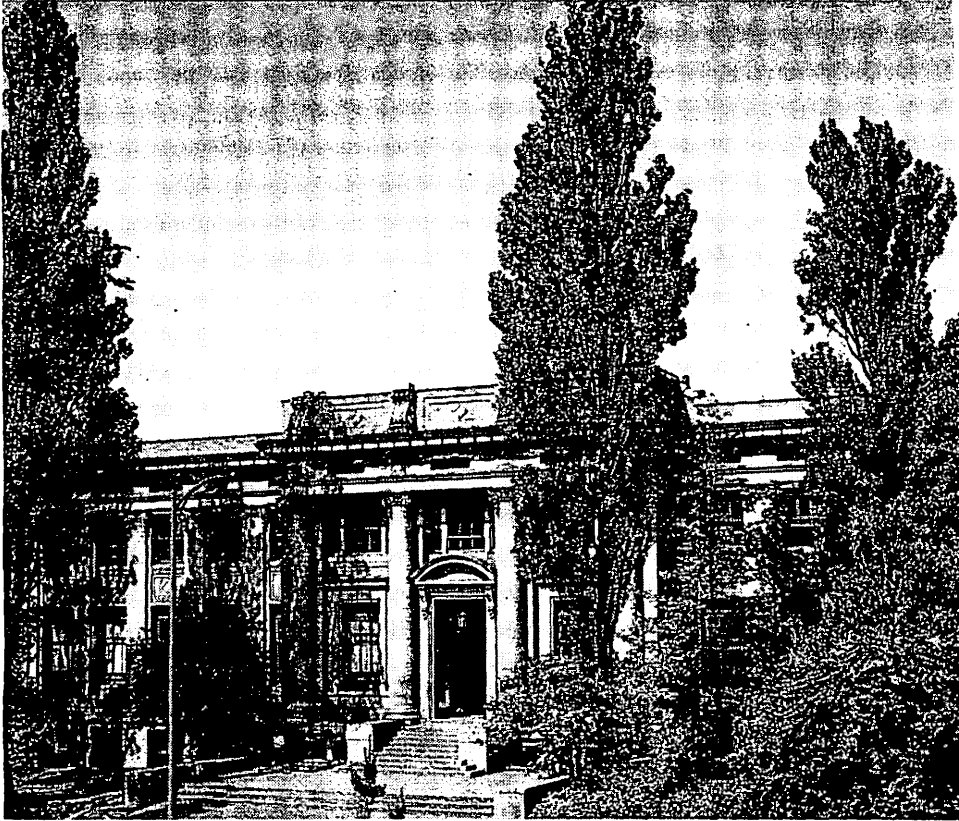


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BULLETIN • UNIVERSITY OF WASHINGTON



**COLLEGE OF
ARCHITECTURE AND
URBAN PLANNING**

1961-1963

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes three general bulletins; bulletins of the colleges and schools; Summer Quarter Bulletin; the bulletin of the Center for Graduate Study at Hanford; and publications of the Division of Correspondence Study and the Division of Evening Classes.

INTRODUCTION TO THE UNIVERSITY, one of the general bulletins, is especially prepared for new and prospective students. It lists all the University curricula, with their admission requirements, and presents information on other phases of student life, including services for students, student activities, and expenses. UNIVERSITY RULES AND REGULATIONS, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as registered students. HANDBOOK OF SCHOLARSHIPS, the third general bulletin, lists the various scholarships available.

Curricula, courses, and scholarship requirements in each field of study are described in the college and school bulletins. Each of these bulletins also discusses services, organizations, and expenses as they relate to students in the particular college or school.

Requests for copies of any of the bulletins should be addressed to the Addressograph Service.

General Bulletins

HANDBOOK OF SCHOLARSHIPS (RESTRICTED DISTRIBUTION)

INTRODUCTION TO THE UNIVERSITY

UNIVERSITY RULES AND REGULATIONS (FOR REGISTERED STUDENTS ONLY)

Bulletins of the Colleges and Schools

COLLEGE OF ARCHITECTURE AND URBAN PLANNING

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF BUSINESS ADMINISTRATION

SCHOOL OF DENTISTRY

COLLEGE OF EDUCATION

COLLEGE OF ENGINEERING

COLLEGE OF FISHERIES

COLLEGE OF FORESTRY

GRADUATE SCHOOL

SCHOOL OF LAW

SCHOOL OF MEDICINE

SCHOOL OF NURSING

COLLEGE OF PHARMACY

SCHOOL OF SOCIAL WORK

Other Bulletins

SUMMER QUARTER

SUMMER QUARTER SPECIAL FEATURES

CENTER FOR GRADUATE STUDY AT HANFORD

CORRESPONDENCE STUDY

EVENING CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 970
July, 1961

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CALENDAR

Applications for Admission, Registration, Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in the following Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

WINTER QUARTER, 1961

REGISTRATION PERIOD

OCT. 24-NOV. 18	Advance Registration only for students in residence Autumn Quarter, 1960. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
DEC. 27-29	In-Person Registration for students in residence Autumn Quarter, 1960, who did not complete Winter Quarter, 1961, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
DEC. 27-29	In-Person Registration for former students not in residence Autumn Quarter, 1960. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 9.</i>
DEC. 2	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
DEC. 20	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
DEC. 27-29	In-Person Registration for ALL new students.
DEC. 29	Last day to register for Winter Quarter, 1961. Note application deadlines above.
JAN. 3-9	Change of registration by appointment only.

ACADEMIC PERIOD

JAN. 3—TUESDAY	Instruction begins
JAN. 9—MONDAY	Last day to add a course
FEB. 17—FRIDAY	Last day to submit applications for advanced credit examinations
FEB. 22—WEDNESDAY	Washington's Birthday and Founder's Day holiday
MAR. 4—SATURDAY	Advanced credit examinations
MAR. 10-16	Final examinations
MAR. 16—THURSDAY	Quarter ends

SPRING QUARTER, 1961

REGISTRATION PERIOD

JAN. 23-FEB. 17	Advance Registration only for students in residence Winter Quarter, 1961. A service fee of \$15.00 will be
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	assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
MAR. 21-23	In-Person Registration for students in residence Winter Quarter, 1961, who did not complete Spring Quarter, 1961, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
MAR. 21-23	In-Person Registration for former students not in residence Winter Quarter, 1961. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is March 10.</i>
MAR. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
MAR. 15	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
MAR. 21-23	In-Person Registration for ALL New students.
MAR. 23	Last day to register for Spring Quarter, 1961. Note application deadlines above.
MAR. 27-31	Change of registration by appointment only.

ACADEMIC PERIOD

MAR. 27—MONDAY	Instruction begins
MAR. 31—FRIDAY	Last day to add a course
MAY 12—FRIDAY	Last day to submit applications for advanced credit examinations
MAY 27—SATURDAY	Advanced credit examinations
MAY 30—TUESDAY	Memorial Day holiday
JUNE 4—SUNDAY	Baccalaureate Sunday
JUNE 2-8	Final examinations
JUNE 8—THURSDAY	Quarter ends
JUNE 10—SATURDAY	Commencement

SUMMER QUARTER, 1961**REGISTRATION PERIOD**

General In-Person for ALL students (*by appointment only*):

June 1, 2, 5

June 12-16

Registration may be delayed if new student Applications for Admission or former student Applications for Appointment or Permit to register are received after May 15.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

Students in the Schools of Law, Dentistry, Medicine, and the Hospital Division of the School of Nursing must file an Application for Registration Permit, although no appointment date is necessary.

Registration Appointments or Permits will be issued as follows:

Students in residence Spring Quarter, 1961:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates	Monday, April 17, 8 a.m. to 5 p.m.
Juniors	Tuesday, April 18, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 19, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 20, 8 a.m. to 5 p.m.

Former Students not in residence Spring Quarter 1961, may obtain an Application for Appointment or Permit by writing to, or calling in person, at the Registrar's Office, Room 109, Administration Building, or telephoning LAkeview 4-6000, Extension 2551, beginning April 17 and preferably *no later than May 15*. Application for Registration Appointment must be received before registration materials can be processed. *New (entering) Students* will receive Registration Appointments with their Official Notice of Admission.

ACADEMIC PERIOD

JUNE 19—MONDAY	Instruction begins
JUNE 20—TUESDAY	Last day to add a course for the first term
JUNE 23—FRIDAY	Last day to add a course for the full quarter
JUNE 30—FRIDAY	Last day to submit applications for advanced credit examinations for first term
JULY 4—TUESDAY	Independence Day holiday
JULY 15—SATURDAY	Advanced credit examinations
JULY 19—WEDNESDAY	Final examinations and first term end
JULY 20—THURSDAY	Second term begins
JULY 21—FRIDAY	Last day to add a course for the second term
JULY 28—FRIDAY	Last day to submit applications for advanced credit examinations for second term
AUG. 12—SATURDAY	Advanced credit examinations
AUG. 18—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1961

REGISTRATION PERIOD

MAY 1-26	Advance Registration only for students in residence Spring Quarter, 1961. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 5-22	In-Person Registration for students in residence Spring Quarter, 1961, who did not complete Autumn Quarter, 1961, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
SEPT. 5-22	In-Person Registration for former students not in residence Spring Quarter, 1961. Appointments and Permits

to register may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Appointments or Permits is September 15.*

- AUG. 1 Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
- SEPT. 1 Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
- SEPT. 7-22 In-Person Registration for ALL new students.
- SEPT. 22 Last day to register for Autumn Quarter, 1961. Note application deadlines.
- SEPT. 25-29 Change of registration by appointment only.

ACADEMIC PERIOD

- SEPT. 25—MONDAY Instruction begins
- SEPT. 29—FRIDAY Last day to add a course
- NOV. 1—WEDNESDAY Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1962, due at Registrar's Office
- NOV. 11—SATURDAY State Admission Day holiday
- NOV. 17—FRIDAY Last day to submit applications for advanced credit examinations
- NOV. 22-27 Thanksgiving recess (6 p.m. to 7:30 a.m.)
- DEC. 2—SATURDAY Advanced credit examinations
- DEC. 6-12 Final examinations
- DEC. 12—TUESDAY Quarter ends

WINTER QUARTER, 1962

REGISTRATION PERIOD

- OCT. 23-Nov. 17 Advance Registration only for students in residence Autumn Quarter, 1961. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
- DEC. 26-28 In-Person Registration for students in residence Autumn Quarter, 1961, who did not complete Winter Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
- DEC. 26-28 In-Person Registration for former students not in residence Autumn Quarter, 1961. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Appointments or Permits is December 8.*

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

- DEC. 1 Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
- DEC. 20 Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
- DEC. 26-28 In-Person Registration for ALL new students.
- DEC. 28 Last day to register for Winter Quarter, 1962. Note application deadlines above.
- JAN. 2-8 Change of registration by appointment only.

ACADEMIC PERIOD

- JAN. 2—TUESDAY Instruction begins
- JAN. 8—MONDAY Last day to add a course
- FEB. 16—FRIDAY Last day to submit applications for advanced credit examinations
- FEB. 22—THURSDAY Washington's Birthday and Founder's Day holiday
- MAR. 3—SATURDAY Advanced credit examinations
- MAR. 9-15 Final examinations
- MAR. 15—THURSDAY Quarter ends

SPRING QUARTER, 1962

REGISTRATION PERIOD

- JAN. 22-FEB. 16 Advance Registration only for students in residence Winter Quarter, 1962. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
- MAR. 20-22 In-Person Registration for students in residence Winter Quarter, 1962, who did not complete Spring Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
- MAR. 20-22 In-Person Registration for former students not in residence Winter Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Appointments or Permits is March 9.*
- MAR. 1 Deadline for ALL new students to submit Applications for admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
- MAR. 15 Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
- MAR. 20-22 In-Person Registration for ALL new students.
- MAR. 22 Last day to register for Spring Quarter, 1962. Note application deadlines above.
- MAR. 26-30 Change of registration by appointment only.

ACADEMIC PERIOD

MAR. 26—MONDAY	Instruction begins
MAR. 30—FRIDAY	Last day to add a course
MAY 11—FRIDAY	Last day to submit applications for advanced credit examinations
MAY 26—SATURDAY	Advanced credit examinations
MAY 30—WEDNESDAY	Memorial Day holiday
JUNE 3—SUNDAY	Baccalaureate Sunday
JUNE 1-7	Final examinations
JUNE 7—THURSDAY	Quarter ends
JUNE 9—SATURDAY	Commencement

SUMMER QUARTER, 1962**REGISTRATION PERIOD**

General In-Person Registration for ALL students (*by appointment only*):

May 31-June 2, 4

June 11-15

Registration may be delayed if new student Applications for Admission or former student Applications for Appointment or Permit to register are received after May 15.

Students in the Schools of Law, Dentistry, Medicine, and the Hospital Division of the School of Nursing must file an Application for Registration Permit, although no appointment date is necessary.

Registration Appointments or Permits will be issued as follows:

Students in residence Spring Quarter, 1961:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates	Monday, April 16, 8 a.m. to 5 p.m.
Juniors	Tuesday, April 17, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 18, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 19, 8 a.m. to 5 p.m.

Former Students not in residence Spring Quarter, 1962, may obtain an Application for Appointment or Permit by writing to, or calling in person at the Registrar's Office, Room 109, Administration Building, or telephoning LAkeview 4-6000, Extension 2551, beginning April 17 and preferably *no later than May 15*. Application for Registration Appointment must be received before registration materials can be processed. *New (entering) Students* will be mailed Registration Appointments with their Official Notice of Admission.

ACADEMIC PERIOD

JUNE 18—MONDAY	Instruction begins
JUNE 19—TUESDAY	Last day to add a course for the first term
JUNE 22—FRIDAY	Last day to add a course for the full quarter
JUNE 29—FRIDAY	Last day to submit applications for advanced credit examinations for first term

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

JULY 4—WEDNESDAY	Independence Day holiday
JULY 14—SATURDAY	Advanced credit examinations
JULY 18—WEDNESDAY	Final examinations and first term end
JULY 19—THURSDAY	Second term begins
JULY 20—FRIDAY	Last day to add a course for the second term
JULY 27—FRIDAY	Last day to submit applications for advanced credit examinations for second term
AUG. 11—SATURDAY	Advanced credit examinations
AUG. 17—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1962

REGISTRATION PERIOD

APR. 30—MAY 25	Advance Registration only for students in residence Spring Quarter, 1962. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 10-28	In-Person Registration for students in residence Spring Quarter, 1962, who did not complete Autumn Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
SEPT. 10-28	In-Person Registration for former students not in residence Spring Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is September 1.</i>
JULY 15	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointments will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 12-28	In-Person Registration for ALL new students.
SEPT. 28	Last day to register for Autumn Quarter, 1962. Note application deadlines.
OCT. 1-5	Change of registration by appointment only.

ACADEMIC PERIOD

OCT. 1—MONDAY	Instruction begins for all students
OCT. 5—FRIDAY	Last day to add a course
NOV. 1—THURSDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1963, due at Registrar's Office
NOV. 12—MONDAY	State Admission Day holiday
NOV. 21—WEDNESDAY	Last day to submit applications for advanced credit examinations
NOV. 21-26	Thanksgiving recess (6 p.m. to 7:30 a.m.)
DEC. 8—SATURDAY	Advanced credit examinations

DEC. 12-18	Final examinations
DEC. 18—TUESDAY	Quarter ends

WINTER QUARTER, 1963

OCT. 29-Nov. 27	Advance Registration only for students in residence Autumn Quarter, 1962. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
JAN. 2-4	In-Person Registration for students in residence Autumn Quarter, 1962, who did not complete Winter Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
JAN. 2-4	In-Person Registration for former students not in residence Autumn Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 1.</i>
DEC. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
DEC. 20	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
JAN. 2-4	In-Person Registration for ALL new students.
JAN. 4	Last day to register for Winter Quarter, 1963. Note application deadlines.
JAN. 7-11	Change of registration by appointment only.

ACADEMIC PERIOD

JAN. 7—MONDAY	Instruction begins
JAN. 11—FRIDAY	Last day to add a course
FEB. 21—THURSDAY	Last day to submit applications for advanced credit examinations
FEB. 22—FRIDAY	Washington's Birthday and Founder's Day holiday
MAR. 9—SATURDAY	Advanced credit examinations
MAR. 15-21	Final examinations
MAR. 21—THURSDAY	Quarter ends

SPRING QUARTER, 1963**REGISTRATION PERIOD**

JAN. 28-FEB. 21	Advance Registration only for students in residence Winter Quarter, 1963. A service fee of \$15.00 will be assessed any student eligible for Advance Registration
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Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

- who fails to participate and then applies for In-Person Registration for that quarter.
- MARCH 26-28** In-Person Registration for students in Residence Winter Quarter, 1963, who did not complete Spring Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
- MARCH 26-28** In-Person Registration for former students not in residence Winter Quarter, 1963. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Appointments or Permits is March 1.*
- MARCH 1** Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
- MARCH 15** Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
- MARCH 26-28** In-Person Registration for ALL new students.
- MARCH 28** Last day to register for Spring Quarter, 1963. Note application deadlines.
- APRIL 1-5** Change of Registration by appointment only.

ACADEMIC PERIOD

- APRIL 1—MONDAY** Instruction begins for all students
- APRIL 5—FRIDAY** Last day to add a course
- MAY 12—FRIDAY** Last day to file applications for master's degrees for Spring Quarter
- MAY 30—THURSDAY** Memorial Day
- JUNE 7-13** Final examinations
- JUNE 9—SUNDAY** Baccalaureate Sunday
- JUNE 13—THURSDAY** Quarter ends
- JUNE 15—SATURDAY** Commencement

SUMMER QUARTER, 1963

REGISTRATION PERIOD

General In-Person Registration for ALL students (*by appointment only*):

June 6-10

June 17-21

Registration may be delayed if new student Applications for Admission or former student Applications for Appointment or permit to register are received after May 15.

Students in the Schools of Law, Dentistry, Medicine, and the Hospital Division of the School of Nursing must file an Application for Registration Permit, although no appointment date is necessary.

Registration Appointments or Permits will be issued as follows:

Students in residence Spring Quarter, 1963:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates	Monday, April 22, 8 a.m. to 5 p.m.
Juniors	Tuesday, April 23, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 24, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 25, 8 a.m. to 5 p.m.

Former Students not in residence Spring Quarter, 1963, may obtain an Application for Appointment or Permit by writing to, or calling in person at the Registrar's Office, Room 109, Administration Building, or telephoning LAkeview 4-6000, Extension 2551, beginning April 22 and preferably no later than May 15. Application for Registration Appointment must be received before registration materials can be processed.

New (entering) Students will be mailed Registration Appointments with their Official Notice of Admission.

ACADEMIC PERIOD

JUNE 24—MONDAY	Instruction begins
JUNE 25—TUESDAY	Last day to add a course for the first term
JUNE 28—FRIDAY	Last day to add a course for the full quarter
JULY 4—THURSDAY	Independence Day holiday
JULY 5—FRIDAY	Last day to file applications for master's degrees for Summer Quarter
JULY 24—WEDNESDAY	Final examinations and first term end
JULY 25—THURSDAY	Second term begins
JULY 26—FRIDAY	Last day to add a course for the second term
AUGUST 23—FRIDAY	Final examinations and second term end

For further information concerning subsequent quarters inquire at the Registrar's Office.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.

ADMINISTRATION

BOARD OF REGENTS

JOSEPH DRUMHELLER, <i>President</i>	Seattle
MRS. A. SCOTT BULLITT, <i>Vice-President</i>	Seattle
JOHN L. KING	Seattle
HERBERT S. LITTLE	Seattle
ALBERT B. MURPHY	Everett
HAROLD S. SHEFELMAN	Seattle
ROBERT J. WILLIS	Yakima
HELEN E. HOAGLAND, <i>Secretary</i>	
DON H. WAGEMAN, <i>Treasurer</i>	

OFFICERS OF ADMINISTRATION

CHARLES E. ODEGAARD, Ph.D.	<i>President of the University</i>
FREDERICK P. THIEME, Ph.D.	<i>Provost of the University</i>
GLENN H. LEGGETT, Ph.D.	<i>Vice-Provost of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
HAROLD A. ADAMS, M.S.	<i>Director of Admissions</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>
ARTHUR P. HERRMAN, B.A. in Arch.	<i>Dean of the College of Architecture and Urban Planning</i>

FACULTY OF THE COLLEGE OF ARCHITECTURE AND URBAN PLANNING

(As of September 16, 1961)

A single date following the name indicates the beginning of service in the University. When two dates are given, the second, in parentheses, is the date of the promotion to present academic rank.

- Chervenak, Robert A., 1959, *Assistant Professor of Architecture*
B.Arch., 1951, Washington
- Cohn, Sidney B., 1960, *Instructor in Architecture*
B.Arch., 1950, Washington
- Dietz, Robert Henry, 1947 (1958), *Professor of Architecture and Chairman, Graduate Program in Architecture*
B.Arch., 1941, Washington; M.Arch., 1944, Massachusetts Institute of Technology
- Haag, Richard, 1958 (1960), *Associate Professor of Landscape Design*
B.S. in L.A., 1950, California; M.S. in L.A., 1952, Harvard
- Herrman, Arthur Philip, 1923 (1937), *Professor of Architecture; Dean of the College of Architecture and Urban Planning*
B.A. in Arch., 1921, Carnegie Institute of Technology; F.A.I.A.
- Jensen, Alfred, 1930 (1956), *Professor Emeritus of Architectural Engineering*
B.S. in C.E., 1925, M.S. in C.E., 1932, Washington
- Johnston, Norman J., 1960 (1961), *Associate Professor of Architecture and Urban Planning*
B.A., 1942, Washington; B.Arch., 1949, Oregon; M.C.P., 1959, Pennsylvania
- Kolb, Keith Robert, 1952 (1960), *Associate Professor of Architecture*
B.Arch., 1947, Washington; M.Arch., 1950, Harvard
- Leonidas, Thomas A., 1960, *Lecturer in Architecture*
B.S. in E.E., 1949, British Columbia
- Lovett, Wendell Harper, 1948 (1960), *Associate Professor of Architecture*
B.Arch., 1947, Washington; M.Arch., 1948, Massachusetts Institute of Technology

- Mithun, Omer Lloyd, 1947 (1960), *Associate Professor of Architecture*
B.Arch., 1942, Minnesota
- Nelsen, Ibsen A., 1958 (1960), *Assistant Professor of Architecture*
B.Arch., 1951, Oregon
- Norton, Thomas J., 1961, *Acting Assistant Professor of Urban Planning*
B.A. in Far Eastern, 1949, Washington; Master of Urban Planning, 1960, Washington
- Radcliffe, Donald Gregg, 1947 (1948), *Assistant Professor of Architectural Engineering*
B.S. in C.E., 1932, M.S. in C.E., 1934, Illinois
- Rohrer, John Abram, 1948 (1959), *Associate Professor of Architecture*
B.Arch., 1937, Washington
- Sparling, Thomas Esval, 1956, *Lecturer in Architecture*
B.S. in E.E., 1939, Montana State College
- Sproule, John Robert, 1948 (1960), *Associate Professor of Architecture*
B.Arch., 1934, Washington
- Steinbrueck, Victor, 1946 (1960), *Professor of Architecture*
B.Arch., 1935, Washington
- Stern, Richard Morris, 1955, *Lecturer in Architecture*
B.S. in C.E., 1935, North Dakota
- Streissguth, Daniel Michener, 1955 (1961), *Associate Professor of Architecture*
B.Arch., 1948, Washington; M.Arch., 1949, Massachusetts Institute of Technology
- Tang, T. Kenneth, 1959 (1960), *Assistant Professor of Architectural Engineering*
B.S. in C.E., 1950, Washington
- Timpe, Carl Louis, 1957, *Lecturer in Architecture*
- Torrence, Gerard Rutgers, 1954 (1961), *Associate Professor of Architectural Engineering*
B.S. in C.E., 1949, Washington; M.S. in S.E., 1950, Massachusetts Institute of Technology
- Wherrette, William Carnes, 1948 (1960), *Associate Professor of Architecture*
B.Arch., 1948, Carnegie Institute of Technology
- Wolfe, Myer Richard, 1949 (1958), *Professor of Urban Planning and Chairman, Graduate Program in Urban Planning*
B.S., 1940, New Hampshire; M. Regional Planning, 1947, Cornell

COOPERATING FACULTY

- | | |
|------------------------|---------------------------------|
| Mason, Alden C..... | <i>Associate Professor, Art</i> |
| Pizzuto, Eugene..... | <i>Assistant Professor, Art</i> |
| Smith, Charles W..... | <i>Associate Professor, Art</i> |
| Tsutakawa, George..... | <i>Associate Professor, Art</i> |

GRADUATE URBAN PLANNING ADVISORY COMMITTEE TO THE DEAN OF THE COLLEGE

- Edgar M. Horwood, *Associate Professor of Civil Engineering, A.I.P.*
- Calvin F. Schmid, *Professor of Sociology and Director, Office of Population Research*
- John C. Sherman, *Associate Professor of Geography*
- Donald H. Webster, *Professor of Political Science and Director, Bureau of Governmental Research and Services*
- Bayard O. Wheeler, *Professor of General Business and Real Estate*
- Myer R. Wolfe, *Professor of Urban Planning, A.I.P., and Chairman, Graduate Program in Urban Planning*

LIBRARY and ADMINISTRATIVE STAFF

- | | |
|--------------------------|---------------------------------|
| Betty L. Austin | <i>Librarian</i> |
| Mary-Jane Worth..... | <i>Administrative Assistant</i> |
| Mary Broadley Gomes..... | <i>Secretary</i> |
| Isabelle Reynolds..... | <i>Clerk-Typist</i> |



GENERAL INFORMATION

GENERAL INFORMATION

INAUGURATED BY ACTION of the Board of Regents at the instigation of the Washington State Chapter of the American Institute of Architects, the Department of Architecture was established in 1914. In 1935 the status was changed to that of School of Architecture in the College of Arts and Sciences.

The College of Architecture and Urban Planning was recognized as an autonomous unit of the University in July, 1957. At that time Prof. Arthur P. Herrman, Director of the School of Architecture since 1937, was appointed Acting Dean, and in April, 1958, was appointed Dean.

A member of the Association of Collegiate Schools of Architecture since 1925, the College is also accredited by the National Architectural Accrediting Board. It is also a member of the newly formed Association of Collegiate Schools of Planning. While accreditation procedures have not yet been set up for urban planning, this College has been "recognized" by the American Institute of Planners for membership purpose.

The College of Architecture and Urban Planning offers three five-year programs, each leading to a bachelor's degree. Architecture has been offered since 1928, Urban Planning since 1941, and Landscape Architecture since 1960. The College also offers programs leading to the degrees of Master of Architecture and Master of Urban Planning.

OBJECTIVES OF THE COLLEGE

The College of Architecture and Urban Planning offers curricula in three professional areas related to the human environment: architecture, landscape architecture, and urban planning. Though there is a certain amount of close relationship among the three disciplines, each makes its own distinct contribution. In these creative fields, the hope is to sharpen the student's perception, stimulate his imagination, give him a method of approach, and inspire him to the highest degree of professional competence. The goal is the continuous improvement of the physical environment of human beings through the creative talents of architects, landscape architects, and planners.

ARCHITECTURE

One of the primary concerns of architecture is the study of the perceptual quality of shelter and environment. The ideal is to produce the best possible physical space and artificial climate for people, and, that environment should satisfy the function of the design. Architecture must possess the element of beauty—its aesthetic delight is as fundamental to good architecture as its function. Advances in technology and changes in social and economic conditions present a constant challenge to the profession, warranting a continuing search for a more precise performance.

To create a mental image of a structure and then to translate it into a workable building requires a special combination of carefully developed abilities and techniques. The architect is the person in whose mind the image of the building takes shape. The successful architect should be a well educated person. He must possess the sensitivity and skill of the artist, have a clear understanding of structure and materials, and have a wide knowledge of the activities and desires of people. An architect is much more than a technician—he must acquire competence in design, which is emphasized in the course of study and taught by the use of the project method.

The objective of the graduate program in architecture is to explore the possibilities for a finer architecture which grow out of a deep and intensive knowledge of the relationship among the technical, sociological, economic, and aesthetic influences significant to architectural form. To accomplish this, the suggested graduate study leading to a Master of Architecture degree is of an individual exploratory nature, thereby allowing a competent student to formulate a program of study and research which will enhance his development and contribute to architectural advancement.

LANDSCAPE ARCHITECTURE

Landscape Architecture is the art and science of planning land for human use and enjoyment. It involves the design disciplines of architecture, art, and sculpture; engineering principles of earthwork, grading, and surveying; and the planning processes of natural resource conservation.

A degree of Bachelor of Landscape Architecture is offered in a five-year program. The first two years are devoted to general education with emphasis on the natural sciences and basic approaches to "design". The first two years of the Architecture curriculum may be substituted. The final three years are built around a core of Landscape Design reinforced by service courses in Botany, Engineering, Forestry, etc.

The case study method is used in the design of public areas, urban redevelopment projects, and even individual residences. The curriculum is concerned with the restoration and the recreation of new environments where the natural has been damaged, but a major emphasis will be on the conservation of natural landscape values.

URBAN PLANNING

Urban planning is a relatively new profession, but it has gained considerable recognition, as it is increasingly necessary to meet some of the development problems of a modern, growing society on a professional level.

Included in the many duties of the urban planner are research concerning the population, land uses and economic bases of cities, and the preparation of long range, comprehensive development plans. These plans include proposals for land use, transportation facilities, and community facilities such as schools, parks, and public buildings.

In order to help put his plans into effect the planner prepares zoning ordinances, subdivision regulations, municipal capital improvement programs, and proposals for slum clearance and urban renewal.

It is important that a professional planner have an integrated understanding of

his community and of its purposes and problems. Therefore, the Urban Planning curricula are designed to acquaint the student with the political, physical, economic, and social structures of communities, the emerging problems of growth and decay, and the preventive and remedial methods for meeting such problems on a professional level.

The Urban Planning curricula combine courses from a number of different fields such as political science, sociology, business, geography, civil engineering, and urban planning. These courses are coordinated by an advisory committee composed of members of the participating colleges and departments.

Both a graduate and an undergraduate program are offered by the College of Architecture and Urban Planning. The undergraduate program is a five-year course of study which leads to a Bachelor of Urban Planning degree. The graduate program, which leads to the degree of Master of Urban Planning, normally covers a two-year period. The educational objectives of the undergraduate and graduate programs are similar in that both are concerned with techniques and methods of urban planning, but the emphases of the two curricula are somewhat different.

The undergraduate program is intended for the student who is primarily interested in the design and physical planning aspects of urban planning. Considerable attention is given to the elements of physical planning, including the development of useful and aesthetic patterns in space and structure, and of design precepts for large groups of buildings and entire cities.

The program commences with two years of preprofessional training which is common to the architecture and landscape architecture programs. In the following three years, the professional training progressively emphasizes factors affecting the use of land and other elements of the urban planning process.

The graduate program, on the other hand, is somewhat more concerned with broader areas of planning research and administration.

This program draws students from a variety of undergraduate backgrounds such as sociology, geography, political science, civil engineering, and architecture. However, selected "foundation," "urban study," and "technique" courses also are needed to provide a basis for the professional courses. Therefore, it is strongly recommended that students planning on eventual graduate training in urban planning discuss their undergraduate college preparation with the Urban Planning adviser in order to be sure that they will have adequate preparation for their graduate study.

COLLEGE BUILDING AND FACILITIES

Instruction in architecture and urban planning is centered in Architecture Hall. This building was erected as a permanent structure to be used as the Art Gallery for the Alaska-Yukon-Pacific Exposition in 1909. Architecture Hall, in addition to regular classrooms and staff offices, contains drafting rooms, seminar rooms, and a library.

THE LIBRARY

Since research is an essential part of the study of architecture and urban planning, the library is closely integrated into the teaching program of the College. Located in Architecture Hall, the library is a branch of the main University Library. The collection includes 5,000 books; 3,300 pamphlets; 111 currently received periodicals; a large file of manufacturers' catalogs, brochures, and samples which provide data on all aspects of building fabrication; a number of trade magazines; a file of blueprints; 6,000 lantern slides; and 4,000 35-millimeter colored slides.

Literature on historic phases of architecture, its famous practitioners, past and present; the philosophy and theory of design, color, sculpture, drawing, lettering, mechanical and electrical equipment for buildings; materials and methods of architectural construction; city, county, and regional planning and landscape architecture is available for student use during the day and evening. Current and past issues of the most prominent architectural and urban planning periodicals of the United States and various other countries are also on file in the library.

ADMISSION TO THE UNIVERSITY

PRELIMINARY STATEMENTS

The Board of Admissions, which is appointed by the President, is responsible for the interpretation and administration of the regulations governing admission to the University.

The University recognizes high school diplomas, college credits presented for advanced standing, and college degrees earned in the following institutions: (1) high schools accredited by the Washington State Department of Public Instruction; (2) out-of-state high schools accredited by their state university and state department of public instruction, or by the regional accrediting association of the area; (3) colleges and universities accredited by their regional accrediting association.

Resident. Defined for purposes of admission and/or assessment of fees as an individual who has been domiciled in the state of Washington for one year immediately prior to his registration. The domicile of a minor is that of his parents or his legal guardian.

Nonresident. An applicant whose credentials are received from a school or college located outside the state of Washington. An applicant who believes himself eligible for resident status may apply for reclassification through the Office of Residence Classification which has final authority in determining such status.

Qualified Student. One whose scholastic standing and preparation meet the standards for admission to the University.

Regular Student. One who fulfills the following requirements: (1) has been granted unqualified admission to a college or school of the University; (2) whose current Program of Studies is satisfactory to the dean of his college or school; (3) has received medical clearance from the Student Health Service and completed all of the required steps for registration, including the payment of tuition and fees, the filing of class cards, and the depositing of registration materials at Sections.

Grade-point averages. These are based on a four-point system in which A = 4, B = 3, C = 2, D = 1, E = 0. An adjustment to this system is made as necessary in the computation of grade-point averages earned at other institutions.

ELIGIBILITY FOR ADMISSION WITH FRESHMAN STANDING

(Applicable to Residents of the State of Washington)

Undergraduate programs offered by the University lead to the baccalaureate degree; students, therefore, are admitted when, in the judgment of the University, they appear qualified to pursue a degree program with a reasonable probability of success. In making this judgment, the University's Board of Admissions considers the applicant's total record, including such factors as scholastic achievement in a college preparatory program, recommendations of the high school principal or counselor, rank in class, and scores on any nationally administered tests associated with college entrance.

Scholastic achievement is measured largely in terms of the criteria listed below. All students entering the University are expected to meet these criteria. Non-residents and students who enter with advanced standing will find additional admission criteria in subsequent sections.

SCHOLASTIC CRITERIA

1. Graduation with diploma from an accredited high school.
2. Achievement of an over-all high school grade-point average of at least 2.50 in courses completed after September, 1960, and a grade-point average of at least 2.00 in courses completed prior to September, 1960.
3. Completion of a college preparatory program of at least 16 units to include the following:

a. English	at least 3 units
b. One foreign language	at least 2 units
c. College preparatory mathematics	at least 2 units

- | | |
|--------------------------------------|------------------|
| d. One laboratory science | at least 1 unit |
| e. Social science | at least 2 units |
| f. Electives from the above subjects | at least 2 units |

Additional electives may be chosen from any subjects acceptable for high school graduation.

To insure normal progress in the College of Architecture and Urban Planning students must complete, while in high school, three semesters of algebra, and two of plane geometry. Physics should be selected as the laboratory science. Trigonometry and freehand drawing are strongly recommended as additional electives.

ELIGIBILITY FOR ADMISSION WITH ADVANCED STANDING

(Applicable to Residents of the State of Washington)

A qualified student in good standing at an accredited institution may apply for admission with advanced standing. Such an applicant is expected to have the same high school preparation as the student who enters as a freshman, and to have a college grade-point average which meets the standards herein specified.

With fewer than 45 acceptable credits, an applicant must present a grade-point average of 2.50 in high school work completed after September, 1960; a 2.00 grade-point average in such work completed prior to this date; and a 2.00 cumulative average in all college work.

With 45 or more acceptable credits an applicant is expected to present a cumulative and last-term grade-point average of at least 2.00. See also section on transfer of advanced credit, page 24.

ADMISSION OF NONRESIDENTS TO UNDERGRADUATE STANDING

Applications from nonresidents will be considered, but first preference is given legal residents of the state of Washington, and sons and daughters of University of Washington alumni residing outside the state.

Nonresident applicants are selected on the basis of their preparation and scholastic standing. In general, a freshman applicant must be eligible to enter the university of his own state, and satisfy the foregoing scholastic criteria with a 3.00 (B) grade-point average or place in the upper 25 per cent of his graduating class.

An applicant for admission with advanced standing with fewer than 45 college credits must have a cumulative grade-point average of at least 3.00 in standard college courses as well as a high school grade-point average of at least 3.00 or have been in the upper fourth of his class. An applicant presenting more than 45 credits for advanced standing must present a 2.70 grade-point average in standard college courses.

Sons and daughters of University of Washington alumni are admitted according to resident standards but are required to pay the regular nonresident tuition fees. Applicants for admission to curricula in which the University serves on a regional basis will be accorded special consideration by the Board of Admissions.

ADMISSION OF SPECIAL STUDENTS AND AUDITORS

Non-high school graduates who are 21 or older and legal residents of Washington may apply to the Board of Admissions for admission with special standing. With their application they must submit all available records of secondary school and college study. Special students may register in and take for credit whatever courses the dean of the college permits, but may not participate in student activities or receive degrees. By fulfilling conditions specified by the Board of Admissions, special students may change their status to that of regular students and may receive degrees.

Persons 21 or older may register as auditors in nonlaboratory courses or the lecture sessions of laboratory courses by obtaining the consent of the dean of the college and the instructors of the courses. Auditors do not participate in class discussion or laboratory work. They may receive credit for audited courses only by enrolling in them as regular students in a subsequent quarter.

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Applicants for admission with graduate or advanced undergraduate standing are expected to meet the same general requirements as nonresidents of Washington educated in American schools. However, they must file their credentials before March 1 to be considered for admission Autumn Quarter or six months before the opening of another quarter in which they may wish to enroll. In addition, they must demonstrate a satisfactory command of the English language.

The official record of the Canadian student is the matriculation certificate or university admission certificate of his province. Canadian and foreign students who have been in University attendance must have official transcripts forwarded as required of all students. High School graduates and university transfer students must meet the scholarship requirements for nonresident students. See page 23.

ADMISSION OF VETERANS

Veterans and children of deceased veterans should meet the general admission criteria and follow the general procedures outlined for all applicants. Applications for and questions about government aid should be addressed to the Veterans Division Regional Office. See pages 23 and 26.

ADMISSION OF UNDERGRADUATE STUDENTS WHO DO NOT MEET THE ADMISSIONS STANDARDS

An applicant whose preparation and previous scholarship do not clearly qualify him for admission may submit additional evidence in support of his application. This may include scores on nationally recognized tests of scholastic aptitude or achievement; letters from school administrators, teachers or counselors; and other information which may assist the Board of Admissions in evaluating his probability of success in the University.

Students admitted by special action of the Board of Admissions will be expected to achieve and maintain a satisfactory scholastic average in their University work and to fulfill any conditions specified by the Board at the time of their admission.

A student thus admitted on probation will be subject to scholarship rules given on pages 30 and 31. Furthermore, he may not (1) be pledged 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 regulations of the University Intercollegiate Athletics Committee.

ADMISSION TO THE GRADUATE SCHOOL

Basic requirements for admission to the Graduate School are a bachelor's degree from an institution of recognized standing, a grade-point average of 3.00 in the junior and senior years of college work, approval of the Graduate School, and approval of the department in which the work is to be taken. For complete information, see the *Graduate School Bulletin*.

TRANSFER OF ADVANCED CREDIT FROM OTHER INSTITUTIONS

The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted.

1. The advanced standing for which an applicant's training appears to fit him is granted tentatively on admission. Definite advanced standing is not determined before the end of the student's first quarter in the University. The maximum that may be accepted from other colleges and universities is 135 quarter credits or senior standing. Transfer credit will not be allowed in the senior year.

2. Transfer credits will be accepted for upper-division credit *only* when earned at an accredited four-year degree-granting institution.

3. Transfer credits from institutions accredited for less than four years will not be accepted in excess of the accreditation of the school concerned.

4. Transfer of junior college credit shall apply on the 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 to completion of the first two years in the University. In no case shall the transfer of junior college credit to the University exceed 90 quarter credits exclusive of physical education activity credits.

5. The maximum number of credits obtainable by acceptance of Armed Forces training schools credits will be 30. All such credits will be counted as extension credits and will be included in the 90-credit maximum allowed toward the bachelor's degree, but none will apply toward the work of the senior year.

6. A maximum of 45 credits earned in extension and correspondence courses at other institutions may be transferred, but none of the credits can apply in the senior year. Extension and correspondence credits from schools that are not members of the National University Extension Association are accepted only after examination.

7. Credits earned in evening and extension classes or correspondence courses at this University are accepted after the student has satisfactorily completed 35 credits of work in residence (that is, registered in regular University classes). A maximum of 90 extension and/or correspondence credits is acceptable; the 90 credits may include the 45 extension and/or correspondence credits allowable from other institutions or may consist entirely of courses taken in this University's Division of Evening Classes or Division of Correspondence Study. All credits earned in advanced-credit examinations and all acceptable Armed Forces training schools credits must be counted in the 90 extension credit maximum. Up to ten evening class or correspondence course credits from this University can apply toward the work of the senior year.

8. For work done in unaccredited institutions, extended secondary programs in institutions whose standing is unknown, and for work with private teachers, University credit is granted only after examination. Applications for advanced-credit examinations must be filed during the first quarter in residence.

9. No credit will be granted 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. The prescribed written permission is effective only if obtained before registration. Nothing in this rule makes mandatory the granting of any credit by the University.

10. Credits for architecture courses may be transferred only from professional schools accredited by the National Architectural Accrediting Board.

ADMISSIONS PROCEDURE

Requests for Application for Admission forms and correspondence regarding admission to any college or school of the University should be addressed to the Office of Admissions, University of Washington, Seattle 5, Washington. Graduates of high schools in the state of Washington may obtain this form from their principals.

Applications and required transcripts must be filed with the Office of Admissions prior to the following dates in order to be assured of consideration for admission to the quarter for which application is being made: August 1 for Autumn Quarter, 1961, July 15 for subsequent Autumn Quarters; December 1 for Winter Quarter; March 1 for Spring Quarter; May 15 for Summer Quarter.

All records become a part of the official file and can neither be returned nor duplicated for any purpose. Failure to submit complete credentials will be considered a serious breach of honor, and may result in permanent dismissal from the University.

A leaflet giving general information and instructions for registration is mailed with the Notice of Admission. In the event of a discrepancy, instructions in the leaflet supersede those found in earlier publications. *The University assumes no*

responsibility for applicants who come to the campus before they have been officially notified of their admission.

The admissions credentials of applicants who do not register for the quarter to which they have been admitted are normally retained in the Office of Admissions for a period of one year from the date of application. At the end of this period, credentials on file are discarded unless the applicant has notified the Office of his continued interest in attending the University or of his enrollment in the Evening Classes program. Should a student wish to renew his application after the one-year lapse, he must submit new credentials in advance of the date given above for the quarter desired.

FOR FRESHMAN STANDING

An application form, obtained from the University's Office of Admissions or from a Washington high school, should be completed according to instructions appearing on the form and return to the Office of Admissions.

Students may apply through their high schools on completion of the first semester of the senior year. Those who are qualified will be issued notices of early or conditional admission which become valid on graduation with a grade-point average of no less than 2.50 for the final semester. Others also will be notified of their admission status.

Scores on a nationally administered college aptitude test are not required. However, they may be helpful in evaluating a borderline student's probability of success.

FOR ADVANCED UNDERGRADUATE STANDING

An application form, obtained from the University's Office of Admissions or from a Washington junior college should be completed according to instructions appearing on the form and sent to the Office of Admissions. In addition, the applicant should request the principal of his high school and the registrar of each college he has attended to forward an official transcript of his record to the University's Office of Admissions. When these credentials have been evaluated, the applicant will be notified of his admission status.

FOR GRADUATE STANDING

An application form, obtained from the University's Office of Admissions, should be completed according to instructions appearing on the form and returned to the Office of Admissions. In addition an applicant should request the registrar of each college or university in which he has been enrolled as an undergraduate or graduate student to forward *two* official transcripts to the University's Office of Admissions. When these credentials have been evaluated, the applicant will be notified of his admission status. The student will find it convenient to have an additional copy of the record for reference.

WORLD WAR I OR II VETERANS

Under certain conditions a veteran of World War I or II who is not eligible for Veterans Administration benefits is fully or partly exempt from tuition charges. See page 33.

KOREAN VETERANS

A Korean veteran under Public Law 550 should obtain admittance to the University prior to making application for Certificate for Education and Training, thus eliminating the chance of obtaining a certificate valid for an incorrect degree. If the veteran has any questions regarding application for a certificate, he should consult the Veterans Division, Safety Division Building. Educational allowance payments are made directly to the veteran by the Veterans Administration after the veteran and institution submit a monthly attendance certification.

Korean Certificate

Application for this certificate should be made at least four weeks prior to the beginning of University instruction. If the veteran is eligible, the Veterans Ad-

ministration will issue him a Certificate for Education and Training which must be presented, along with his Program of Studies, to the Veterans Division, Safety Division Building as soon as registration is completed. A Korean veteran should be prepared to meet all his own expenses as well as the cost of tuition, fees, and supplies for at least two months, because allowances are not made until after a full month's attendance has been established.

Quarter Credit Requirements (Public Law 550)

14 credits	Full subsistence
10 to 13 credits	Three-fourths subsistence
7 to 9 credits	One-half subsistence
6 credits or less	Established tuition and fees
or credits $\div 14 \times \$110.00$, whichever is the lesser.	

Graduate Credit Requirements (Public Law 550) 500-level courses or above

9 credits	Full subsistence
7 to 8 credits	Three-fourths subsistence
5 to 6 credits	One-half subsistence
4 credits or less	Established tuition and fees
or credits $\div 14 \times \$110.00$, whichever is the lesser.	

If a graduate is combining 400-level courses with 500-level courses, he should consult with the Veterans Division, Safety Division Building, to determine the scale of pay.

Termination of Training

A veteran *eligible* under Public Law 550 must complete his training by *eight* years after his release from active service, or by January 31, 1965, whichever is earlier.

DISABLED VETERANS

A veteran with a disability under Public Law 894 should contact a training officer in the nearest Veterans Administration Office approximately four weeks prior to registration.

CHILDREN OF DECEASED VETERANS

Public Law 634 grants federal benefits to children of deceased veterans of World War I, World War II, or the Korean Conflict who died as a result of injury or disease incurred or aggravated while in the service. Information regarding eligibility under this law should be requested from a Veterans Administration Regional Office.

The Certificate for a Program of Education issued to those eligible persons by the Veterans Administration is to be presented to the Veterans Division, Safety Division Building, on the date of registration.

REQUIRED TESTS AND EXAMINATIONS

Washington Pre-College Differential Guidance Test

This grade prediction test is required of all entering freshmen, including those transferring to the University with fewer than 45 credits. It is also required of transfer students who have not completed courses which are equivalent to English 101 (English composition) or Humanistics-Social Studies 265 (Techniques of Communication). High school seniors are advised to arrange through their high schools to take this test in the spring when it is offered throughout the state of Washington. Nonresidents of Washington may take the test at the time of their registration according to instructions mailed with the notice of admission. Sample copies are not available. Special, foreign, blind students, and auditors are exempted.

The several parts of this test have been selected because of their proven value for the prediction of grades most likely to be earned by a student. The results of

the test are used by departmental advisers as an aid in assigning students to appropriate sections in English composition and other subjects. Therefore, it is advisable that the student bring a copy of the results with him when he comes for his first conference with his counselor or adviser.

Mathematics Placement Tests

One section of the Pre-College Differential Guidance Test evaluates a student's mastery of intermediate algebra and plane geometry. A satisfactory score on this section qualifies a student to enroll in Mathematics 104 (Trigonometry) or Mathematics 105 (College Algebra). Those who fail to qualify and wish to proceed to the study of more advanced mathematics courses may choose one of the following alternative plans:

1. Pass Mathematics 101 and then take 104, or 105, or both. No credit is given for Mathematics 101 to students who have completed the third semester of high school algebra.
2. Pass Mathematics 103, in which the first four weeks are devoted to a review of intermediate algebra and the last six weeks to the study of plane trigonometry equivalent to Mathematics 104. The satisfactory completion of this course qualifies the student to enroll in Mathematics 105 (College Algebra).

Students who have studied trigonometry, fourth semester algebra, mathematical analysis, or similar subjects in high school, will be placed in the next appropriate course at the University according to their scores in additional placement tests given by the Department of Mathematics. It is advisable to review before taking these examinations. This generally applies to students entering such fields as engineering, architecture and urban planning, fisheries, forestry, pharmacy, mathematics, and the physical and marine sciences.

Medical Examination

A student entering the University for the first time, or returning to the University after an absence of more than one calendar year, or who has previously attended Summer Quarter classes but is entering regular University classes for the first time, is required to submit to the Student Health Service (Hall Health Center) a form containing his health history and a report of a physical examination by a physician. The form will be sent to new students by the Office of Admissions, and to returning former students by the Registrar. This examination, which is required before a student may register, is taken at the student's expense. A chest X ray, also required of the above students, is given at the Student Health Service without charge.

With the exception of Canadian students, who will follow the above instructions, foreign students must take the required physical examination at the Student Health Service when they arrive on the campus.

MISCELLANEOUS INFORMATION

Junior High School Courses. The University recognizes college preparatory courses given in the junior high school and assigns them the same value as equivalent courses offered by the high school. Students who elect these subjects in the junior high may subsequently achieve a superior degree of competence in related subject areas in high school.

Accelerated, Honors, and Advanced Placement Courses. The University encourages qualified students to extend themselves academically by taking advantage of advanced, accelerated, and honors courses offered by their schools. Successful participation in such challenging opportunities assures superior academic preparation and serves to identify those students more likely to profit from University-level honors courses.

The University of Washington grants placement and/or credit at the discretion

of the University department concerned on the basis of scores earned in College Entrance Examination Board Advanced Placement Examinations, and on the basis of placement examinations administered to entering students (see "Required Tests and Examinations," page 27).

REGISTRATION

REGULAR STUDENT

See page 22.

PROCEDURE

ALL students, currently in school, who plan to register for a succeeding quarter (Summer Quarter excepted) must register by Advance Registration and pay fees by the stated deadline. Students are held responsible for knowing and observing registration procedures, dates, and deadlines which appear in the bulletins, in "Official Notices" in the *Daily*, and on campus bulletin boards.

New students are given appointments when they are notified of admission, and they receive complete directions for registering at the time of registration.

Students expecting to return to the University after an absence of a quarter or more (excluding Summer Quarter) must register by In-Person Registration. The required registration appointment may be obtained by writing to or telephoning the Registrar's Office at the same time specified in the Calendar.

ADVISING

After notification of admission, and before registration, new students must visit the College for assistance in planning their course program. The College of Architecture and Urban Planning maintains an advisory office under the direction of the Dean, in 204 Architecture Hall.

REGISTERED CREDITS ALLOWED EACH QUARTER

Except with the consent of his dean, no student may be registered for less than 12 credits (or the equivalent) or more than 16 credits (or the equivalent) or the number called for in the prescribed curricula, exclusive of physical education activity courses and lower-division military, naval, or air science courses. In no case may a student be registered for, or receive credit for more than 20 credits (or the equivalent) of work, exclusive of physical education activity courses and lower-division military, naval, or air science courses. Work taken in noncredit courses or to remove entrance deficiencies, or concurrently in extension classes, by correspondence study, or in another collegiate institution, must be included in the computation of the total registered credits allowed.

CHANGES OF REGISTRATION

After students have registered, they cannot change their schedules except with permission of the Dean or Associate Dean of the College. No student is permitted to make a registration change that involves entering a new course after the first calendar week of the quarter. After that time no student may register without the consent of the Dean or Associate Dean and the instructor whose class the student wishes to enter.

WITHDRAWAL FROM A COURSE

Official withdrawal from a course is made only under the following conditions: (1) during the first fifteen calendar days of a quarter, with the consent of the withdrawing student's adviser; (2) after the first fifteen calendar days of a quarter and before the end of the first six calendar weeks of a quarter, with the approval of the student's adviser, of the instructor of the course from which withdrawal is sought, and of the dean of the college in which the withdrawing student is enrolled; and (3) after the first six calendar weeks of a quarter and before final examination week, only upon certification in writing to the Registrar by the dean of the college in which the withdrawing student is enrolled that, in the judgment

of the dean, withdrawal is necessitated by the student's hardship. Withdrawals from courses accomplished by any other method are unofficial withdrawals which are entered on a student's record as EW, and are assigned the value of E in the computation of a student's grade-point average. No official withdrawal may be made during final examination week.

Official withdrawals are entered on a student's record as follows: (1) a withdrawal within the first fifteen calendar days of a quarter, as W; (2) a withdrawal after the first fifteen calendar days of a quarter and before final examination week, as PW, if the student's work has been satisfactory, and as E, if the student's work has been unsatisfactory. Grades of PW and W are assigned no value in the computation of grade-point averages.

WITHDRAWAL FROM THE UNIVERSITY

The student should obtain at the office of the dean of his school or college the Request for Withdrawal From the University form. The same system of grading applies as that prescribed under Withdrawal From a Course.

QUALIFICATIONS FOR GRADUATION

MINIMUM SUBJECT REQUIREMENTS

For graduation, the College of Architecture and Urban Planning requires completion of one of the three baccalaureate programs, with a total of at least 225 academic credits (including Health Education 110 or 175) and the required quarters of military and physical education activity. A student majoring in architecture must maintain a yearly grade-point average of 2.30 (C+) in the three professional design courses: Architectural Design, Grades II, III, and IV.

Admission to the professional program (last three years) of the College of Architecture and Urban Planning is selective and based upon the recommendations of the Admissions Committee of the College. Each applicant must appear for a personal interview.

SCHOLARSHIP

Grade points per credit are awarded on the following basis: a grade of A earns 4 points; B, 3 points; C, 2 points; D, 1 point. The grade of E or EW signifies failure and the grade point is 0. The quarterly and cumulative grade-point averages are computed by multiplying the grade point received in a course by the total number of credits the course carries, totaling these values, and dividing by the total number of credits the student attempted. Courses for which any of the following symbols are recorded are not considered in determining the grade-point average: I, N, S, W, PW, X. Grade-point averages are calculated on the basis of all grades received in courses which carry academic credit, including courses repeated. Grades received in repeated courses do not cancel or replace any other grades. Only University of Washington residence credits will be used in these computations.

Any undergraduate student who has completed three or more quarters in the University and whose cumulative grade-point average is below 2.00 shall be placed on academic probation. Any undergraduate student who has completed not more than two quarters at the University shall be placed on probation when his cumulative grade-point average is below 1.80. The dean of the school or college in which the student is enrolled shall notify the student as soon as possible that he is on probation. Such action will be noted permanently on the student's official academic record.

Any undergraduate student on academic probation will be dropped: (1) if he fails to attain at least a 2.00 for the following quarter's work; or (2) if he fails to attain a 2.00 cumulative average at the end of the two subsequent quarters. Only under exceptional circumstances will a student dropped under low scholarship rules be readmitted to the University. Such a student will be readmitted only at the

discretion of the dean of the school or college to which he seeks admission and, if readmitted, will enter on academic probation. Such a student will be dropped: (1) if he fails to attain a 2.00 for the following quarter's work; or (2) if he fails to attain a 2.00 cumulative average at the end of two quarters. He will be removed from probation at the end of the quarter in which his cumulative grade-point average reaches 2.00 or better. Any student dropped under this rule will be notified in writing of this action by the dean of the school or college in which he is enrolled.

A senior who has completed the required number of credits for graduation but whose work in what would normally be his final quarter places him on probation will not receive a degree until he has been removed from probation. A senior who has completed the required number of credits for graduation but whose work in his last quarter results in his being dropped for low scholarship shall not receive a degree until he has been readmitted and removed from probation.

SENIOR-YEAR RESIDENCE

Senior standing is attained when 135 credits, plus the required quarters of ROTC and physical education, have been earned. Of the work of the senior year (45 credits), at least 35 credits must be earned in three quarters of residence. The remaining 10 credits may be earned either in residence or in this University's evening classes or correspondence courses.

In the College of Architecture and Urban Planning all credits required in the fourth- and fifth-year programs must be earned in residence at the University of Washington.

MILITARY TRAINING

The Departments of Air Science, Military Science, and Naval Science conduct the ROTC programs under agreements between the University and the United States Air Force, Army, and Navy. At the University, these programs are coordinated by the Dean of the College of Engineering.

The University requires male students who enter the University as freshmen or sophomores to complete six quarters of military training. (For exemptions, see below). The two-year basic programs offered by the Departments of Air Science and Military Science and the four-year program offered by the Department of Naval Science, satisfy this requirement. For a complete list of courses offered by these Departments, see the *Yearly Time Schedule*. In addition to the basic programs, the Department of Air Science and the Department of Military Science each offers for selected students an advanced program which leads to commissioning in the Air Force or the Army. The four-year program of the Department of Naval Science, also for selected students, leads to commissioning in the Navy or Marine Corps.

Students enrolling in Naval ROTC, and those who take the advanced program of Air Force or Army ROTC must agree in writing to complete the course of training and accept a commission in the service for which they are trained. *The honoring of this commitment is a condition of graduation from the University.*

The basic program of the Department of Air Science consists of three quarters of military classroom instruction on the Foundations of Air Power. These are offered in the Spring Quarter of the first year and the Autumn and Winter Quarters of the second year. During each of the other three quarters, the student must substitute an approved University course in lieu of Air Science. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*. Leadership Laboratory is required each of the six quarters of the basic program and is conducted one hour each week.

The basic program (freshmen and sophomores) of the Department of Military Science requires drill one hour each week. Classroom military studies for freshmen are not required in the Autumn Quarter. One hour per week is required in the Winter Quarter, and two hours of classroom work are required in Spring Quarter. As a substitute for these classroom hours in Autumn Quarter of the

freshman year, registration is required in a selected three-credit or five-credit course in another department. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*. Sophomores are required to attend two hours per week of classroom military studies throughout the academic year.

Information concerning the Naval Science ROTC program can be found in the bulletins of the College of Arts and Sciences, the College of Business Administration, and the College of Engineering.

Exemptions from the military requirement are granted to:

1. Students who are twenty-three or over at the time of original entry into the University.
2. Students who enter as juniors or seniors.
3. Special students.
4. Students registered for 6 credits or less.
5. Students who are not citizens of the United States.
6. Students who, because of physical condition, are exempted by the University Health Officer.
7. Students who have equivalent military service. Complete or partial exemptions, depending on length of service, are granted for previous active service in the Armed Forces or Coast Guard.
8. Students who are active members or reserve officers of the Armed Forces or Coast Guard, or commissioned officers of the National Guard.
9. Students who are active enlisted members of the National Guard or of the Organized Reserve of the Armed Forces or Coast Guard.
10. Transfer students who present acceptable credit for military training taken in other colleges. The amount of exemption depends on the amount of previous training. Transfer students are required to take military training only for the number of quarters they need to achieve junior standing by a normal schedule.
11. Students who seek exemption on grounds other than 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 after consultation with the appropriate ROTC commander.

Those who are exempted under paragraph 5 or 11 must arrange at the time of initial entrance to substitute equivalent extra credits in other University courses to equal the number of credits they would have been required to earn in military training courses.

PHYSICAL AND HEALTH EDUCATION

Activity Courses. Students who enter the University as freshmen are required to complete one physical education activity course each quarter for the first three quarters of residence. In fulfilling the foregoing requirement, *all* students must pass a swimming test or satisfactorily complete one quarter of swimming. In fulfilling the three-quarter requirement, no activity course may be repeated for credit.

Men students may use credits earned in freshman or varsity sports to satisfy the activity course requirement.

Women students, in fulfilling the three-quarter requirement, may take a maximum of two credits in any of the following: (1) swim area; (2) dance area; (3) tennis and badminton; (4) any other specific individual, dual, or team activity.

The following students are exempt from the requirement of activity courses:

1. Students who have attained the age of twenty-five. A student who attains the age of twenty-five during a quarter in which he is registered for a required physical education activity course shall be held for the completion of that course. This rule shall not be retroactive in its application to students who entered prior to

Spring Quarter, 1951, and were exempted from required physical education courses under previous rules.

2. Students who enter as sophomores, juniors, or seniors.
3. Special students.
4. Students registered for 6 credits or less.

5. Students who, because of physical condition, are exempted by the Graduation Committee upon the recommendation of the Dean of the College. Such action will be taken only when the Dean has received a joint recommendation for exemption from the University Health Officer and the Executive Officer of the Department of Physical Education for Men or for Women, whichever is appropriate. All other students who are reported by the University Health Officer as physically unfit to join regular classes will be assigned by the Executive Officer of the Department of Physical Education for Men or for Women to special programs adapted to their needs.

6. Students who are veterans of military service. Complete exemption is granted for one year or more of active duty. This exemption does not grant credit. Veterans with less than one year of service receive no exemption.

7. Transfer students who present acceptable credit for physical education activity courses taken in other colleges. The amount of exemption depends on the number of quarters for which credit is transferred.

Health Courses. All men students who enter the University as freshmen are required to take Health Education 175, a course in personal health, within the first three quarters of residence. The health education course requirement may be satisfied by passing a health-knowledge examination. Successfully passing this test exempts the student from the requirement but does not grant credit for Health Education 175. Veterans with one year or more of active service are exempt from this requirement. This exemption does not grant credit.

Women students who enter the University as freshmen are required to take Health Education 110 within the first three quarters of residence. Women entering the University for the first time may satisfy this requirement by passing a health-knowledge examination given during the Autumn Quarter registration period. Successfully passing this test exempts the student from the requirement, but does not grant credit for Health Education 110.

TUITION AND FEES

All tuition and fees are payable in United States dollars at the time of registration. The University reserves the right to change any of its fees without notice.

The following fee schedules for resident and nonresident students apply to the academic year (Autumn, Winter, and Spring Quarters). Summer fees are listed in the *Summer Quarter Bulletin*.

Veterans of World Wars I or II

Exemption from tuition charges is granted resident students who either (1) served in the United States Armed Forces during World War I and received honorable discharges; or (2) served in the United States Armed Forces during World War II at any time after December 6, 1941, and before January 1, 1947, and received honorable discharges, but are no longer entitled to federal educational benefits; or (3) are United States citizens who served in the armed forces of governments associated with the United States during World Wars I or II and received honorable discharges. Nonresident students who meet one of these requirements pay one-half of the nonresident tuition. This exemption is not granted to Summer Quarter students.

Proof of eligibility should be met as follows:

- (1) World War I veterans should present copy of discharge papers to Comptroller's Office, 203 Administration Building.
- (2) World War II veterans with Korean service or who have suffered disability should present a letter from the Veterans Administration Regional Office to the Veterans Division, Safety Division Building, stating they are no longer eligible for any federal educational benefits. (Excepted are those veterans who have had both World War II benefits and Korean benefits and have expired those benefits at the University of Washington.)

- (3) World War II veterans who have not suffered any disability or served in the Korean Conflict should present an 8½-inch x 11-inch photostat of discharge papers to the Veterans Division, Safety Division Building.

Exemption must be cleared prior to student's appointment day for registration in order to prevent personal payment.

MISCELLANEOUS CHARGES

A registration service fee of \$15.00 is charged those students: (1) eligible for Advance (mail) Registration who fail to participate; or (2) who, after the established application deadline, are granted Appointments or Permits to register by In-Person Registration by action of the Registration Appeal Board. A late registration fee of \$15.00 is charged any student granted permission to register after the last registration day before the opening of Autumn, Winter, or Spring Quarters by action of the Registration Appeal Board. A charge of \$5.00 is made Autumn, Winter, and Spring Quarters 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.

<i>Special Examination</i>	\$1.00
<i>Removal of an Incomplete</i>	2.00
<i>Washington Pre-College Differential Guidance (Grade Prediction) Test</i>	5.00
<i>Athletic Admission Ticket (optional for ASUW members)</i>	3.50-6.50
Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.	

FEES FOR RESIDENT STUDENTS

A resident is one who has been domiciled in Washington for at least a year immediately prior to registration.

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

Type of Registration	Tuition Fee	Incidental Fee	ASUW Fee*	Total Fees
			Autumn, Winter, and Spring Quarters	Autumn, Winter, and Spring Quarters
Full-time students** (undergraduate and graduate) except in Medical and Dental Schools	\$35.00	\$56.50	\$8.50	\$100.00
Auditors		39.00		39.00
Part-time (max. 6 credits exclusive of R.O.T.C.)§	35.00	39.00	†	74.00
Ex-service, personnel of World Wars I and II†† (Chapter 46, Laws of 1945)				
Full-time		56.50	8.50	65.00
Part-time (max. 6 credits)§		39.00	†	39.00
Students registered for thesis only (for credit or final)		56.50	†	56.50
Students registered for degree final only (nonthesis)		56.50	†	56.50

* Athletic admission ticket is optional for ASUW members. Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.

** A \$25.00 uniform deposit is paid by students in Army and Air Force R.O.T.C.; refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.

† 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 to determine eligibility.

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

Military Uniform Deposit	25.00
Paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.	
Breakage Ticket Deposit	3.00
Required in some laboratory courses; ticket is returnable for full or partial refund.	
Locker Rental, per quarter	2.00
Required of men students taking physical education activities.	
Quarterly Grade Report	.50
One grade report is issued at the close of each quarter without charge; the charge, payable in advance, is made for each additional copy.	
Transcripts	1.00
One transcript is furnished without charge; the charge, payable in advance, is made for each additional copy.	
Graduation Exercises	10.00
MUSIC PRACTICE ROOM, per quarter: piano practice, \$3.00, one hour a day; \$5.00, two hours a day; \$6.00, three hours a day. Organ practice, \$6.00, one hour a day; \$10.00, two hours a day; \$12.00, three hours a day. Practice rooms are available only to students taking music courses.	
PHYSICAL EDUCATION ACTIVITIES, per quarter: bowling, \$5.00; canoeing \$3.00; golf instruction, \$1.50 per quarter.	

FEES FOR NONRESIDENT STUDENTS

Prospective students are classified as nonresidents when their credentials come from schools outside Washington. If they believe they are residents, they may petition the Residence Classification Office, 205A Administration Building, for a change of classification.

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

Type of Registration	Tuition Fee	Incidental Fee	ASUW Fee* Autumn, Winter, and Spring Quarters	Total Fees Autumn, Winter, and Spring Quarters
Full-time students** (undergraduate and graduate) except in Medical and Dental Schools	\$35.00	\$56.50	\$8.50	\$100.00
Auditors		39.00		39.00
Part-time (max. 6 credits exclusive of R.O.T.C.)§	35.00	39.00	†	74.00
Ex-service, personnel of World Wars I and II†† (Chapter 46, Laws of 1945)				
Full-time		56.50	8.50	65.00
Part-time (max. 6 credits)§		39.00	†	39.00
Students registered for thesis only (for credit or final)		56.50	†	56.50
Students registered for degree final only (non-thesis)		56.50	†	56.50

* Athletic admission ticket is optional for ASUW members. Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.

** A \$25.00 uniform deposit is paid by students in Army and Air Force R.O.T.C.; refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.

† 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 to determine eligibility.

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

REFUND OF FEES

All major fees will be refunded in full if complete withdrawal is made during the first three calendar days of the quarter; one-half the amount will be refunded if withdrawal is made during the first thirty calendar days. Fee refunds are not made to students withdrawing under discipline.

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

At least two weeks must elapse between payment and refund of fees, if payment was made by check.

ESTIMATE OF YEARLY EXPENSE

The figures given below are minimum estimates for an academic year, which includes Autumn, Winter, and Spring Quarters. Living costs and personal expenses vary widely with the needs of the individual student.

Tuition, Incidental, and ASUW Membership Fees

Full-time resident student	\$300.00
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Full-time nonresident student	600.00
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<i>Athletic Admission Ticket</i> (optional)	6.50
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<i>Health and Accident Insurance</i> (optional)	16.50
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<i>Miscellaneous Charges</i>	38.50
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Military uniform deposit, breakage ticket, and locker charges.

<i>Books and Supplies</i>	90.00
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Board and Room

Room and meals in Men's Residence Halls	675.00
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Room and meals in Women's Residence Halls	615.00-720.00
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Room and meals in fraternity or sorority house	670.00-760.00
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(Including dues and social assessments.)

Initial cost of joining is not included; this information may be obtained from the Interfraternity Council or Panhellenic Council.

<i>Personal Expenses</i>	300.00
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STUDENT ACTIVITIES AND SERVICES**ASSOCIATED STUDENTS**

Membership in the Associated Students of the University of Washington, the central organization which conducts all student activities, is required of all regularly enrolled students. Through the ASUW Board of Control and its various committees and boards, students assume major responsibility in the government of student life. The ASUW helps to finance the programs of athletics, debates, concerts, lectures, and many other activities and facilities, including the University of Washington *Daily* and the Student Union Building.

HONORARY AND PROFESSIONAL SOCIETIES

Tau Sigma Delta, the International Honorary Professional Fraternity in Architecture and Allied Arts, was organized in 1913 at the University of Michigan. Chapters have been established in most of the recognized schools of architecture. The Iota Chapter was established in 1924 at the University of Washington. Membership is selective and based upon scholastic attainment. The purpose of Tau Sigma Delta is to promote scholarship and professional excellence in design.

Atelier, a professional student society and social organization, was formed at the inception of the school to unite the students and to encourage them to handle their own problems and become aware of the ethics and high standards of the profession. It is open to all students in the College and all are urged to join. Included

in the many social events sponsored by Atelier is an annual ball. It also publishes a students' yearbook.

Urban Planning Students Association, a professional student society, sponsors lectures and meetings of planning interest, as well as several social functions during the year. It is open to all urban planning students.

SCHOLARSHIPS AND LOANS

The University offers a number of awards for outstanding academic achievement. Some are given by the University, and many others are available through the generosity of friends and alumni. Information concerning the list of current awards and loans may be obtained from the Office of the Dean of Students.

An emergency loan fund is administered by the Office of the Dean of Students.

The University also awards 100 tuition scholarships each academic year to worthy students from other countries. There are no scholarships available for the Summer Quarter. These awards are made on the basis of the academic record of the student, recommendations from his professors, his need for such assistance, and the availability of such openings in his department at the University. These scholarships cover tuition only and are administered by the Foreign Exchange Scholarship Committee, Foreign Students Office, University of Washington, Seattle 5, Washington, U.S.A. Application for these scholarships must be made by March 1 for the following year.

Scholarships and medals created especially for architectural students with high scholastic standing, general excellence, and outstanding design ability are awarded each year. Medals are presented by the American Institute of Architects; Alpha Rho Chi, national social fraternity of Architecture; and the Faculty of the College. Scholarships and monetary awards are:

AMERICAN INSTITUTE OF ARCHITECTS, SEATTLE CHAPTER, INC., SCHOLARSHIP. Awarded to outstanding student or students of Architecture Design, Grade I, who may also need financial assistance to continue formal training.

ARCHITECTURAL FOUNDATION. Traveling or study scholarship awarded to an outstanding student.

ARCHITECTURE ALUMNI TRAVELING SCHOLARSHIP. Awarded to an outstanding student for summer travel preceding the final year.

NORTHWEST PLASTER BUREAU, INC. SCHOLARSHIP. Awarded to a student with high scholastic standing and in need of financial assistance.

TAU SIGMA DELTA, IOTA CHAPTER. Several small prizes awarded Spring Quarter in a competition for all design classes.

UNIT MASONRY ASSOCIATION SCHOLARSHIP. Awarded to a fourth-year student in Architecture who has done outstanding work in design. Three merit certificates are also given by the Unit Masonry Association.

OFFICE OF THE DEAN OF STUDENTS

The Office of the Dean of Students is concerned with the general welfare of students and welcomes correspondence and conferences with both parents and students. This Office works closely with the advisory system of the colleges and schools of the University; it directs students to faculty advisers, the Counseling Center, and other persons and agencies offering information and assistance with personal and social problems. The Dean of Students Office also has current information on Selective Service regulations.

The Foreign Students Office operates through the Office of the Dean of Students. The Foreign Student Adviser and his staff offer guidance on all nonacademic problems to students from other countries. Questions about immigration regulations, housing, social relationships, personal problems, finances, minimum course requirements, employment, and home hospitality should be referred to this Adviser. Students who are interested in study abroad may obtain from him information about schools in other countries and about Fulbright and other scholarships.

COUNSELING CENTER

The Counseling Center in Lewis Hall Annex offers vocational and educational counseling to students who need help in their adjustments to college. The staff of the Center, which includes vocational counselors and psychologists, works closely with other student services and supplements the academic advisory program.

HOUSING

Accommodations are available to men in the Men's Residence Halls, 1201 Campus Parkway, Seattle 5, Washington. Interested students should write to the Manager, Men's Residence Halls. Preference in assignment to the Women's Residence Halls is given to younger girls. Interested women should write to the Manager, Women's Residence Halls, University of Washington, Seattle 5, Washington. Information about fraternities may be obtained from the Interfraternity Council, Student Union Building, University of Washington, and about sororities from the Panhellenic Council, Student Union Building, University of Washington.

University regulations require that women students under twenty-one who do not live at home must live in approved group residences such as the Women's Residence Halls, sororities, and church-sponsored living groups. Other types of living arrangements must be reported to the Dean of Women and be approved by the student's parents or guardians.

Married students who have children are eligible to apply to the Office of Student Residences for accommodations in Union Bay Village and Sand Point Homes, the University's family housing projects. Because there is a long waiting list, new students should not rely on the possibility of obtaining immediate housing.

The Office of Student Residences, 23 Administration Building, keeps listings of off-campus rooms, rooms with board, housekeeping rooms, apartments, and houses which are available to University students. These listings must be consulted in person.

HEALTH CENTER

The University maintains a health service and infirmary to help guard against infectious diseases and incipient ill health.

The infirmary receives bed patients at any hour and provides nursing care, medicines, and the attendance of a staff doctor up to one week each quarter free of charge. For a period longer than one week a charge of \$2.00 a day is made. At their own expense, infirmary patients may consult any licensed physician in good standing.

Health and accident insurance for students is available at the time of registration.

EMPLOYMENT

Part- and full-time work off campus may be obtained at the University Placement Office. Applications are accepted from students or graduates of the University and from the wives or husbands of University students. Application must be made in person after residence in Seattle has been established. Placement in jobs on campus is handled by the Personnel Department and the ASUW Personnel Office.



THE COLLEGE PROGRAMS

THE COLLEGE PROGRAMS

THE COLLEGE OF ARCHITECTURE AND URBAN PLANNING offers baccalaureate programs in Architecture, Landscape Architecture, and Urban Planning. Each program is of five years' duration and leads to a professional degree: Bachelor of Architecture, Bachelor of Landscape Architecture, and Bachelor of Urban Planning. The College also offers programs leading to the degrees of Master of Architecture and Master of Urban Planning.

LICENSURE

In most states, to be permitted to practice architecture and use the title architect, the candidate must pass a professional examination. Information about license requirements in the state of Washington may be obtained from the Department of Licenses, Olympia, Washington. Information regarding national registration may be obtained from the National Council of Architectural Registration Boards, Council Offices: Commerce Exchange Building, Oklahoma City, Oklahoma.

Urban Planning licensing laws have not been set up in any state, although they are being considered in some.

BACHELOR'S DEGREES

Students working toward bachelor's degrees must qualify for admission to the University and to the College. Course requirements for each degree are described below. General requirements for all degrees include military training, physical education, scholarship and minimum credits, and senior-year residence.

CURRICULA

Students are not permitted to deviate from a curriculum or to substitute courses except with the consent of the Dean of the College.

The College reserves the right to retain student work for temporary or permanent record.

BACHELOR OF ARCHITECTURE

The five-year curriculum leading to the degree of Bachelor of Architecture is outlined below.

PREPROFESSIONAL REQUIREMENTS

First Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Arch. 100 Appreciation...	2	Arch. 101 Appreciation...	2	Arch. 105 The House...	2
English 101 Composition...	3	English 102 Composition...	3	English 103 Composition...	3
Math. 104 Plane Trig.	3	Math. 105 College Algebra	5	Sociol. 110 Survey	5
Approved electives	5	Approved electives	5	Approved electives	5
Health Educ. 110 or 175		Phys. Educ. activity	†	Phys. Educ. activity	†
Health	2	ROTC	‡	ROTC	‡
Phys. Educ. activity	†				
ROTC	‡				

Second Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Arch. 124 Design Gr. I...	6	Arch. 125 Design Gr. I...	6	Arch. 126 Design Gr. I...	6
Physics 101 General	4	Art 258 Water Color	3	Art 259 Adv. Water Color	3
Physics 107 General Lab.	1	Physics 102 General	4	Physics 103 General	4
Approved electives	4	Physics 108 General Lab.	1	Physics 109 General Lab.	1
ROTC	‡	Approved electives	2	ROTC	‡
		ROTC	‡		

Electives should be approved by the adviser of the College.

PROFESSIONAL REQUIREMENTS

Third Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Arch. 200 History	3	Arch. 201 History	3	Arch. 202 History	3
Arch. 224 Design Gr. II ...	6	Arch. 225 Design Gr. II ...	6	Arch. 226 Design Gr. II ...	6
Arch. 235 Mech. Equip.		Arch. 236 Mech. Equip.		Arch. 237 Mech. Equip.	
of Bldgs.	2	of Bldgs.	2	of Bldgs.	2
Arch. 276 Statics	3	Arch. 277 Strength of		Arch. 278 Trusses	3
La. Ar. 230 Theory &		Materials	3	Approved elective	2-3
Perception	2	Approved elective	2-3		

Fourth Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Arch. 303 History	3	Arch. 325 Design Gr. III... 6		Arch. 326 Design Gr. III ... 6	
Arch. 324 Design Gr. III. 6		Arch. 338 Illum. Sem. 1		Arch. 339 Acoustics Sem... 1	
Arch. 330 Materials	3	Arch. 360 Theory &		Arch. 370 Bldg. Econ. 2	
Arch. 376 Structural Des:		Analysis	3	Arch. 378 Structural Des:	
Timber & Steel	4	Arch. 369 Specifications &		Reinforced Concrete	4
		Contracts	2	Urb. Pl. 400 Introd. to	
		Arch. 377 Structural Des:		Urban Planning	3
		Reinforced Concrete ... 4			

Fifth Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Arch. 424 Design Gr. IV ... 7		Arch. 425 Design Gr. IV ... 7		Arch. 426 Design Gr. IV ... 7	
Arch. 430 Contract Draw... 3		Arch. 431 Contract Draw... 3		Arch. 432 Contract Draw ... 3	
Urb. Pl. 485 Housing	2	Approved elective	3-5	Arch. 468 Prof. Practice ... 2	
Approved elective	3-5			Approved elective	3-5

† See Page 32 for Physical Education Activity requirement.

‡ See Page 31 for ROTC requirement.

BACHELOR OF LANDSCAPE ARCHITECTURE

The five-year curriculum leading to the degree of Bachelor of Landscape Architecture is listed below. Richard Haag is in charge.

PREPROFESSIONAL REQUIREMENTS

First Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Arch. 100 Appreciation . . .	2	Arch. 101 Appreciation . . .	2	Arch. 105 The House . . .	2
English 101 Composition . .	3	English 102 Composition . .	3	English 103 Composition . .	3
Math. 104 Plane Trig. . .	3	Math. 105 College Algebra .	5	Sociol. 110 Survey	5
Health Educ. 110 or		Approved electives	5	Approved electives	5
175 Health	2	Phys. Educ. activity	†	Phys. Educ. activity	†
Approved electives	5	ROTC	‡	ROTC	‡
Phys. Educ. activity	†				
ROTC	‡				

Second Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Arch. 124 Design Gr. I . . .	6	Arch. 125 Design Gr. I . . .	6	Arch. 126 Design Gr. I . . .	6
Biology 101J-	5	Biology 102J	5	Art 272 Sculpture	3
Approved electives	4	Art 258 Water color	3	Bot. 113 Local Flora	5
ROTC	‡	Approved electives	2	ROTC	‡
		ROTC	‡		

10 credits in a physical science may be substituted for Biology 101J-102J

Electives should be approved by the adviser of the College.

PROFESSIONAL REQUIREMENTS

Third Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Arch. 200 History	3	Arch. 201 History	3	Arch. 202 History	3
Arch. 224 Design Gr. II . .	6	Arch. 225 Design Gr. II . .	6	Arch. 226 Design Gr. II . .	6
La. Ar. 230 Theory &		La. Ar. 231 History	3	Urb. Pl. 400 Introduction	
Perception	2	Anth. 250 The Nature		to Urban Planning	3
Art 426 Origins of		of Culture	2	Art 129 Appreciation	
Modern Art	2			of Design	2
				Gen. Engr. 121 Surveying .	3

Fourth Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Arch. 303 History	3	La. Ar. 335 Construction . .	4	La. Ar. 336 Construction . .	4
La. Ar. 334 Construction . .	4	La. Ar. 351 Landscape		La. Ar. 352 Landscape	
La. Ar. 350 Landscape		Design Gr. III	6	Design Gr. III	6
Design Gr. III	6	Geog. 370 Conservation		Bot. 331 Ornamental	
Urb. Pl. 479 The		of Natural Resources . .	5	Plants	3
Urban Form	2			Geog. 302 The Pacific	
				Northwest	3

Fifth Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
La. Ar. 460 Landscape		La. Ar. 461 Landscape		La. Ar. 462 Landscape	
Design Gr. IV	6	Design Gr. IV	6	Design Gr. IV	6
Sociol. 430 Human Ecology	5	La. Ar. 465 Planting Design	4	La. Ar. 470 Off. Procedure	3
Geog. 477 Urban		Urb. Pl. 482 Community		Anth. 201 Physical Anth.: .	
Geography	3	Facilities	2	Man in Nature	5
For. 356 Forest Recreation	3	For. 301 Survey of		Approved electives	2-3
		Forestry	3		

† See Page 32 for Physical Education Activity requirement.

‡ See Page 31 for ROTC requirement.

BACHELOR OF URBAN PLANNING

The five-year curriculum leading to the degree of Bachelor of Urban Planning is outlined below. Myer R. Wolfe is in charge.

PREPROFESSIONAL REQUIREMENTS

First Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Arch. 100 Appreciation . . .	2	Arch. 101 Appreciation . . .	2	Arch. 105 The House . . .	2
English 101 Composition . .	3	English 102 Composition . .	3	English 103 Composition . .	3
Math. 104 Plane Trig. . .	3	Math. 105 College Algebra .	5	Sociol. 110 Survey	5
Health Educ. 110 or 175 . .		Approved electives	5	Approved electives	5
Health	2	Phys. Educ. activity	†	Phys. Educ. activity	†
Approved electives	5	ROTC	‡	ROTC	‡
Phys. Educ. activity	†				
ROTC	‡				

Second Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Arch. 124 Design Gr. I . . .	6	Arch. 125 Design Gr. I . . .	6	Arch. 126 Design Gr. I . . .	6
Physics 101 General	4	Art 258 Water Color	3	Art 259 Adv. Water Color . .	3
Physics 107 General Lab. . .	1	Physics 102 General	4	Physics 103 General	4
Approved electives	4	Physics 108 General Lab. . .	1	Physics 109 General Lab. . .	1
ROTC	‡	Approved electives	2	ROTC	‡
		ROTC	‡		

Electives should be approved by the adviser of the College.

PROFESSIONAL REQUIREMENTS

Third Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Arch. 200 History	3	Arch. 201 History	3	Arch. 202 History	3
Arch. 224 Design Gr. II . .	6	Arch. 225 Design Gr. II . .	6	Arch. 226 Design Gr. II . .	6
Pol. Sci. 375 Munic. Govt. .		Econ. 200 Introduction . . .	5	Urb. Pl. 400 Intro. to . . .	
and Admin.	5	Approved elective	2-3	Urban Planning	3
La. Ar. 230 Theory & . . .				Gen. Engr. 121 Surveying . .	3
Perception	2				

Fourth Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Arch. 324 Design Gr. III . .	6	Arch. 325 Design Gr. III . .	6	Urb. Pl. 481 Urban	
Urb. Pl. 479 Urban Form. . .	3	Urb. Pl. 480 Urban		Plan. Analysis II	3
Urb. Pl. 485 Housing	2	Plan. Analys. I	3	Urb. Pl. 490 City	
Civil Engr. 403 Urban		Urb. Pl. 482 Commun.		Plan. Design	7
Planning	3	Facilities	2	Econ. 350 Pub. Finance . . .	
		Approved elective	3-5	and Taxation I	5

Fifth Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Urb. Pl. 491 City		Urb. Pl. 492 City		Urb. Pl. 493 City	
Plan. Design	7	Plan. Design	7	Plan. Design	7
Civil Engr. 429 Traffic . . .		R. Est. 301 Urban		Approved electives	8
Engr. Operations	3	Land Economics	5	(usually includes)	
Sociol. 430 Human		Approved elective	3	Pol. Sci. 582)	
Ecology or		(usually Pol. Sci. 581)			
Geog. 477 Urban					
Geography	5				

Approved professional electives: Architecture 303 History of Architecture (3); Civil Engineering 350 Introduction to Sanitary Engineering (3), 428 Highway Policy and Economics (3); Geography 370 Conservation of Natural Resources (5);

† See Page 32 for Physical Education Activity requirement.

‡ See Page 31 for ROTC requirement.

Political Science 470 Introduction to Public Administration (5), 580, 581, 582 Seminar in Metropolitan and Urban Planning Problems (3,3,3); Preventive Medicine 422 Introduction to Environmental Health (3); Sociology 331 Population Problems (5), 365 Urban Community (5).

ADVANCED DEGREES

Students who intend to work toward a Master of Architecture or a Master of Urban Planning degree must apply for admission to the College of Architecture and Urban Planning and to the Graduate School, and meet the requirements outlined in the *Graduate School Bulletin*. *Graduate students must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded. For graduate study, the approval of both the College of Architecture and Urban Planning and the Graduate School is necessary.*

MASTER OF ARCHITECTURE

A student seeking admission to the graduate program in Architecture must show evidence of having attained a Bachelor of Architecture degree from an accredited school of architecture. In addition, he must produce scholastic evidence of his proficiency in design, planning, structures, mechanics, aesthetics, and history to the Graduate Committee of the faculty of the College of Architecture and Urban Planning. Any and all deficiencies, or lack of the necessary academic subject material, as required by the standards in securing the degree of Bachelor of Architecture from the College of Architecture and Urban Planning, shall be corrected before admission will be considered. If deficiencies are in evidence, it will be necessary for the student to satisfy any additional requirements which the Graduate Committee deems necessary.

Graduate work in Architecture normally takes one year. A degree of Master of Architecture will be awarded upon satisfactory completion of 36 or more credits, which will include 9 credits for a Master's thesis. A foreign language will not be required. A minimum of one school year (three quarters) in residence is required of students seeking a degree of Master of Architecture. Although the Master's thesis may be prepared and presented during the three quarters' residence period, such procedure will not be encouraged in order that more time and effort can be devoted to subject material required to be taken during the academic year.

PROGRAM OF STUDY

PROFESSIONAL COURSES

Arch. 524-525-526 Advanced Architectural Studies (6-6-6)

Arch. 560, 561, 562 Graduate Seminar (3,3,3)

Arch. 600 Research (*)

Arch. 700 Thesis (9)

Generally, credit will *not* be given for having taken these courses or their equivalent at another institution.

ELECTIVES

Architecture 468 Professional Practice (2)	Herrman
Urban Planning 479 The Urban Form (2)	Johnston
Urban Planning 482 Urban Community Facilities (2)	
Urban Planning 485 Housing (2)	Wolfe
Urban Planning 480 Urban Planning Analysis I (3)	Wolfe
Civil Engineering 403 Principles of Urban Planning (3)	Horwood

Economics 350	Public Finance and Taxation I (5)	Hall, Ballesteros
Political Science 375	Problems of Municipal Government and Administration (5)	Warren
Real Estate 301	Urban Land Economics and Real Estate Institutions (5)	
Urban Planning 490	City Planning Design (7)	Wolfe

TYPICAL PROGRAM FOR GRADUATE STUDENTS IN ARCHITECTURE

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Arch. 524 Adv. Arch. Studies	6	Arch. 525 Adv. Arch. Studies	6	Arch. 526 Adv. Arch. Studies	6
Arch. 560 Grad. Seminar	3	Arch. 561 Grad. Seminar	3	Arch. 562 Grad. Seminar	3
Arch. 600 Research (optional)	*	Arch. 600 Research (optional)	*	Arch. 600 Research (optional)	*
Foundation courses or elective	3	Foundation courses or elective	3	Foundation courses or elective	3

In addition: Arch. 700 Thesis (9)

* Credit to be arranged.

MASTER OF URBAN PLANNING

The degree, Master of Urban Planning, will be awarded upon satisfactory completion of the courses specified below, a thesis, and an oral examination. The varied background of training and experience found among candidates for this degree permits some adjustment of the student's program to meet individual needs and objectives.

PROGRAM OF STUDY

I. FOUNDATION COURSES

Preferably some should be taken before entrance into the graduate program; the remainder must be taken after entrance.

- Survey or introductory courses in sociology and economics (for example Sociology 110 or 310 and Economics 200 or General Business 101 or their equivalents). No credit toward the master's degree will be granted for these courses.
- Introductory courses in urban planning and in housing equivalent to those given at the University of Washington: Urban Planning 400, Introduction to Urban Planning (3), or Civil Engineering 403, Principles of Urban Planning (3); and Urban Planning 485, Housing (2), or Sociology 455, Housing in the American Community (5).
- A minimum of 23 credits of urban study and background courses or approved equivalent courses from other institutions. These courses are to be selected from the following list, including at least one course from each category:

1. ECONOMIC DETERMINANTS

Public Finance and Taxation I (Economics 350)
 Conservation of Natural Resources (Geography 370)
 Urban Geography (Geography 477)
 Urban Land Economics and Real Estate Institutions (Real Estate 301)

2. SOCIOLOGY

Population Problems (Sociology 331)
 Urban Community (Sociology 365)
 # Human Ecology (Sociology 430)

3. PUBLIC POLICY

Problems of Municipal Government and Administration
 (Political Science 375)

State and Local Government and Administration (Political Science 376)
 Introduction to Public Administration (Political Science 470)
 Metropolitan Area Government (Political Science 480)
 Seminar in Metropolitan and Urban Planning Problems
 (Political Science 580)

4. PHYSICAL ENVIRONMENT

History of Modern Architecture (Architecture 303)
 Introduction to Environmental Health (Preventive Medicine 422)
 Seminar in Community Resources and Organization for Recreation
 (Recreation Education 524)
 Introduction to Sanitary Engineering (Civil Engineering 350)

5. TECHNIQUES

Social Statistics (Sociology 223)
 ° Principles of Cartography (Geography 360)
 Problems in Map Reproduction (Geography 464)
 Methods of Sociological Research (Sociology 420)
 Traffic Engineering—Operations (Civil Engineering 429)
 Public Relations (Communications 303)
 Graphic Techniques in the Social Sciences (Sociology 425J)

Depending on the student's background and his special interests, these courses are ordinarily recommended.

° For persons having no background in design or drafting, this course is usually required.

II. PROFESSIONAL COURSES

Candidates take all professional courses—the core of the program. Generally credit will *not* be given for having taken these courses or their equivalent at another institution.

Urban Planning 479—The Urban Form (2)
 Urban Planning 480, 481—Urban Planning Analysis I and II (3,3)
 Urban Planning 482—Urban Community Facilities (2)
 Urban Planning 590, 591, 592, 593—Urban Planning Problems (7,7,7,7)
 Urban Planning 600—Research (°)
 Urban Planning 700—Thesis (9)
 Civil Engineering 521—Seminar in Urban Transportation Planning (2)
 Political Science 581, 582—Seminar in Metropolitan and Urban Planning Problems (3,3)
 Sociology 530—Advanced Human Ecology (3) or
 Sociology 531—Demography (3)
 Real Estate 520—Seminar in Real Estate and Urban Land Economics (3) or
 Geography 510—Research Seminar: Settlement and Urban Geography
 (3, maximum 9)

TYPICAL TIME AND COURSE PROGRAM

		First Year			
AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Urb. Pl. 485 Housing	2	Urb. Pl. 480 Urban		Urb. Pl. 481 Urban	
Civil Engr. 403 Urban		Plan. Anal. I	3	Plan. Analys. II	3
Planning	3	Urb. Pl. 482 Commun.		Urb. Pl. 590 Urban	
Foundation courses		Facilities	2	Plan. Probs.	7
or electives	10	Foundation courses		Civil Engr. 521 Seminar	
	15	or electives	10	in Urban Transporta-	
			15	tion Plan.	2
				Foundation course	
				or elective	3
					15

		Second Year			
AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Urb. Pl. 479 The Urban Form	2	Urb. Pl. 592 Urban Plan. Probs.	7	Urb. Pl. 700 Thesis	9
Urb. Pl. 591 Urban Plan. Probs.	7	Pol. Sci. 581 Seminar in Metro. and Urban Plan. Probs.	3	Pol. Sci. 582 Seminar in Metro. and Urban Plan. Probs.	3
R.Est. 520 Seminar in Real Estate and Urban Land Econ.	3	Soc. 530 Adv. Human Ecology	3		12
	12		13		

COURSE-NUMBERING SYSTEM

Courses numbered from 100 through 299 are lower-division courses, for freshmen and sophomores; those numbered from 300 through 499 are upper-division, for juniors and seniors.

Courses numbered 500 and above are intended for and restricted to graduate students. Some courses numbered in the 300's and 400's are open both to graduates and to upper-division undergraduates. Such courses, when acceptable to the College of Architecture and Urban Planning and the Graduate School, may be part of the graduate program. The Graduate School accepts credits in approved 300-level courses for the minor or supporting fields only; approved 400-level courses are accepted as part of the major. For a listing of approved 300- and 400-numbered courses, consult the *Graduate School Bulletin*.

Undergraduate students of senior standing who wish to register for a 500-level course must obtain permission from both the instructor of the class and the Dean of the Graduate School.

The number in parentheses following the course title indicates the amount of credit each course carries. In most lecture courses a credit is given for each class hour a week during a quarter; laboratory courses generally carry less credit than the work time required. An asterisk in place of a credit number means that the amount of credit is variable. Hyphens between course numbers mean that credit is *not* granted until the series of courses is completed.

Courses to which the letter J is appended are joint courses in two or more departments and as such grant credit in one of the departments.

Not all of these courses are offered every quarter. Final confirmation of courses to be offered, as well as a list of times and places of class meetings, is given in the *Yearly Time Schedule*.

COURSES FOR UNDERGRADUATES

ARCHITECTURE COURSES

- 100, 101 Architectural Appreciation (2,2)** Herrman
Survey of architectural design from an historical viewpoint.
- 105 The House (2)** Herrman
Analysis of domestic architecture.
- 124, 125, 126 Architectural Design, Grade I (6,6,6)**
Design and drawing fundamentals to provide a working knowledge, language, and tools for the architect. Prerequisite, permission.
- 200, 201, 202 History of Architecture (3,3,3)** Davis, Johnston
Comparative study of the Classic, Byzantine, Romanesque, Gothic, and Renaissance periods. Prerequisite, 101.
- 224, 225, 226 Architectural Design, Grade II (6,6,6)**
Prerequisite, 126.
- 235, 236, 237 Mechanical Equipment of Buildings (2,2,2)**
Analysis and methods of plumbing and sanitation; electric wiring and illumination; heating, ventilation, and air conditioning.
- 276 Statics (3)** Tang, Torrence
Basic analysis of forces and force systems by analytical and graphic methods. Stress analysis of trusses. Prerequisite, Mathematics 105.
- 277 Strength of Materials (3)** Tang, Torrence
Stress and strain. Strength and elastic properties of structural materials. Riveted and welded joints. Designs of simple timber and steel beams, girders, and columns. Prerequisite, 276.

- 278 Analysis and Design of Trusses (3)** **Tang, Torrence**
Determination of roof loads. Complete design of various types of roof trusses in timber and steel. Prerequisite, 277.
- 303 History of Architecture (3)** **Johnston**
Analysis of architectural developments since the Renaissance.
- 314, 315, 316 Architectural Drawing (4,4,4)**
Orthographic projection, shades and shadows, perspective, drafting, and rendering techniques.
- 324, 325, 326 Architectural Design, Grade III (6,6,6)**
Prerequisite, 226.
- 330 Materials and Their Uses (3)** **Lovett**
Manufacture, properties, and design potentials of building materials. Prerequisites, Physics 103 and 109.
- 338 Illumination Seminar (1)** **Wherrette**
Principles of illumination as applied to buildings. Prerequisite, senior in architecture.
- 339 Acoustics Seminar (1)** **Lovett**
Principles of acoustical designing as applied to buildings. Prerequisite, senior in architecture.
- 360 Design Theory and Analysis (3)** **Steinbrueck**
Design theory, analysis of planning, and building types. Prerequisite, 226.
- 369 Specifications and Contracts (2)** **Mithun**
Form and composition of building specifications and related contract documents. Prerequisite, 330.
- 370 Building Economics (2)** **Mithun**
Social, political, and economic factors affecting the location, construction, financing, and marketing of buildings. Prerequisite, senior in architecture.
- 376 Structural Design: Timber and Steel (4)** **Radcliffe, Torrence**
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)** **Radcliffe, Torrence**
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.
- 424, 425, 426 Architectural Design, Grade IV (7,7,7)**
Prerequisite, 326.
- 427, 428, 429 Architectural Problems (3-7,3-7,3-7)** **Herrman**
Prerequisite, 426.
- 430, 431, 432 Contract Drawings (3,3,3)** **Dietz**
Lectures and drafting-room practice. Prerequisites, 326 and 378.
- 468 Professional Practice (2)** **Herrman**
Introduction to the architectural office, business operation, and professional procedure. Prerequisite, senior in architecture.

LANDSCAPE ARCHITECTURE COURSES

- 230 Theory and Perception (2)** **Haag**
General survey, orientation, and introduction to basic theory of landscape architecture. Prerequisite, Architecture 126, or permission.
- 231 History (3)** **Johnston**
A critical and historical analysis of man's progress in designing land and outdoor space.
- 334, 335, 336 Construction (4,4,4)**
A study of the problems of earth grading, drainage, highway design and alignment, retaining walls, irrigation, and utility systems. Prerequisite, Architecture 226.
- 350, 351, 352 Landscape Design, Grade III (6,6,6)** **Haag**
Intensive study in the analysis, approach, solution, and presentation of basic landscape architectural problems. Prerequisite, Architecture 226.
- 460, 461, 462 Landscape Design, Grade IV (6,6,6)** **Haag**
Advanced study in the analysis, approach, solution, and presentation of complex landscape architectural problems. Prerequisite, 352.
- 465 Planting Design (4)**
Studio exercises and lectures in the use of plant materials in landscape architectural design. Prerequisite, fifth-year landscape architecture major.
- 470 Office Procedure (3)**
A study of the professional practice and ethics of the landscape architect. Prerequisite, fifth-year student in landscape architecture.

URBAN PLANNING COURSES

- 400 Introduction to Urban Planning (3)** **Wolfe**
History, principles, theories of city growth and planning. Emphasis on city structure as a physical monument to contemporary culture. Present urban faults and remedial action.
- 479 The Urban Form (2)** **Johnston**
Evolution of the urban form. Development of the physical setting as related to building groupment, open spaces, and circulation patterns. Cultural influences on the city structure.
- 480 Urban Planning Analysis I (3)** **Wolfe**
The urban plan and plan making. Emphasis on comprehensive, coordinative urban planning. Various planning surveys with methodology and techniques discussed. Prerequisite, 400 or permission.
- 481 Urban Planning Analysis II (3)** **Wolfe**
Factors relating to the timing, phasing, and programming of urban development. The bearing of amenity, density, etc. on the actual development process. Prerequisite, 480.
- 482 Urban Community Facilities (2)**
Relationships of goal structure and physical requirements of public facilities. Criteria pertinent to schools, parks, utilities, etc., and their effect on the comprehensive plan. Prerequisite, urban planning or architecture major, or permission.
- 485 Housing (2)** **Wolfe**
Survey of housing and redevelopment problems, theories, standards, and practice. Prerequisite, 400.
- 490, 491, 492, 493 City Planning Design (7,7,7,7)** **Wolfe**
Planning problems, with emphasis on urban design based on the interpretation of social, economic, and physical data. Prerequisite, Architecture 325 or permission.

COURSES FOR GRADUATES ONLY**ARCHITECTURE**

- 524, 525, 526 Advanced Architectural Studies (6,6,6)** **Dietz**
Advanced experimental studies dealing with significant architectural relationships involving scholarly investigation, development and presentation of results.
- 560, 561, 562 Graduate Seminar—Theory of Architecture (3,3,3)** **Staff and Visiting Lecturers**
Lectures and discussions by members of the faculty and visiting specialists in order to develop a broad understanding of the forces influencing the creation of the human environment.
- 600 Research (*)**
Student research will be permitted and encouraged when the studies support departmental interests.
- 700 Thesis (9)**

URBAN PLANNING

- 590, 591, 592, 593 Urban Planning Problems (7,7,7,7)** **Wolfe**
Typical planning problems using the city as a laboratory. Emphasis on urban research, evaluation of basic data, planning proposals, and presentation techniques. Prerequisite, graduate student in urban planning.
- 600 Research (*)**
- 700 Thesis (9)**

BULLETIN • UNIVERSITY OF WASHINGTON



**COLLEGE OF
ARTS AND SCIENCES
1961-1962**

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes three general bulletins; bulletins of the colleges and schools; two Summer Quarter bulletins; the bulletin of the Center for Graduate Study at Hanford; and bulletins of the Division of Correspondence Study and the Division of Evening Classes.

INTRODUCTION TO THE UNIVERSITY, one of the general bulletins, is especially prepared for new and prospective students. It lists all the University curricula, with their admission requirements, and presents information on other phases of student life, including services for students, student activities, and expenses. UNIVERSITY RULES AND REGULATIONS, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as registered students. HANDBOOK OF SCHOLARSHIPS, the third general bulletin, lists the various scholarships available.

Curricula, courses, and scholarship requirements in each field of study are described in the college and school bulletins. Each of these bulletins also discusses services, organizations, and expenses as they relate to students in the particular college or school.

Requests for copies of any of the bulletins should be addressed to the Registrar.

General Bulletins

HANDBOOK OF SCHOLARSHIPS (RESTRICTED DISTRIBUTION)

INTRODUCTION TO THE UNIVERSITY

UNIVERSITY RULES AND REGULATIONS (FOR REGISTERED STUDENTS ONLY)

Bulletins of the Colleges and Schools

COLLEGE OF ARCHITECTURE AND URBAN PLANNING

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF BUSINESS ADMINISTRATION

SCHOOL OF DENTISTRY

COLLEGE OF EDUCATION

COLLEGE OF ENGINEERING

COLLEGE OF FISHERIES

COLLEGE OF FORESTRY

GRADUATE SCHOOL

SCHOOL OF LAW

SCHOOL OF MEDICINE

SCHOOL OF NURSING

COLLEGE OF PHARMACY

SCHOOL OF SOCIAL WORK

Other Bulletins

SUMMER QUARTER

SUMMER QUARTER SPECIAL FEATURES

CENTER FOR GRADUATE STUDY AT HANFORD

CORRESPONDENCE STUDY

EVENING CLASSES

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CALENDAR

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

AUTUMN QUARTER, 1961

REGISTRATION PERIOD

MAY 1-26	Advance Registration only for students in residence Spring Quarter, 1961. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 5-22	In-Person Registration for students in residence Spring Quarter, 1961, who did not complete Autumn Quarter, 1961, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
SEPT. 5-22	In-Person Registration for former students not in residence Spring Quarter, 1961. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is September 15.</i>
AUG. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 7-22	In-Person Registration for ALL new students.
SEPT. 22	Last day to register for Autumn Quarter, 1961. Note application deadlines.
SEPT. 25-29	Change of registration by appointment only.

ACADEMIC PERIOD

SEPT. 25—MONDAY	Instruction begins
SEPT. 29—FRIDAY	Last day to add a course
NOV. 1—WEDNESDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1962, due at Registrar's Office
NOV. 11—SATURDAY	State Admission Day holiday
NOV. 17—FRIDAY	Last day to submit applications for advanced credit examinations
NOV. 22-27	Thanksgiving recess
DEC. 2—SATURDAY	Advanced credit examinations
DEC. 6-12	Final examinations
DEC. 12—TUESDAY	Quarter ends

WINTER QUARTER, 1962**REGISTRATION PERIOD**

OCT. 23-Nov. 17	Advance Registration only for students in residence Autumn Quarter, 1961. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
DEC. 26-28	In-Person Registration for students in residence Autumn Quarter, 1961, who did not complete Winter Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
DEC. 26-28	In-Person Registration for former students not in residence Autumn Quarter, 1961. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 8.</i>
DEC. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
DEC. 20	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
DEC. 26-28	In-Person Registration for ALL new students.
DEC. 28	Last day to register for Winter Quarter, 1962. Note application deadlines above.
JAN. 2-8	Change of registration by appointment only.

ACADEMIC PERIOD

JAN. 2—TUESDAY	Instruction begins
JAN. 8—MONDAY	Last day to add a course
FEB. 16—FRIDAY	Last day to submit applications for advanced credit examinations
FEB. 22—THURSDAY	Washington's Birthday and Founder's Day holiday
MAR. 3—SATURDAY	Advanced credit examinations
MAR. 9-15	Final examinations
MAR. 15—THURSDAY	Quarter ends

SPRING QUARTER, 1962**REGISTRATION PERIOD**

JAN. 22—FEB. 16	Advance Registration only for students in residence Winter Quarter, 1962. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
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MAR. 20-22	In-Person Registration for students in residence Winter Quarter, 1962, who did not complete Spring Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
MAR. 20-22	In-Person Registration for former students not in residence Winter Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is March 9.</i>
MAR. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
MAR. 15	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one more calendar years.
MAR. 20-22	In-Person Registration for ALL new students.
MAR. 22	Last day to register for Spring Quarter, 1962. Note application deadlines above.
MAR. 26-30	Change of registration by appointment only.

ACADEMIC PERIOD

MAR. 26—MONDAY	Instruction begins
MAR. 30—FRIDAY	Last day to add a course
MAY 11—FRIDAY	Last day to submit applications for advanced credit examinations
MAY 26—SATURDAY	Advanced credit examinations
MAY 30—WEDNESDAY	Memorial Day holiday
JUNE 3—SUNDAY	Baccalaureate Sunday
JUNE 1-7	Final examinations
JUNE 7—THURSDAY	Quarter ends
JUNE 9—SATURDAY	Commencement

SUMMER QUARTER, 1962**REGISTRATION PERIOD**

General In-Person Registration for ALL students (*by appointment only*):

May 31, June 1, 4

June 11-15

Registration may be delayed if new student Applications for Admission or former student Applications for Appointment or Permit to register are received after May 15.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

Students in the Schools of Law, Dentistry, Medicine, and the Hospital Division of the School of Nursing must file an Application for Registration Permit, although no appointment date is necessary.

Registration Appointments or Permits will be issued as follows:

Students in residence Spring Quarter, 1961:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates	Monday, April 16, 8 a.m. to 5 p.m.
Juniors	Tuesday, April 17, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 18, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 19, 8 a.m. to 5 p.m.

Former Students not in residence Spring Quarter, 1962, may obtain an Application for Appointment or Permit by writing to, or calling in person at the Registrar's Office, Room 109, Administration Building, or telephoning LAkeview 4-6000, Extension 2551, beginning April 17 and preferably *no later than May 15*. Application for Registration Appointment must be received before registration materials can be processed. *New (entering) Students* will be mailed Registration Appointments with their Official Notice of Admission.

ACADEMIC PERIOD

JUNE 18—MONDAY	Instruction begins
JUNE 19—TUESDAY	Last day to add a course for the first term
JUNE 22—FRIDAY	Last day to add a course for the full quarter
JUNE 29—FRIDAY	Last day to submit applications for advanced credit examinations for first term
JULY 4—WEDNESDAY	Independence Day holiday
JULY 14—SATURDAY	Advanced credit examinations
JULY 18—WEDNESDAY	Final examinations and first term end
JULY 19—THURSDAY	Second term begins
JULY 20—FRIDAY	Last day to add a course for the second term
JULY 27—FRIDAY	Last day to submit applications for advanced credit examinations for second term
AUG. 11—SATURDAY	Advanced credit examinations
AUG. 17—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1962

REGISTRATION PERIOD

APR. 30-MAY 25	Advanced Registration only for students in residence Spring Quarter, 1962. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 10-28	In-Person Registration for students in residence Spring Quarter, 1962, who did not complete Autumn Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.

SEPT. 10-28	In-Person Registration for former students not in residence Spring Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is September 1.</i>
JULY 15	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointments will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 12-28	In-Person Registration for ALL new students.
SEPT. 28	Last day to register for Autumn Quarter, 1962. Note application deadlines.
OCT. 1-5	Change of registration by appointment only.

ACADEMIC PERIOD

OCT. 1—MONDAY	Instruction begins
OCT. 5—FRIDAY	Last day to add a course
NOV. 1—THURSDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1963, due at Registrar's Office.
NOV. 12—MONDAY	State Admission Day holiday
NOV. 21—WEDNESDAY	Last day to submit applications for advanced credit examinations
NOV. 21-26	Thanksgiving recess (6:30 p.m. to 7:30 a.m.)
DEC. 8—SATURDAY	Advanced credit examinations
DEC. 12-18	Final examinations
DEC. 18—TUESDAY	Quarter ends

For further information concerning subsequent quarters inquire at the Registrar's Office.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

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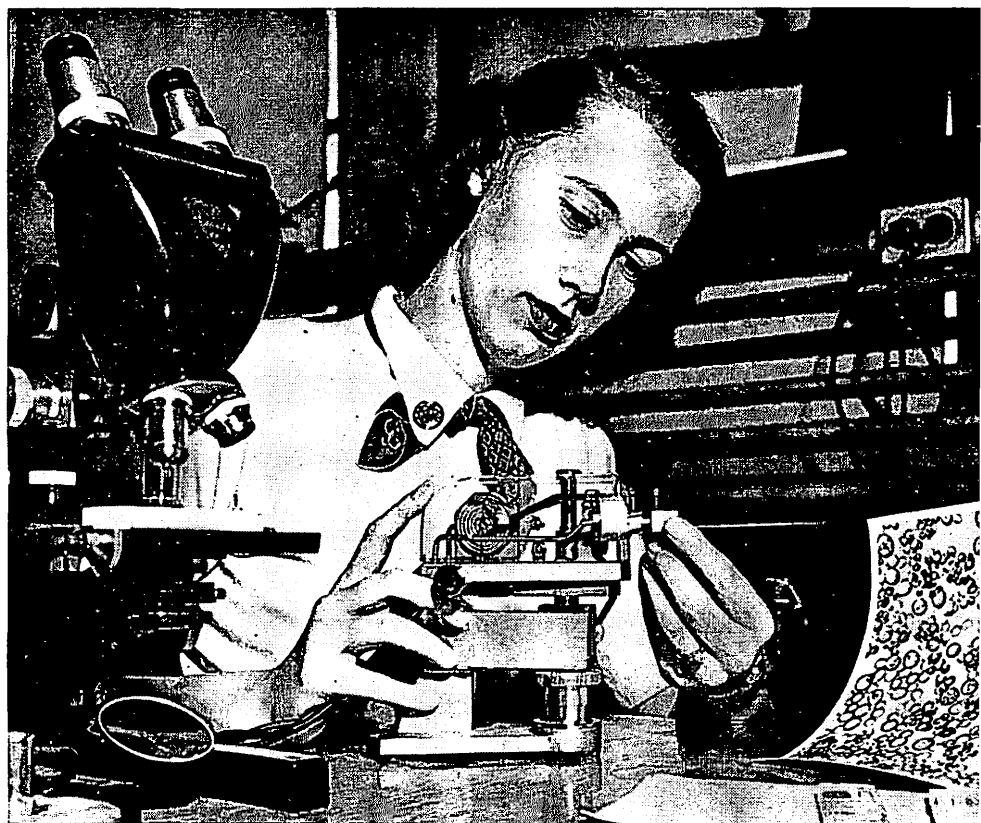
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GENERAL INFORMATION

GENERAL INFORMATION

HISTORY AND OBJECTIVES

THE FIRST COURSES offered by the University when it opened November 4, 1861, were courses in fields now included in the College of Arts and Sciences. The Laws of 1863 provided that the University should consist of at least four departments: (1) a department of literature, science, and arts, (2) a department of law, (3) a department of medicine, and (4) a military department. As the University grew, the study of the basic arts and sciences was organized within a college, first called the College of Literature, Science, and Arts, and later called successively the College of Liberal Arts, University College, and the College of Arts and Sciences (since 1939). Some former departments of the College have developed into separate colleges which apply the fundamental disciplines to particular professions.

Nevertheless, the College of Arts and Sciences is still the largest and most diversified of all the divisions of the University. It consists of the subject matter departments of anthropology, astronomy, botany, chemistry, classics, economics, English, Far Eastern and Slavic languages and literature, genetics, geography, geology, Germanic languages and literature, history, mathematics, meteorology and climatology, oceanography, philosophy, physics, political science, psychology, Romance languages and literature, Scandinavian languages and literature, sociology, speech, and zoology; the semiprofessional Schools of Art, Communications, Drama, Home Economics, Music, Physical and Health Education; and the Far Eastern and Russian Institute and the Division of General Studies, which offer interdepartmental courses and curricula. The departments and schools of the College offer almost one hundred curricula leading to the degrees of Bachelor of Arts and Bachelor of Science, as well as graduate study leading to the degrees of Master of Arts, Master of Science, and Doctor of Philosophy.

In spite of their seeming diversity, the units of the College of Arts and Sciences have a common objective: to promote the study of the basic arts and sciences by the students and faculty. The four-year undergraduate programs of the College are designed to translate this general objective into more specific objectives: to enable all of its students to acquire an understanding of man and the universe; to appreciate the intellectual and esthetic achievements of mankind; and to contribute as informed, rational, sentient beings, to the culture and progress of a changing world. The kind of education which serves these objectives is sometimes designated

as "liberal"; it provides both breadth and depth of intellectual experience, not restricted in its relevance to any vocational or professional application.

The basic programs offered by the College are constructed within a framework which preserves the tradition of liberal education. The objectives of the College, however, permit a wide variability in the educational aims of its students. Certain units of the College combine professional training with general college study, but any special goals of a professional or vocational nature are regarded as extensions of the basic bachelor's program. The faculty is deeply aware of the value of individuality to our society and is ready to assist students to develop programs which satisfy strong personal desires; yet the objectives of the College require some common patterns of study which are described under "Degree Programs," page 22.

In addition to providing instructional programs for students whose major fields of interest lie in the departments and schools of the College, the College provides instruction to students in every other unit of the University. Those students who expect to enter the professional Schools of Law, Medicine, Dentistry, Social Work, or Librarianship find in the preprofessional programs of the College the means of advancing their general education while preparing for their professional training. Students enrolled in other undergraduate colleges of the University are often required to take a large portion of their work in courses given in the College of Arts and Sciences, and may elect additional courses as their degree programs permit.

FACILITIES AND SERVICES

The College of Arts and Sciences offers a number of study, research, and cultural facilities which, while associated with one or more of the units of the College, have even wider significance as elements of the University itself.

The University libraries contain over a million books and acquire 65,000 more each year. They currently receive 17,000 periodicals. The Henry M. Suzzallo Library, opened in December, 1926, houses the main collection, the general catalog, the reference division and documents section, current periodicals, the science room, and the reserve book room; in addition, the Pacific Northwest Bibliographical Center maintains a union catalog for libraries in Washington, Oregon, Idaho, Montana, and British Columbia. Twenty branch libraries for special academic subjects are located in other buildings. Particularly notable among the library holdings are the books and manuscripts in the Pacific Northwest collection; works on oceanography, fisheries, and forestry; documents as a depository of the United States government, United Nation agencies, and the Canadian government; and materials in Russian, Japanese, and especially Chinese.

The Washington State Museum, for which a new building is under construction, contains natural history and anthropological collections of the Pacific Northwest, Oceania, and the Far East. Three University theaters, the Showboat, the Penthouse, and the Playhouse, are used throughout the year in the School of Drama program. Radio Station KUOW, an FM station operated by the School of Communications, and television station KCTS, a community-sponsored project with studios located at the University, are used both for student training and for public service in communications. The Henry Art Gallery offers a program of frequently changing exhibitions of recent work in painting, sculpture, printmaking, photography, and the craft media, film programs, musicales, and other special events.

Service-research organizations include the Bailey and Babette Gatzert Institute of Child Development, of the Psychology Department, which provides clinical training for graduate students, conducts research, and offers consultative service, and the University Nursery School, maintained for nursery school teacher training, observations, and demonstrations. The Speech and Hearing Clinic, of the Department of Speech, offers remedial service to students and others with speech or hearing defects. Two bureaus conducting research in government and international relations are affiliated with the Department of Political Science. These agencies are the Bureau of Governmental Research and Services and the Institute of Inter-

national Affairs. The Institute for Economic Research is a research organization affiliated with the Department of Economics.

Through the Language Laboratory, operated jointly by the language departments and the Film Center, it is possible for students to practice hearing and speaking a foreign language at their own pace, in addition to class hours which are thus freed for explanation and discussion.

The Institute for Sociological Research and the Office of Population Research are maintained by the Department of Sociology. The cyclotron and the Cosmic Ray Laboratory are research agencies of the Department of Physics.

The Research Computer Laboratory of the Graduate School has two magnetic drum-type, high-speed computing machines which are used for research computations of all departments and research groups on campus as well as for laboratory work related to the undergraduate courses in numerical analysis and data processing.

The Friday Harbor Laboratories (under the administrative jurisdiction of the Graduate School) on San Juan Island, about eighty miles north of Seattle, provide unique opportunities for teaching and research in the marine sciences. During the summer, courses in algology, marine zoology, oceanography, meteorology, and fisheries are offered for advanced undergraduate and graduate students.

Near the campus is the University Arboretum, maintained for the propagation of plants and shrubs from all over the world. This 267-acre park is of particular interest to students of botany and zoology.

ADMISSION TO THE UNIVERSITY AND TO THE COLLEGE

PRELIMINARY STATEMENTS

The Board of Admissions, which is appointed by the President, is responsible for the interpretation and administration of the regulations governing admission to the University.

The University recognizes high school diplomas, college credits presented for advanced standing, and college degrees earned in the following institutions: (1) high schools accredited by the Washington State Department of Public Instruction; (2) out-of-state high schools accredited by their state university and state department of public instruction, or by the regional accrediting association of the area; (3) colleges and universities accredited by their regional accrediting association.

Resident. Defined for purposes of admission and/or assessment of fees as an individual who has been domiciled in the state of Washington for one year immediately prior to his registration. The domicile of a minor is that of his parents or his legal guardian.

Nonresident. An applicant whose credentials are received from a school or college located outside the state of Washington. An applicant who believes himself eligible for resident status may apply for reclassification through the Office of Residence Classification which has final authority in determining such status.

Qualified Student. One whose scholastic standing and preparation meet the standards for admission to the University.

Regular Student. One who fulfills the following requirements: (1) has been granted unqualified admission to a college or school of the University; (2) whose current program of studies is satisfactory to the dean of his college or school; (3) has received medical clearance from the Student Health Service and has completed all of the required steps for registration, including the payment of tuition and fees, the filing of class cards, and the depositing of registration materials at Sections.

Grade-point averages. These are based on a four-point system in which A=4, B=3, C=2, D=1, E=0. An adjustment to this system is made as necessary in the computation of grade-point averages earned at other institutions.

ADMISSION OF WASHINGTON RESIDENTS

ELIGIBILITY FOR ADMISSION WITH FRESHMAN STANDING

Undergraduate programs offered by the University lead to the baccalaureate degree; students, therefore, are admitted when, in the judgment of the University, they appear qualified to pursue a degree program with a reasonable probability of success. In making this judgment, the University's Board of Admissions considers the applicant's total record, including such factors as scholastic achievement in a college preparatory program, recommendations of the high school principal or counselor, rank in class, and scores on any nationally administered tests associated with college entrance.

Scholastic achievement is measured largely in terms of the criteria listed below. All students entering the University are expected to meet these criteria. Non-residents and students who enter with advanced standing will find additional admission criteria in subsequent sections.

SCHOLASTIC CRITERIA

1. Graduation with diploma an accredited high school.
2. Achievement of an over-all high school grade-point average of at least 2.50 in courses completed after September, 1960, and a grade-point average of at least 2.00 in courses completed prior to September, 1960.
3. Completion of a college preparatory program of at least 16 units to include the following:

a. English	at least 3 units
b. One foreign language	at least 2 units
c. College preparatory mathematics	at least 2 units
d. One laboratory science	at least 1 unit
e. Social science	at least 2 units
f. Electives from the above subjects	at least 2 units

Additional electives may be chosen from any subjects
acceptable for high school graduation.

Because an appropriate choice of high school electives serves to strengthen a student's preparation, the University will give this part of his record the same careful attention it gives to other aspects of his qualifications.

Students who expect to enter the College of Arts and Sciences should plan their high school electives carefully, both to lay the foundation for their general education which will be continued at the college level, and to insure that they are adequately prepared to begin their study in the College. Students should elect subjects in English, languages, social sciences, natural sciences, mathematics, and fine arts which will provide a well-rounded preparation for college study. Since many programs require some college mathematics, it is advisable for students to include $\frac{1}{2}$ unit of algebra in the electives specified in "f" above. In addition, intensive preparation in an academic area may be appropriate for students who have specific educational objectives. For example, students who expect to complete a major in mathematics or the physical sciences are generally urged to complete all of the standard mathematics courses offered by their high schools in order to avoid unnecessary delays in their progress toward a degree. Students expecting to complete major programs in botany, chemistry, communications, foreign languages, mathematics, music, oceanography, and physics should examine the recommendations of these departments, under "Courses of Instruction."

Junior High School Courses. The University recognizes college preparatory courses given in the junior high school and assigns them the same value as equivalent courses offered by the high school. Students who elect these subjects in the junior

high may subsequently achieve a superior degree of competence in related subject areas in high school.

Accelerated, Honors, and Advanced Placement Courses. The University encourages qualified students to extend themselves academically by taking advantage of advanced, accelerated, and honors courses offered by their schools. Successful participation in such challenging opportunities assures superior academic preparation and serves to identify those students more likely to profit from University-level honors courses.

The University of Washington grants placement and/or credit, at the discretion of the University department concerned, on the basis of scores earned in College Entrance Examination Board Advanced Placement Examinations, and on the basis of placement examinations administered to entering students (see "Required Tests and Examinations," page 20).

ELIGIBILITY FOR ADMISSION WITH ADVANCED STANDING

A qualified student in good standing at an accredited institution may apply for admission with advanced standing. Such an applicant is expected to have the same high school preparation as the student who enters as a freshman, and to have a college grade-point average which meets the standards herein specified.

With fewer than 45 acceptable credits, an applicant must present a grade-point average of 2.50 in high school work completed after September, 1960; a 2.00 grade-point average in such work completed prior to this date; and a 2.00 cumulative average in all college work.

With 45 or more acceptable credits, an applicant is expected to present a cumulative and last-term grade-point average of at least 2.00.

The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted.

Regulations concerning the transfer of credit may be found on page 243.

ADMISSION OF SPECIAL STUDENTS AND AUDITORS

Non-high school graduates who are 21 or older and legal residents of Washington may apply to the Board of Admissions for admission with special standing. With their applications, they must submit all available records of secondary school and college study. Special students may register in and take for credit whatever courses the Dean of the College permits, but may not participate in student activities or receive degrees. By fulfilling conditions specified by the Board of Admissions, special students may change their status to that of regular students and may receive degrees.

Persons 21 or older may register as auditors in nonlaboratory courses or the lecture sessions of laboratory courses by obtaining the consent of the Dean of the College and the instructors of the courses. Auditors do not participate in class discussion or laboratory work. They may receive credit for audited courses only by enrolling in them as regular students in a subsequent quarter.

ADMISSION OF NONRESIDENTS

ADMISSION OF NONRESIDENTS TO UNDERGRADUATE STANDING

Applications from nonresidents will be considered, but first preference is given legal residents of the state of Washington, and sons and daughters of University of Washington alumni residing outside the state.

Nonresident applicants are selected on the basis of their preparation and scholastic standing. In general, a freshman applicant must be eligible to enter the university of his own state, and satisfy the foregoing scholastic criteria with a 3.00 (B) grade-point average or place in the upper 25 per cent of his graduating class.

An applicant for admission with advanced standing with fewer than 45 college credits must have a cumulative grade-point average of at least 3.00 in standard college courses as well as a high school grade-point average of at least 3.00 or

have been in the upper fourth of his class. An applicant presenting more than 45 credits for advanced standing must present a 2.70 grade-point average in standard college courses. For regulations on transfer of credit, see page 243.

Sons and daughters of University of Washington alumni are admitted according to resident standards but are required to pay the regular nonresident tuition fees. Applicants for admission to curricula in which the University serves on a regional basis will be accorded special consideration by the Board of Admissions.

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Applicants for admission with graduate or advanced undergraduate standing are expected to meet the same general requirements as nonresidents of Washington educated in American schools. However, they must file their credentials before March 1 to be considered for admission Autumn Quarter, or six months before the opening of another quarter in which they may wish to enroll. In addition, they must demonstrate a satisfactory command of the English language.

The official record of the Canadian student is the matriculation certificate or university admission certificate of his province. Canadian and foreign students who have been in university attendance must have official transcripts forwarded as required of all students. High school graduates and university transfer students must meet the scholarship requirements for nonresident students. See above.

UNDERGRADUATE ADMISSION, EXCEPTIONAL CASES

(See page 243.)

ADMISSION TO THE GRADUATE SCHOOL

Basic requirements for admission to the Graduate School are a bachelor's degree from an institution of recognized standing, a grade-point average of 3.00 in the junior and senior years of college work, approval of the Graduate School, and approval of the department in which the work is to be taken. For complete information, see the *Graduate School Bulletin*.

ADMISSIONS PROCEDURE

Requests for Application for Admission forms and correspondence regarding admission to any college or school of the University should be addressed to the University of Washington, Office of Admissions, Seattle 5, Washington. Graduates of high schools in the state of Washington may obtain this form from their principals.

Applications and required transcripts must be filed with the Office of Admissions prior to the following dates in order to be assured of consideration for admission to the quarter for which application is being made: July 15 for Autumn Quarter; December 1 for Winter Quarter; March 1 for Spring Quarter; May 15 for Summer Quarter.

All records become a part of the official file and can neither be returned nor duplicated for any purpose. Failure to submit complete credentials will be considered a serious breach of honor, and may result in permanent dismissal from the University.

A leaflet giving general information and instructions for registration is mailed with the Notice of Admission. In the event of a discrepancy, instructions in the leaflet supersede those found in earlier publications. *The University assumes no responsibility for applicants who come to the campus before they have been officially notified of their admission.*

The admissions credentials of applicants who do not register for the quarter to which they have been admitted are normally retained in the Office of Admissions for a period of one year from the date of application. At the end of this period,

credentials on file are discarded unless the applicant has notified the Office of his continued interest in attending the University or of his enrollment in the Evening Classes program. Should a student wish to renew his application after the one-year lapse, he must submit new credentials in advance of the date given above for the quarter desired.

FOR FRESHMAN STANDING

An application form, obtained from the University's Office of Admissions or from a Washington high school, should be completed according to instructions appearing on the form and returned to the Office of Admissions.

Students may apply through their high schools on completion of the first semester of the senior year. Those who are qualified will be issued notices of early or conditional admission which become valid on graduation with a grade-point average of no less than 2.50 for the final semester. Others also will be notified of their admission status.

Scores on a nationally administered college aptitude test are not required. However, they may be helpful in evaluating a borderline student's probability of success.

FOR ADVANCED UNDERGRADUATE STANDING

An application form, obtained from the University's Office of Admissions or from a Washington junior college should be completed according to instructions appearing on the form and sent to the Office of Admissions. In addition, the applicant should request the principal of his high school and the registrar of each college he has attended to forward an official transcript of his record to the University's Office of Admissions. When these credentials have been evaluated, the applicant will be notified of his admission status.

FOR GRADUATE STANDING

An application form, obtained from the University's Office of Admissions, should be completed according to instructions appearing on the form and returned to the Office of Admissions. In addition an applicant should request the registrar of each college or university in which he has been enrolled as an undergraduate or graduate student to forward *two* official transcripts to the University's Office of Admissions. When these credentials have been evaluated, the applicant will be notified of his admission status. The student will find it convenient to have an additional copy of the record for reference.

VETERANS

ADMISSION OF VETERANS

Veterans and children of deceased veterans should meet the general admission criteria and follow the general procedures outlined for all applicants. Applications for and questions about government aid should be addressed to the Veterans Division Regional Office.

WORLD WAR I OR II VETERANS

Under certain conditions a veteran of World War I or II who is not eligible for Veterans Administration benefits is fully or partly exempt from tuition charges. See page 247.

KOREAN VETERANS

A Korean veteran under Public Law 550 should obtain admittance to the University prior to making application for a Certificate for Education and Training, thus eliminating the chance of obtaining a certificate valid for an incorrect degree. If the veteran has any questions regarding application for a certificate, he should consult the Veterans Division, Safety Division Building. (Regulations concerning the Certificate are listed on page 244.) Educational allowance payments are made

directly to the veteran by the Veterans Administration after the veteran and institution submit a monthly attendance certification.

DISABLED VETERANS

A veteran with a disability under Public Law 894 should contact a training officer in the nearest Veterans Administration Office approximately four weeks prior to registration.

CHILDREN OF DECEASED VETERANS

Public Law 634 grants federal benefits to children of deceased veterans of World War I, World War II, or the Korean Conflict who died as a result of injury or disease incurred or aggravated while in the service. Information regarding eligibility under this law should be requested from a Veterans Administration Regional Office.

The Certificate for Education and Training issued to those eligible persons by the Veterans Administration is to be presented, along with the Program of Studies, to the Veterans Division, Safety Division Building, as soon as registration is completed.

Credit requirements for monthly subsistence for Public Law 634 students are the same as those listed for Public Law 550 students. Public Law 634 students may not be authorized for less than half-time subsistence.

REQUIRED TESTS AND EXAMINATIONS

Washington Pre-College Differential Guidance Test

This grade prediction test is required of all entering freshmen, including those transferring to the University with fewer than 45 credits. It is also required of transfer students who have not completed courses which are equivalent to English 101 (English composition). High school seniors are advised to arrange through their high schools to take this test in the spring when it is offered throughout the state of Washington. Nonresidents of Washington may take the test at the time of their registration according to instructions mailed with the notice of admission. Sample copies are not available. Special, foreign, blind students, and auditors are exempted.

The several parts of this test have been selected because of their proven value for the prediction of grades most likely to be earned by a student. Since the results of the test are used by departmental advisers as an aid in assigning students to appropriate sections in English composition and other subjects, it is advisable that the student bring a copy of the results with him when he comes for his first conference with his counselor or adviser.

Mathematics Placement Tests

One section of the Pre-College Differential Guidance Test evaluates a student's mastery of intermediate algebra and plane geometry. A satisfactory score on this section qualifies a student to enroll in Mathematics 104 (trigonometry) or Mathematics 105 (college algebra). Those who fail to qualify and wish to proceed to the study of more advanced mathematics courses may choose one of the following alternative plans:

1. Pass Mathematics 101 and then take 104, or 105, or both. No credit is given for Mathematics 101 to students who have completed the third semester of high school algebra.
2. Pass Mathematics 103, in which the first four weeks are devoted to a review of intermediate algebra and the last six weeks to the study of plane trigonometry equivalent to Mathematics 104. The satisfactory completion of this course qualifies the student to enroll in Mathematics 105 (College Algebra).

Students who have studied trigonometry, fourth semester algebra, mathematical analysis, or similar subjects in high school, will be placed in the next appropriate

course at the University according to their scores in additional placement tests given by the Department of Mathematics. It is advisable to review before taking these examinations.

Medical Examination

A student entering the University for the first time, or returning to the University after an absence of more than one calendar year, or who has previously attended Summer Quarter classes but is entering regular University classes for the first time, is required to submit to the Student Health Service (Hall Health Center) a form containing his health history and a report of a physical examination by a physician. The form will be sent to new students by the Office of Admissions, and to returning former students by the Registrar. This examination, which is required before a student may register, is taken at the student's expense. A chest X ray, also required of the above students, is given at the Student Health Service without charge.

With the exception of Canadian students, who will follow the above instructions, foreign students must take the required physical examination at the Student Health Service when they arrive on the campus.

REGISTRATION

PROCEDURE

ALL students, currently in school, who plan to register for a succeeding quarter (Summer Quarter excepted) must register by Advance Registration and pay fees by the stated deadline. Students are held responsible for knowing and observing registration procedures, dates, and deadlines which appear in the bulletins, in "Official Notices" in the *Daily*, and on campus bulletin boards.

New students are given appointments when they are notified of admission, and they receive complete directions for registering at the time of registration.

Students expecting to return to the University after an absence of a quarter or more (excluding Summer Quarter) must register by In-Person Registration. The required registration appointment may be obtained by writing to, calling at, or telephoning the Registrar's Office at the time specified in the Calendar, but in no case later than the stated deadline (see pages 5-9).

ADVISING

After notification of admission and as early as possible before registration, the student should visit or write (a visit is preferred) the College for assistance in the selection of courses for his first academic program. The student will be assisted by faculty advisers who have a concern for the academic and educational questions that most students have about the importance of their studies. A program of studies will be discussed and planned to fit the needs of the individual student within the educational plan and policy of the College. The student will find his first visit much more profitable if he has studied the material sent to him before his arrival on campus.

Each student must report to the central advisory office in 121 Miller Hall. Here he will be assigned an adviser, if he is a premajor or if he is a preprofessional student in dental hygiene, dentistry, education, law, librarianship, medicine, occupational therapy, or physical therapy. If he has selected a major field of study, he will be given the necessary documents and sent to his major department where he will be assigned an adviser. The students assigned to the College Honors Program will be advised by the Director of Honors or a member of the Honors Council.

REGISTERED CREDITS ALLOWED EACH QUARTER

Except with the consent of the Dean, no student may be registered for less than 12 credits (or the equivalent) or more than 16 credits (or the equivalent) or the number called for in the prescribed curricula, exclusive of physical education

activity courses and lower-division military, naval, or air science courses. In no case may a student be registered for, or receive credit for, more than 20 credits (or the equivalent) of work, exclusive of physical education activity courses, and lower-division military, naval, or air science courses. Work taken in noncredit courses or to remove entrance deficiencies, or concurrently in evening classes, by correspondence study, or in another collegiate institution, must be included in the computation of the total registered credits allowed.

CHANGES OF REGISTRATION

After students have registered, they cannot change their schedules except with permission of the Dean of the College. No student is permitted to make a registration change that involves entering a new course after the first calendar week of the quarter. After that time, no student may register without the consent of the Dean and the instructor whose class the student wishes to enter.

WITHDRAWALS FROM COURSES OR FROM THE UNIVERSITY

(see page 245.)

DEGREE PROGRAMS

The College of Arts and Sciences, through its departments, schools, and inter-departmental programs, offers curricula leading to the degrees of Bachelor of Arts and Bachelor of Science, as well as graduate study leading to the degrees of Master of Arts, Master of Science, and Doctor of Philosophy.

UNDERGRADUATE CURRICULA

Several kinds of undergraduate degree curricula are offered in the College. *Prescribed* departmental curricula, offered by some departments and schools, definitely prescribe the work the student must complete for the bachelor's degree; *elective* departmental curricula are more flexible than prescribed curricula but require at least 36 credits in the major subject; *interdepartmental* curricula, given by the Division of General Studies, meet the individual needs of students whose major field of interest extends beyond the limits of a single department or college.

In addition to curricula leading to degrees in the College, the College provides curricula for the basic preparation of students who plan to enter into professional training offered by schools of dentistry, education, law, librarianship, medicine, and social work. These curricula vary in length from one to four years.

Students who have not made a definite choice of a degree program before entering the University may select, in consultation with an adviser, a program of studies which will meet the general requirements of the College and at the same time provide opportunities to explore the possibilities of college study. Students may remain in this premajor category no later than the end of the sophomore year.

HONORS PROGRAM

The College provides special opportunities for students of superior ability. Special sections of elementary courses and sequences of advanced courses for students who have demonstrated special abilities in a single field of study have been available in the College for many years.

To provide further encouragement for the superior student, the College is initiating in Autumn, 1961, a four-year Honors Program which will combine general honors courses with honors sequences in the major field of the student. Freshman students entering in Autumn, 1961, are selected for the College Honors Program on the basis of their high school records and qualifying examinations; other students may enter the program during the academic year upon recommendation by the faculty and approval by the Honors Council of the College.

The Director of Honors and the Honors Council will counsel students accepted into this program, and will arrange approximately one-half of their schedules in honors courses.

BACHELOR'S DEGREES

Students working toward bachelor's degrees in the College of Arts and Sciences must meet certain general requirements of the University and the College as well as the particular requirements of their major department.

UNIVERSITY REQUIREMENTS

The University credit requirement for graduation is 180 academic credits (including Health Education 110 or 175) and the required quarters of military training and physical education activity. At least 60 of the 180 credits must be in upper-division courses, those numbered 300 and above. Advanced ROTC courses do not count as upper-division credit, and no more than 18 credits in advanced ROTC courses may be counted toward graduation.

Military Training. The University requires male students who enter the University as freshmen or sophomores to complete six quarters of military training.

The Departments of Air Science, Military Science, and Naval Science conduct the ROTC programs under agreements between the University and the United States Air Force, Army, and Navy. At the University, these programs are coordinated by the Dean of the College of Engineering. Complete descriptions of the military training program may be found on page 245.

Physical Education Activity Courses. Students who enter the University as freshmen are required to complete one physical education activity course each quarter for the first three quarters of residence. In fulfilling the foregoing requirement, all students must pass a swimming test or satisfactorily complete one quarter of swimming. In fulfilling the three-quarter requirement, no activity course may be repeated for credit. Regulations concerning activity courses may be found on page 246.

Health Courses. All students who enter the University as freshmen are required to take Health Education 110 (women) or 175 (men) within the first three quarters of residence. The health education course requirement may be satisfied by passing a health-knowledge examination. Successfully passing this test exempts the student from the requirement but does not grant credit for Health Education 110 (women) or 175 (men). Veterans with one year or more of active service are exempt from this requirement.

COLLEGE REQUIREMENTS

In addition to the University requirements, students of the College must fulfill an English requirement, group requirements, and a major requirement.

English Requirement. Competence in the use of English is so essential to University study that the College requires that each student include 9 credits in English 101, 102, and 103 (or the equivalent by exemption or transfer credit) in the total presented for graduation. Students normally should complete the freshman English requirement during their first three quarters in residence, but in any event during the first four quarters. Honors students and other students who demonstrate competence in writing beyond the level ordinarily expected by these courses may be exempted from one or more quarters of the sequence, and students entering under the Advanced Placement Program may similarly qualify for exemption or credit.

Group Requirements. The College reserves an appreciable fraction of a student's four undergraduate years to develop a breadth of knowledge and outlook and an appreciation of intellectual and aesthetic ideas. These qualities are intended to be the common possession of all graduates of the College. In acquiring them, the student will be carried into areas far from any intended specialization.

The subject material available to a student in the College is divided into three broad fields of knowledge. He is required to present a minimum of 30 credits in one group (usually the field of his major), 20 credits in another, and 10 credits

in the third. Health Education 110 or 175, English 101, 102, and 103, and any courses taken to remove entrance deficiencies may not be used to fulfill group requirements. The subjects included in these fields are:

<i>I. Humanities</i>	<i>II. Social Sciences</i>	<i>III. Sciences</i>
Art	Anthropology	Anatomy 301
Classics	Economics	Astronomy
Communications	Far Eastern Institute	Biochemistry
Drama	courses	Biology
English	Geography	Botany
Far Eastern languages and literature	History	Chemistry
General and comparative literature	Home economics	Conjoint 317-318
Germanic languages and literature	Philosophy	Genetics
Humanities 101, 102, 103, 201	Physical and health education	Geology
Journalism	Political science	Mathematics
Liberal arts	Psychology	Meteorology and climatology
Librarianship	Social Science 101, 102, 103	Microbiology
Music	Sociology	Oceanography 101
Radio-Television		Physical Science 101
Romance languages and literature		Physics
Scandinavian languages and literature		Zoology
Slavic languages and literature		
Speech		

In selecting courses as electives, whether to satisfy the minimum group requirements or for any other purpose, a student should be guided by considerations both private and public. His private interests and talents may provide strong motivation for courses in certain areas which could serve him in later life as a supplement to his career, as a basis for appreciation of the arts, or as a creative outlet. Educated people have as well a public responsibility to seek a basis for understanding the problems confronting mankind. Sequences of courses offered by a single department or by groups of departments are particularly valuable in meeting these objectives. With the aid of his adviser, a student will be able to select courses which introduce him to other cultures than his own, and to aesthetic values and the foundations of scientific thought which cross man-made barriers.

Major Requirements. Among the characteristics of thought which the College attempts to develop in a student are the abilities to manipulate abstract ideas and to explore relationships deeply, confidence in the power of his own intellect, and an awakened intellectual curiosity. These attributes come from thorough study of a subject selected for its richness of content. The study must aim at imparting a depth of knowledge. It must take up several facets of the subject, dwelling on the synthesis of empirical and theoretical knowledge and exposing significant unsolved problems. By providing, through a "major" requirement, the means to satisfy these liberal purposes of the College and the desire of students to become proficient in some field, the College proposes to exploit the strong interests of its students. This part of the student's program is determined by the department or school in which he does his major study; descriptions of the major programs are to be found on pages 31-202.

General Information. Students should apply for bachelor's degrees during the first quarter of the senior year. A student may choose to graduate under the graduation requirements of the Bulletin published most recently before the date of his entry into the College, provided that not more than ten years have elapsed since that date and that he has the approval of his major department. As an alternative, he may choose to fulfill the graduation requirements as outlined in the Bulletin published most recently before the anticipated date of his graduation. All responsibility for fulfilling graduation requirements rests with the student concerned. A student graduating from another college of the University who wishes to receive a degree simultaneously from the College of Arts and Sciences must receive approval from the Assistant Dean of the College of Arts and Sciences at least three quarters before

completing the requirements for the degree from this College. No student may graduate from the College of Arts and Sciences without a minimum of three quarters of attendance in that College.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate School Bulletin*. The choice of bulletin does not apply to advanced degrees in the Graduate School. Graduate students must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.

Graduate programs leading to the master's degree are available in the fields of anthropology, art, botany, chemistry, classics, communications (journalism and radio-television), drama, economics, English (including general and comparative literature), Far Eastern and Slavic languages and literature, genetics, geography, geology, Germanic languages and literature, history, home economics, mathematics, meteorology and climatology, music, oceanography, philosophy, physical education, physics, political science, psychology, Romance languages and literature, Scandinavian languages and literature, sociology, speech, and zoology. Interdepartmental programs in linguistics, in public administration, and in radiological sciences are administered by special committees.

Graduate programs leading to the degree of Doctor of Philosophy are available in the fields of anthropology, botany, chemistry, classics, economics, English (including general and comparative literature), Far Eastern and Slavic languages and literature, genetics, geography, geology, Germanic languages and literature, history, mathematics, meteorology and climatology, music, oceanography, philosophy, physics, physiological psychology, political science, psychology, Romance languages and literature, sociology, speech, and zoology. An interdepartmental program in linguistics is administered by a special committee.

A graduate program leading to the degree of Doctor of Musical Arts is offered through the School of Music.

SCHOLARSHIP

Grade points per credit are awarded on the following basis: a grade of A earns 4 points; B, 3 points; C, 2 points; D, 1 point. The grade of E or EW signifies failure and the grade point is 0. The quarterly and cumulative grade-point averages are computed by multiplying the grade point received in a course by the total number of credits the course carries, totaling these values, and dividing by the total number of credits the student attempted. Grade-point averages are calculated on the basis of all grades received in courses which carry academic credit, including courses repeated. Grades received in repeated courses do not cancel or replace any other grades. Only University of Washington residence credits will be used in these computations.

Academic probation is essentially a warning to the student that he must show improvement if he is to remain in the University. Any undergraduate student who has completed three or more quarters in the University and whose cumulative grade-point average is below 2.00 will be placed on academic probation. Any undergraduate student who has completed not more than two quarters at the University will be placed on probation when his cumulative grade-point average is below 1.80. The Dean of the College will notify the student as soon as possible that he is on probation. Such action will be noted permanently on the student's official academic record.

An undergraduate student on academic probation will be dropped from the University: (1) if he fails to attain at least a 2.00 for the following quarter's work; or (2) if he fails to attain a 2.00 cumulative average at the end of the two subsequent quarters. Only under exceptional circumstances will a student dropped under low scholarship rules be readmitted to the University. Such a student will be

readmitted only at the discretion of the dean of the school or college to which he seeks admission and, if readmitted, will enter on academic probation. Such a student will be dropped: (1) if he fails to attain a 2.00 for the following quarter's work; or (2) if he fails to attain a 2.00 cumulative average at the end of two quarters. He will be removed from probation at the end of the quarter in which his cumulative grade-point average reaches 2.00 or better.

A senior who has completed the required number of credits for graduation but whose work in what would normally be his final quarter places him on probation will not receive a degree until he has been removed from probation. A senior who has completed the required number of credits for graduation but whose work in his last quarter results in his being dropped for low scholarship may not receive a degree until he has been readmitted and removed from probation.

SENIOR-YEAR RESIDENCE

Senior standing is attained when 135 credits, plus the required quarters of ROTC and physical education, have been earned. Of the work of the senior year (45 credits), at least 35 credits must be earned in three quarters of residence. The remaining 10 credits may be earned either in residence or in this University's evening classes or correspondence courses.

ESTIMATE OF YEARLY EXPENSES

The figures given below are minimum estimates for an academic year, which includes Autumn, Winter, and Spring Quarters. Living costs and personal expenses vary widely with the needs of the individual student.

Tuition, Incidental, and ASUW Membership

Full-time resident student	\$300.00
Full-time nonresident student	600.00

<i>Athletic Admission Ticket</i> (optional)	6.50
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<i>Health and Accident Insurance</i> (optional)	16.50
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<i>Extra Service Charges and Rentals</i>	38.50
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Military uniform deposit, breakage ticket, and locker charges.

<i>Books and Supplies</i>	90.00
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Board and Room

Room and meals in Men's Residence Halls	675.00
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Room and meals in Women's Residence Halls	615.00-720.00
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Room and meals in fraternity or sorority house (Including dues and social assessments.)	670.00-760.00
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Initial cost of joining is not included; this information may be obtained from the Interfraternity Council or Panhellenic Council.

<i>Personal Expenses</i>	300.00
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FEES, EXTRA SERVICE CHARGES, AND RENTALS

All fees, extra service charges, and rentals are payable in United States dollars at the time of registration. The University reserves the right to change any of its fees and charges without notice.

The fee schedules for resident and nonresident students, appearing on pages 248 and 249, apply to the academic year (Autumn, Winter, and Spring Quarters). Summer fees are listed in the *Summer Quarter Bulletin*.

STUDENT ACTIVITIES AND SERVICES

ASSOCIATED STUDENTS

Membership in the Associated Students of the University of Washington, the central organization which conducts all student activities, is required of all regularly enrolled students. Through the ASUW Board of Control and its various committees and boards, students assume major responsibility in the government of student life. The ASUW helps to finance the programs of athletics, debates, concerts, lectures, and many other activities and facilities, including the University of Washington *Daily* and the Student Union Building.

FINANCIAL AIDS

The University offers a number of awards for outstanding academic achievement. Some are given by the University and others are supported through the generosity of friends and alumni. Information concerning the list of current awards and loans may be obtained from the Office of the Dean of Students or by referring to the *Handbook of Scholarships*.

Short- and long-term loan funds, including the National Defense Student Loan fund, are administered by the Office of the Dean of Students. Full-time students who are making normal and satisfactory progress are eligible to apply.

OFFICE OF THE DEAN OF STUDENTS

The Office of the Dean of Students is concerned with the general welfare of students and welcomes correspondence and conferences with both parents and students. This Office works closely with the advisory system of the colleges and schools of the University; it directs students to faculty advisers, the Counseling Center, and other persons and agencies offering information and assistance with personal and social problems.

The Foreign Students Office operates through the Office of the Dean of Students. The Foreign Student Adviser and his staff offer guidance on all nonacademic problems to students from other countries. Questions about immigration regulations, housing, social relationships, personal problems, finances, minimum course requirements, and employment should be referred to this Adviser. Students who are interested in study abroad may obtain from him information about schools in other countries and about Fulbright and other scholarships.

COUNSELING CENTER

The Counseling Center in Lewis Hall Annex offers vocational and educational counseling to students who need help in their adjustments to college. The staff of the Center, including vocational counselors and psychologists, works closely with other student services and supplements the academic advisory program. The services of the Center are available to any registered student who desires vocational counseling and to students referred by academic advisers for individual interpretations of their college aptitude scores. Additional tests may be given to determine special interests and aptitudes when necessary.

HOUSING

Information and applications for residence in University-owned housing for single persons may be obtained by writing to the Manager, Men's Residence Halls, 1201 Campus Parkway, Seattle 5, or to the Manager, Women's Residence Halls, University of Washington, Seattle 5. Until August 1, preference in assignment to vacancies is given to students under twenty-one years of age; thereafter, assignments are made in the order of application. Prospective students may apply for the residence halls prior to their acceptance by the University but not before April 15.

University regulations require that women students under twenty-one who do not live at home must live in approved group residences such as the Women's Residence Halls, sororities, or church-sponsored living groups. Other types of

living arrangements must be reported to the Dean of Women and be approved by the student's parents or guardian.

Information about fraternities or sororities may be obtained by writing to the Interfraternity Council or the Panhellenic Council, Student Union Building, University of Washington, Seattle 5.

The Office of Student Residences maintains listings of off-campus rooms, rooms with board, housekeeping rooms, apartments, and houses which are available to University students. These listings must, however, be consulted in person.

Teaching and research assistants and other part-time subfaculty personnel are given first priority for assignment to University-owned housing facilities for married students. Second preference for assignment to Union Bay Village or Sand Point Homes is given to graduate, medical, dental, and law students who have children. Prospective students are eligible to apply when they have been accepted for admission. Write to the Office of Student Residences, 23 Administration Building, for further information and application forms.

A complete statement of University housing policy appears in the *Student Handbook of University Rules and Regulations* and the *Housing Bulletin*.

HEALTH SERVICES

The University maintains a health service and infirmary to help guard against infectious diseases and incipient ill health.

The infirmary receives bed patients at any hour and provides nursing care, medicines, and the attendance of a staff doctor up to one week each quarter free of charge. For a period longer than one week a charge of \$2.00 a day is made. At their own expense, infirmary patients may consult any licensed physician in good standing.

Health and accident insurance for students is available at the time of registration.

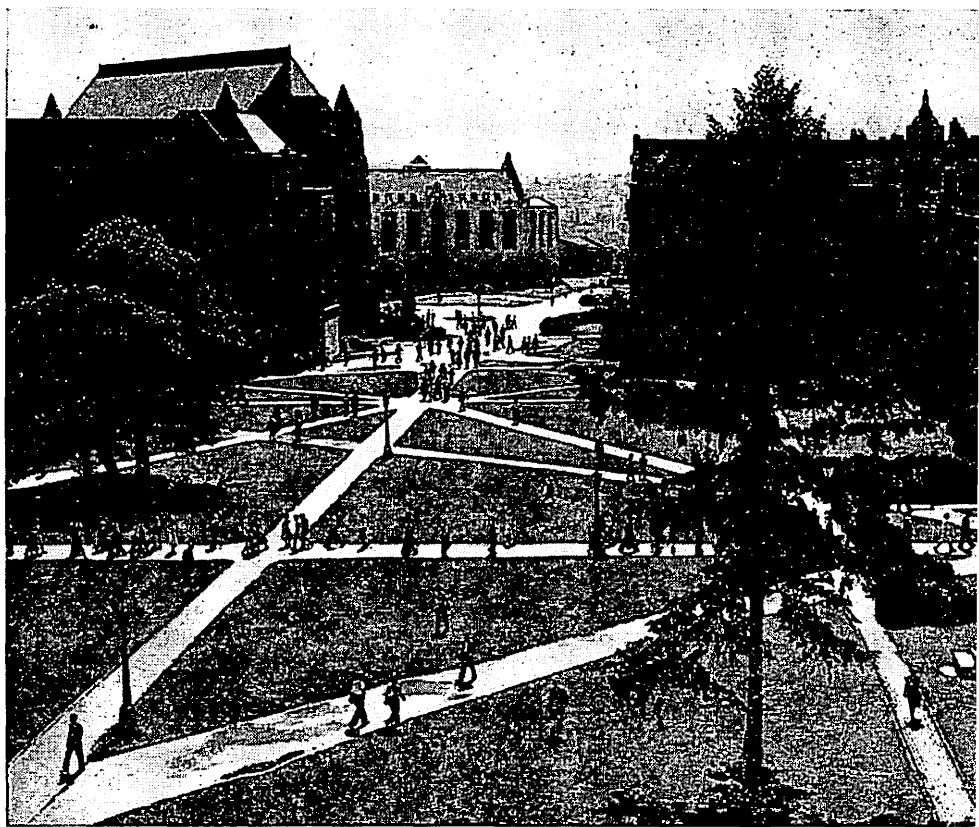
EMPLOYMENT

Part- and full-time work off campus may be obtained at the University Placement Office. Applications are accepted from students or graduates of the University and from the wives or husbands of University students. Application must be made in person after residence in Seattle has been established. Placement in jobs on the campus is handled by the Personnel Department and the ASUW Personnel Office.

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.



COURSES OF INSTRUCTION

COURSE-NUMBERING SYSTEM

Courses numbered from 100 through 299 are lower-division courses, for freshmen and sophomores; those numbered from 300 through 499 are upper-division, for juniors and seniors.

Courses numbered 500 and above are intended for and restricted to graduate students. Some courses numbered in the 300's and 400's are open both to graduates and to upper-division undergraduates. Such courses, when acceptable to the major department and the Graduate School, may be part of the graduate program. The Graduate School accepts credit in approved 300-level courses for the minor or supporting fields only; approved 400-level courses are accepted as part of the major. For a listing of approved 300- and 400-numbered courses, consult the *Graduate School Bulletin*.

Undergraduate students of senior standing who wish to register for a 500-level course must obtain permission from both the instructor of the class and the Dean of the Graduate School.

The number in parenthesis following the course title indicates the amount of credit each course carries. In most lecture courses a credit is given for each class hour a week during a quarter; laboratory courses generally carry less credit than the work time required. An asterisk in place of a credit number means that the amount of credit is variable. Hyphens between course numbers mean that credit is not granted until the series of courses is completed. Courses to which the letter J is appended are joint courses in two or more departments and as such grant credit in one of the departments.

Not all of these courses are offered every quarter. Final confirmation of courses to be offered, as well as a list of times and places of class meetings, is given in the *Yearly Time Schedule*.

COURSES OF INSTRUCTION

AMERICAN STUDIES

**Committee: Thomas Pressly, History, Chairman;
Kermit Vanderbilt, English; Roger Stein, English**

Programs in American Studies are conducted at many colleges and universities in the United States, under various forms, and within different organizations. Teaching and research in American Studies have gone on at the University of Washington since the pioneering work of Prof. Vernon L. Parrington in this field, and are presently conducted by numerous faculty members within the College. The University of Washington is an institutional member of the American Studies Association, and facilities are available for instruction and research in numerous aspects of American history and culture.

Students interested in American Studies may wish to plan a course program which emphasizes a broad and integrated approach to the civilization of the United States. The interdepartmental faculty Committee on American Studies will advise qualified students who wish to coordinate work in their major field with related courses in the history and culture of the United States offered in other departments. The courses listed below are considered especially suitable for such an interdisciplinary approach, but the student will want to consult the committee, to work out a program of American Studies adjusted to his particular needs and interests.

Anthropology 210 North American Indians (3)
Anthropology 311 Indian Cultures of the Pacific Northwest (3)
Anthropology 415 The Character of Eskimo Life (3)
Economics 160 American Economic History (5)
Economics 200 Introduction to Economics (5)
Economics 201 Principles of Economics (5)
Economics 330 Government and Business (5)
Economics 442 American Labor History (5)
Economics 462 Development of American Commercial Capitalism (5)
Economics 463 Development of American Industrial Capitalism (5)
English 267 Survey of American Literature (5)
English 361, 362, 363 American Literature (5,5,5)

English 466 Modern American Literature (5)
 Geography 277 Cities of the United States (3)
 Geography 301 Anglo-America (5)
 Geography 302 The Pacific Northwest (3)
 Geography 325 Historical Geography of America (3)
 Geography 402 United States (5)
 Geography 440J Manufacturing (3 or 5)
 Geography 444 Geography of Water Resources (3 or 5)
 Geography 448 Geography of Transportation (5)
 Geography 477 Urban Geography (5)
 History 241 Survey of the History of the United States (5)
 History 341 Foundations of American Civilization (5)
 History 342 The Development of American Civilization to 1877 (5)
 History 343 Modern American Civilization from 1877 (5)
 History 443 The Intellectual History of the United States (5)
 History 447 History of the Civil War and Reconstruction (5)
 History 450 Twentieth-Century America (5)
 History 458 The United States in World Affairs, 1776-1865 (5)
 History 459 The United States in World Affairs, 1865 to the Present (5)
 History 463 The Westward Movement (5)
 History 464 History of Washington and the Pacific Northwest (5)
 Music 347 Music in the United States (2)
 Music 348 Twentieth-Century Music in the Americas (2)
 Philosophy 424 Recent American Philosophy (3)
 Political Science 202 American Government and Politics (5)
 Political Science 351 The American Democracy (5)
 Political Science 370 Government and the American Economy (5)
 Political Science 412 American Political Thought (5)
 Political Science 450 Political Parties and Elections (5)
 Political Science 451 The Legislative Process (5)
 Political Science 460 Introduction to Constitutional Law (5)
 Sociology 352 The Family (5)
 Sociology 362 Race Relations (5)
 Sociology 365 Urban Community (5)
 Sociology 371 Criminology (5)
 Sociology 450 Contemporary American Institutions (5)
 Speech 425, 426 American Public Address (5,5)

ANTHROPOLOGY

Acting Executive Officer: KENNETH E. READ, 345 Savery Hall

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 92). In addition, the Department offers major and minor academic fields for students in the College of Education; see *College of Education Bulletin*.

BACHELOR OF ARTS

In this curriculum, at least 45 credits in anthropology are required, including the following courses: 201, 202, 203; two area courses from 210, 211, 213, 214; one regional course from 311 or 315, 314J or 317, 415, 418; one archaeology course

from 272, 274; the general language course, 355; one physical anthropology course from 480, 481, 482; two topical courses from 432, 434, 435 or 436, 437, 438, 441.

A 2.50 grade-point average in anthropology is required.

If graduate work is contemplated, electives should include two foreign languages.

ADVANCED DEGREES

The Department offers courses leading to the degrees of Master of Arts and Doctor of Philosophy. Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*.

All candidates for advanced degrees must demonstrate basic proficiency in all fields of anthropology in the First Year Examination, given during the third quarter of full residence. The fields are: areal ethnology, archaeology, linguistics, physical anthropology, and social anthropology. A part of the graduate work, with permission, may be devoted to a minor in a related field.

Students whose preparatory work in anthropology is inadequate will be required to take additional undergraduate courses before being admitted to graduate study.

MASTER OF ARTS. Candidates must complete an approved program of courses and pass the master's examination, which will cover areal ethnology and two other fields of anthropology selected from those listed above. The thesis must be in one of the three fields.

DOCTOR OF PHILOSOPHY. Candidates must complete an approved program of courses and pass the general examination, which will cover areal ethnology and, normally, two other fields of anthropology selected from those listed above. The dissertation must be in areal ethnology or one of the selected fields. In unusual cases, permission may be given for coverage of areal ethnology and only one other field. The language requirements must be satisfied at least three quarters before the general examination.

COURSES FOR UNDERGRADUATES

100 Introduction to the Study of Man (5)

Survey of the fields of anthropology. Problems and principles in the study of man's racial, linguistic, and cultural variation. Physical anthropology, linguistics, cultural anthropology, archaeology. Not open to students who have taken 390.

201 Physical Anthropology: Man in Nature (5)

An introduction to physical anthropology. The basic principles of human genetics, the evidence for human evolution, and the study of race. Prerequisite, 100 or sophomore standing.

202 Cultural Anthropology: Comparison and Analysis (5)

Selected communities around the world which illustrate diversity and universality in human cultures. Prerequisite, 100 or sophomore standing.

203 Archaeology: The Dawn of Tradition (5)

An introduction to the prehistory of man. The beginnings of culture in the Old World to the early Iron Age in Western Europe. Prerequisite, 100 or sophomore standing. Greengo

210 North American Indians (3)

Historic Indian cultures and their modern representatives.

211 Oceania (3)

Ethnographic analysis of the islands of the Pacific; the effects of modern contacts. Read

213 Africa (3)

Discussion of the basic cultures. Ottenberg

214 Eurasia (3)

The cultures of peoples of Europe and Asia.

215 Native Peoples of South America (3)

Indigenous cultures of Mexico and Central and South America. Indian elements in modern Latin America. Watson

250 The Nature of Culture (2)

Orientation to cultural anthropology; introduction to primitive and modern societies and their present day relationships. Not open to students who have had 100, 202, or 390.

- 270 Field Course in Archaeology (12)** **Greengo**
Methods and techniques as demonstrated through field experience. (Offered Summer Quarter only.) Prerequisite, 5 credits in anthropology.
- 272 Prehistoric Cultures of North America (3)** **Greengo**
Archaeology from the earliest evidence to the coming of Europeans.
- 274 Prehistoric Cultures of South America (3)** **Greengo**
From earliest evidence of man to the period of conquest by the Spanish. Adaptations in various environments in terms of Early Lithic, Archaic, Classic, and Post-Classic stages. (Offered 1961-62.)
- 280 Theories of Race (2)**
Survey of human heredity; racial history; race differences. Not open to students who have had 100, 201, or 390.
- 311 Indian Cultures of the Pacific Northwest (3)** **Garfield**
Comparative analysis of material culture and social, religious, and political institutions.
- 314J Peoples of Central and Northern Asia (3)**
An ethnological survey of Tibet, Mongolia, Turkestan, and Siberia. Offered jointly with the Far Eastern and Russian Institute. Prerequisite, major standing in anthropology or Far Eastern, or permission.
- 315 Peoples of the Far North (3)** **Garfield**
Arctic and Sub-Arctic peoples of Asia and North America; nonliterate peoples of Old and New World and cultural history of the Far North. (Offered 1962-63.)
- 317 Ethnology of Southeast Asia (3)**
A survey and analysis of the cultural diversity and unity of the peoples of Burma, Thailand, Indo-China, Malaya, Indonesia, and the Philippines. Prerequisites, major standing in anthropology or Far Eastern, or permission. (Offered 1962-63.)
- 320 Primitive Technology (5)** **Greengo, Gunther**
Study of the material culture of primitive peoples with analysis of techniques of manufacture. Museum material is used for laboratory work.
- 332 The Religions of Primitive Peoples (3)** **Read**
A survey of beliefs and practices designed to provide a world ethnographic sample of the materials. Prerequisite, upper-division standing.
- 350 Basis of Civilization (3)** **Watson**
Inventions, discoveries, and technological achievements of the ancient and primitive worlds; the beginnings of science; the impact of civilization.
- 355 Introduction to Language (3)** **Jacobs**
An anthropological introduction to language as basic to culture. Techniques of analysis and study, descriptive and historical.
- 370 Methods and Problems of Archaeology (5)** **Greengo**
Field experience in this locality is included. Prerequisite, 203.
- 371 Analysis of Archaeological Data (3)** **Greengo**
(Offered 1962-63.)
- 380 Primate and Human Evolution (3)** **Avis**
Development and relationships of primates, including man, traced from comparative and paleontological data.
- 415 The Character of Eskimo Life (3)** **Ray**
An analysis of cultures, aboriginal and contemporary, in terms of the shaping of lives of individuals.
- 417 Middle American Civilization (3)** **Greengo**
The high cultures of Mexico, Guatemala, and Northern Central America. Prerequisite, 215. (Offered 1962-63.)
- 418 Ethnology of Meso-America (3)** **Ray**
Indian and peasant cultures from Mexico through Nicaragua. Cultural and social types, acculturation, and relations to national cultures. Prerequisite, major standing in anthropology, Latin-American studies, sociology, or permission.
- 425 Applied Anthropology (3)** **Ottenberg**
Application to social, economic, and political problems. Prerequisite, 202 or 390, or permission.
- 431 Primitive Literature (3)** **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)** **Ray**
Comparative systems, beliefs, and philosophical concepts of nonliterate peoples.
- 433 Primitive Art (3)** **Gunther**
Aesthetic theories and artistic achievements of preliterate peoples. Museum material is used for illustration. Prerequisite, 10 credits in anthropology or art.
- 434 Comparative Morals and Value Systems (3)** **Read**
The sociological functions of morality in simple societies.
- 435, 436 Primitive and Peasant Economic Systems (3,3)**
435: description and analysis of chief conceptual and empirical features of nonmonetary and simple monetary economies.
436: the impact of monetary economy and industrial technology on nonwestern societies.

- 437 Primitive Political Institutions (3)** **Ray**
Comparative analysis of selected nonliterate societies. Prerequisite, 202.
- 438 The Analysis of Kinship Systems (3)** **Read**
Organization and types of kinship structures among western and nonwestern peoples. Prerequisites, 202, 390, or permission.
- 441 Culture and Personality (5)** **Spiro**
The structure of personality; processes and factors in its development in differing types of culture. Prerequisites, 201, 202, or 390, Psychology 100, and junior standing.
- 442 Childhood and Society (3)** **Spiro**
The relationship between child training and the functioning of social systems. Cross-cultural materials are examined. Prerequisite, 202 or 390, or 15 credits in social sciences.
- 451J, 452J, 453J Phonetics and Phonemics (3,3,3)**
Detailed study of speech sounds, mechanism of their production, and structuring of sounds in languages; practical experience with a wide variety of languages; field techniques. Offered jointly with the Committee on Linguistics. Prerequisite, permission.
- 455 Areal Linguistics (3, maximum 6)** **Jacobs**
Linguistic analyses of the languages of a selected area.
- 460 History of Anthropological Theory (3)** **Jacobs, Ottenberg**
Systematic discussion of the development of the science and the personalities behind its theoretical structure. Prerequisite, 15 credits in anthropology.
- 462J, 463J Morphology and Syntax (3,3)**
The structuring of meaningful elements in language; practical experience with a wide variety of languages; field techniques. Offered jointly with the Committee on Linguistics.
- 470 Culture History of Austronesia (3)** **Greengo**
Indonesia and the islands of the southwest Pacific; relationships with southeast Asia, China, and Japan.
- 480 Physical Anthropology: Anatomy (3)** **Avis**
Prerequisites, 201, 202, and 203 or Biology 101J-102J.
- 481 Physical Anthropology: Structure and Function (3)** **Avis**
Prerequisites, 201, 202, and 203 or Biology 101J-102J.
- 482 Physical Anthropology: Genetics (3)** **Avis**
Prerequisites, 201, 202, and 203 or Biology 101J-102J.
- 499 Undergraduate Research (*, maximum 12)**
Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 500, 501, 502 Preceptorial Reading (3,3,3)**
- 505 Field Techniques in Ethnography (3)** **Ray**
- 510 Seminar in Areal Ethnology (3, maximum 9)**
- 511 Cultural Problems of the Northwest Coast (3, maximum 6)** **Garfield**
- 519J Seminar on Asia (3, maximum 6)** **Passin**
The large cultural regions of the continent are studied in succession, with special reference to anthropological problems. Offered jointly, in alternate years, with the Far Eastern and Russian Institute; offered 1962-63.
- 521 Native American Culture History (4)** **Garfield**
- 522 Cultural Problems of Western America (3)** **Ray**
- 524 Seminar in Cultural Problems of Arctic and Sub-Arctic (3, maximum 6)**
- 525 Seminar in Culture Processes (3, maximum 6)** **Watson**
- 527 Acculturation (3)** **Watson**
- 530 Structures and Functions of Oral Literatures (3)** **Jacobs**
(Offered 1962-63.)
- 531 Analysis of Oral Literature (3, maximum 6)** **Garfield**
- 537, 538, 539 Nonwestern Political Systems (6,6,6)**
- 541 Seminar in Psychological Aspects of Culture (3)** **Spiro**
- 542J Personality Patterns in Japanese Culture (3)** **Passin**
Offered jointly with the Far Eastern and Russian Institute. Prerequisite, permission.
- 553J Analysis of Linguistic Structures (3)** **Jacobs, Li**
Offered jointly with the Far Eastern and Russian Institute.
- 555J Methods in Comparative Linguistics (3)**
Offered jointly with the Committee on Linguistics.
- 561 Seminar in Methods and Theories (3, maximum 9)** **Ray, Watson**
- 563 Structural-Functional Analysis (3-9)** **Read, Spiro**
- 565-566-567 History of Anthropological Sciences (3-3-3)**

570 Seminar in Archaeology (3) (Offered 1962-63.)	Greengo
571 Field Course in Archaeology (5) (Offered Summer Quarter only.)	Greengo
580 Anthropology in Contemporary Problems (3) (Offered 1962-63.)	Gunther
581 Anthropological Migration and Population Study (3) (Offered 1962-63.)	
582 Seminar in Race and Genetics (3)	
600 Research (*)	
700 Thesis (*)	

ART

Director: BOYER GONZALES, 102 Art Building

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

For undergraduate students, the School provides four-year curricula in general art, art education, commercial design, industrial design, interior design, painting, sculpture, ceramic art, and printmaking, which lead to bachelor's degrees. The School also offers a major academic field (for elementary education majors) in the College of Education; see *College of Education Bulletin*.

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.

BACHELOR OF ARTS

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 Drawing	3	Art 106 Drawing	3	Art 107 Drawing	3
Art 109 Design	3	Art 110 Design	3	Art 111 Design	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
Health Educ. 110 or 175		Phys. Educ. activity	†	Approved electives	2
Health	2	ROTC	†	Phys. Educ. activity	†
Phys. Educ. activity	†			ROTC	†
ROTC	†				

CURRICULUM FOR THE GENERAL MAJOR. Students interested in costume design should elect as many as possible of the following courses: 369, 370, 371, 479, 480, and 481; and Home Economics 125, 134, 231, 234, 334, and 433.

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 212 History of West. Art	2	Art 213 History of West. Art	2	Art 214 History of West. Art	2
Art 253 Design & Mater.	3	Art 254 Design & Mater.	3	Art 255 Design & Mater.	3
Art 256 Painting	3	Art 257 Painting	3	Art 258 Water Color	3
Approved electives	4	Art 272 Sculpture	3	Art 261 Elem. Int. Des.	2
ROTC	†	Approved electives	6	Approved electives	5
		ROTC	†	ROTC	†

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 201 Ceramic Art or 357 Metal Design	3	Art 202 Ceramic Art or 358 Jewelry Design	3	Art 362 Life	3
Art 360 Life	3	Art 361 Life	3	Approved design	3
Arch. 100 Appreciation	2	Arch. 101 Appreciation	2	Lab. science	5
Econ., pol. sci. or sociol.	5	Lab. science	2	Approved electives	4
Approved electives	2	Approved electives	2		

† See page 23 for Physical Education activity requirement.

‡ See page 23 for ROTC requirement.

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 350 Printmaking or 410 Illustration	3-5	Art 326 History	2	Art 320 History	2
Art 463 Composition	3	Art 464 Composition	3	Approved electives	13
Approved electives	7-9	Approved electives	10		

CURRICULUM IN ART EDUCATION. Students who wish to emphasize high school teaching will follow the curriculum prescribed below. This curriculum includes courses for both major and minor academic fields and meets academic requirements for the provisional certificate, which is granted through the College of Education. Other requirements for certification are described in the *College of Education Bulletin*.

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 105 Drawing	3	Art 106 Drawing	3	Art 107 Drawing	3
Art 109 Design	3	Art 110 Design	3	Art 111 Design	3
Engl. 101 Composition	3	Engl. 102 Composition	3	Art 129 Apprec. of Design	2
Music elective	2	Humanities 102 The Arts	5	Engl. 103 Composition	3
Health Educ. 110 or 175		Phys. Educ. activity	†	Speech 100 Basic Speech Improvement	5
Health	2	ROTC	†	Phys. Educ. activity	†
Approved electives	2			ROTC	†
Phys. Educ. activity	†				
ROTC	†				

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 201 Ceramic Art	3	Art 213 History of West. Art	2	Art 214 History of West. Art	2
Art 212 History of West. Art	2	Art 254 Design & Mater.	3	Art 255 Design & Mater.	3
Art 253 Design & Mater.	3	Art 272 Sculpture	3	Art 258 Water Color	3
Art 256 Painting	3	Lab. science	5	Art 261 Elem. Interior Design	2
Lab. science	5	Approved electives	2	Psych. 100 General	5
ROTC	†	ROTC	†	ROTC	†

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 205 Lettering	3	Art 291 Art Educ. (Craft) 2		Art 292 Art Educ. (Craft) 2	
Art 290 Art Educ. (Craft) 2		Art 300 Design in Leather	2	Art 302 Bookbinding	2
Art 357 Metal Design or 358 Jewelry Design or 350 Printmaking	3	Art 367 Commer. Design	3	Art 362 Life	3
Educ. 188 Principles of Educ.	3	Educ. 209 Educ. Psych.	3	Educ. 370S Sec. Sch. Meth.	3
Approved electives	5	Approved electives	4	Educ. 405 Prob. of Adoles.	3
				Approved electives	2

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 463 Composition	3	Educ. 319 Super. of Elem. Art Educ.	2	Prev. Med. 461 School & Comm. Health	5
Art Hist. elective	2	Educ. 371X or S Directed Teaching	12	Educ. elective	3
Educ. 320 Teachers' Course in Art	3			Approved electives	7
Education elective	3				
Approved electives	5				

CURRICULUM IN COMMERCIAL DESIGN

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 212 Hist. of West. Art 2		Art 213 Hist. of West. Art 2		Art 205 Lettering	3
Art 253 Design & Mater.	3	Art 254 Design & Mater.	3	Art 214 Hist. of West. Art 2	3
Art 256 Painting	3	Art 257 Painting	3	Art 255 Design & Mater.	3
Art 272 Sculpture	3	Adver. 226 Intro. to Advertising	3	Art 258 Water Color	3
Lab. science	5	Lab. science	5	Psychol. 100 General	5
ROTC	†	ROTC	†	ROTC	†

† See page 23 for Physical Education activity requirement.

‡ See page 23 for ROTC requirement.

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 265 Draw. & Paint.	3	Art 266 Draw. & Paint.	3	Art 309 Portrait	3
Art 360 Life	3	Art 361 Life	3	Art 362 Life	3
Art 366 Commer. Design	3	Art 367 Commer. Design	3	Art 368 Commer. Design	3
Arch. 100 Appreciation	2	Arch. 101 Appreciation	2	Econ. 200 Introduction	5
Approved electives	3	Approved electives	3		

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 410 Illustration	5	Art Hist. elective	2	Art 468 Commer. Design	5
Art 466 Commer. Design	5	Art 467 Commer. Design	5	Art 481 Fashion Illus.	2
Art 479 Fashion Illus.	2	Art 480 Fashion Illus.	2	Art Hist. elective	2
Approved electives	3	Approved electives	5	Approved electives	5

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; 280 or 281 may be substituted for 282 in that year.

CURRICULUM IN INDUSTRIAL DESIGN

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 105 Drawing	3	Art 106 Drawing	3	Art 107 Drawing	3
Art 109 Design	3	Art 110 Design	3	Art 111 Design	3
Arch. 100 Appreciation	2	Arch. 101 Appreciation	2	Art 129 Apprec. of Design	2
Engl. 101 Composition	3	Engl. 102 Composition	3	Engl. 103 Composition	3
Health Educ. 110 or 175	2	Approved electives	5	Math. 103 Intermed. Alg. and Trig. or 104 Plane Trig.	3
Health	2	Phys. Educ. activity	†	Phys. Educ. activity	†
Phys. Educ. activity	†	ROTC	†	ROTC	†
ROTC	†				

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 253 Design & Mater.	3	Art 254 Design & Mater.	3	Art 255 Design & Mater.	3
Arch. 314 Drawing	3	Arch. 315 Drawing	3	Arch. 316 Drawing	3
Mech. Engr. 201 Metal Casting	1	Gen. Engr. 101 Engr. Draw.	3	Mech. Engr. 203 Metal Machining	1
Physics 101 General	4	Mech. Engr. 202 Welding	1	Physics 103 General	4
Physics 107 Lab.	1	Physics 102 General	4	Physics 109 Lab.	1
Approved electives	2	Physics 108 Lab.	1	ROTC	†
ROTC	†	ROTC	†		

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 212 Hist. of West. Art	2	Art 205 Lettering	3	Art 214 Hist. of West. Art	2
Art 316 Des. for Industry	3	Art 213 Hist. of West. Art	2	Art 282 Furn. Design	3
Chemistry or elective	5	Art 317 Des. for Industry	3	Art 318 Des. for Industry	3
Econ. 200 Introduction	5	Chemistry or elective	5	Bus. Law 307 Business Law	3
		Mktg. 301 Principles	5	Mech. Engr. 342 Indus. Materials & Processes	3
				Mech. Engr. 410 Engr. Admin.	3

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 201 Ceramic Art	3	Art 326 History	2	Art 272 Sculpture	3
Art 445 Adv. Indus. Des.	5	Art 357 Metal Design	3	Art 320 History of Mod. Sculp.	2
Adver. 226 Intro to Advertising	3	Art 446 Adv. Industrial Design	5	Art 447 Adv. Indus. Des.	5
Psych. 100 General	5	Adver. 340 Advertising Procedures	5	Gen. Engr. 351 Inventions and Patents	1
				Speech 327 Extempore Speaking	3

† See page 23 for Physical Education activity requirement.

‡ See page 23 for ROTC requirement.

CURRICULUM IN INTERIOR DESIGN

Second Year

FIRST QUARTER	CREDITS
Art 280 Furn. Design	3
Art 283 History	2
Arch. 100 Appreciation . . .	2
Arch. 124 Design, Gr. I . . .	6
ROTC	†

SECOND QUARTER	CREDITS
Art 281 Furn. Design	3
Arch. 101 Appreciation . . .	2
Arch. 125 Design, Gr. I . . .	6
Approved electives	5
ROTC	†

THIRD QUARTER	CREDITS
Art 262 Essentials of Int. Design	2
Art 282 Furn. Design	3
Arch. 105 The House	2
Arch. 126 Design, Gr. I . . .	6
Approved electives	2
ROTC	†

Third Year

FIRST QUARTER	CREDITS
Art 212 Hist. of West. Art . .	2
Art 310 Int. Design	5
Lab. science	5
Approved electives	3

SECOND QUARTER	CREDITS
Art 213 Hist. of West. Art . .	2
Art 311 Int. Design	5
Lab. science	5
Approved electives	3

THIRD QUARTER	CREDITS
Art 214 Hist. of West. Art . .	2
Art 312 Int. Design	5
Econ., pol. sci., or sociol. . .	5
Approved electives	3

Fourth Year

FIRST QUARTER	CREDITS
Art 472 Adv. Int. Design . . .	5
Approved electives	10

SECOND QUARTER	CREDITS
Art 326 History	2
Art 473 Adv. Int. Design . . .	5
Home Ec. 125 Textiles	3
Approved electives	5

THIRD QUARTER	CREDITS
Art 320 History Mod. Sculpt.	2
Art 474 Adv. Int. Design . . .	5
Home Ec. 329 Hand Weaving	2
Approved electives	6

CURRICULUM IN PAINTING

Second Year

FIRST QUARTER	CREDITS
Art 212 Hist. of West. Art . .	2
Art 256 Painting	3
Art 265 Draw. & Paint. . . .	3
Arch. 100 Appreciation . . .	2
Approved electives	5
ROTC	†

SECOND QUARTER	CREDITS
Art 213 Hist. of West. Art . .	2
Art 257 Painting	3
Art 266 Draw. & Paint. . . .	3
Art 272 Sculpture	3
Arch. 101 Appreciation . . .	2
Approved electives	2
ROTC	†

THIRD QUARTER	CREDITS
Art 214 Hist. of West. Art . .	2
Art 258 Water Color	3
Art 267 Draw. & Paint. . . .	3
Lab. science	5
Approved electives	2
ROTC	†

Third Year

FIRST QUARTER	CREDITS
Art 360 Life	3
Art 375 Adv. Painting	3
Lab. science	5
Approved electives	3

SECOND QUARTER	CREDITS
Art 326 History	2
Art 361 Life	3
Art 376 Adv. Painting	3
Econ., pol. sci., or sociol. . .	5
Approved electives	2

THIRD QUARTER	CREDITS
Art 362 Life	3
Art 377 Adv. Painting	3
Approved design	6
Advanced sculpture	3

Fourth Year

FIRST QUARTER	CREDITS
Art 307 Portrait Painting . . .	3
Art 463 Composition	3
Approved electives	9

SECOND QUARTER	CREDITS
Art 308 Portrait Painting . . .	3
Art 464 Composition	3
Approved electives	9

THIRD QUARTER	CREDITS
Art 309 Portrait Painting . . .	3
Art 320 History Sculpt.	2
Art 465 Composition	3
Approved electives	7

CURRICULUM IN SCULPTURE

Second Year

FIRST QUARTER	CREDITS
Art 212 Hist. of West. Art . .	2
Art 256 Painting	3
Art 272 Sculpture	3
Arch. 100 Appreciation . . .	2
Approved electives	5
ROTC	†

SECOND QUARTER	CREDITS
Art 213 Hist. of West. Art . .	2
Art 257 Painting	3
Art 273 Sculpture	3
Arch. 101 Appreciation . . .	2
Lab. science	5
ROTC	†

THIRD QUARTER	CREDITS
Art 214 Hist. of West. Art . .	2
Art 253 Design & Mater. . . .	3
Art 274 Sculpture	3
Art 320 History Mod. Sculpt.	2
Lab. science	5
ROTC	†

† See page 23 for ROTC requirement.

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 201 Ceramic Art	3	Art 202 Ceramic Art	3	Art 324 Sculpture	3
Art 322 Sculpture	3	Art 323 Sculpture	3	Art 334 Adv. Sculpture	3
Art 332 Adv. Sculpture	3	Art 326 History	2	Art 362 Life	3
Art 360 Life	3	Art 333 Adv. Sculpture	3	Econ., pol. sci., or sociol.	5
Approved electives	3	Art 361 Life	3	Approved electives	1

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 436 Sculpture	5	Art 437 Sculpture	5	Art 438 Sculpture	5
Advanced sculpture	7	Approved electives	10	Approved electives	10
Approved electives	7				

CURRICULUM IN CERAMIC ART

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 105 Drawing	3	Art 106 Drawing	3	Art 107 Drawing	3
Art 109 Design	3	Art 110 Design	3	Art 111 Design	3
Engl. 101 Composition	3	Engl. 102 Composition	3	Engl. 103 Composition	3
Health Educ. 110 or	2	Lab. science	5	Lab. science	5
175 Health	2	Approved electives	2	Phys. Educ. activity	†
Phys. sci. or lab. sci.	5	Phys. Educ. activity	†	ROTC	†
Phys. Educ. activity	†	ROTC	†		
ROTC	†				

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 201 Ceramic Art	3	Art 202 Ceramic Art	3	Art 203 Ceramic Art	3
Art 212 Hist. of West. Art	2	Art 213 Hist. of West. Art	2	Art 214 Hist. of West. Art	2
Art 253 Design & Mater.	3	Art 254 Design & Mater.	3	Art 255 Design & Mater.	3
Soc. science elective	5	Humanities elective	5	Soc. sci. elective	5
Approved electives	2	Approved electives	5	Approved electives	2
ROTC	†	ROTC	†	ROTC	†

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 256 Painting	3	Art 273 Sculpture	3	Art 258 Water Color	3
Art 272 Sculpture	3	Art 354 Adv. Ceramic Art	5	Art 261 Inter. Design	2
Art 353 Adv. Ceramic Art	5	Art history elective	2	Art 274 Sculpture	3
Art history elective	2	Approved electives	6	Art 355 Adv. Ceramic Art	5
Approved electives	2		—	Art history elective	2
				Approved electives	2

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 357 Metal Design	3	Art 358 Jewelry Design	3	Art 359 Enameling	3
Art 360 Life	3	Art 361 Life	3	Art 487 Adv. Ceramic Art	5
Art 485 Adv. Ceramic Art	5	Art 486 Adv. Ceramic Art	5	Art 428 Oriental Ceramic	2
Approved electives	4	Approved electives	5	Art	2
				Approved electives	4

CURRICULUM IN PRINTMAKING

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 212 Hist. of West. Art	2	Art 213 Hist. of West. Art	2	Art 214 Hist. of West. Art	2
Art 253 Design & Mater.	3	Art 254 Design & Mater.	3	Art 255 Design & Mater.	3
Art 256 Painting	3	Art 257 Painting	3	Art 258 Water Color	3
Arch. 100 Appreciation	2	Arch. 101 Appreciation	2	Approved electives	7
Lab. science	5	Lab. science	5	ROTC	†
ROTC	†	ROTC	†		

† See page 23 for Physical Education activity requirement.

‡ See page 23 for ROTC requirement.

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 201 Ceramic Art or		Art 202 Ceramic Art		Art 272 Sculpture	3
357 Metal Design	3	or 358 Jewelry Design	3	Art 352 Printmaking—	
Art 327 Hist. of		Art 351 Printmaking—		Serigraph	3
Printmaking	2	Etching	3	Art 362 Life	3
Art 350 Intro. to		Art 361 Life	3	Art Hist. elective	2-3
Printmaking	3	Art 383 Art of China	3	Approved electives	3-4
Art 360 Life	3	Approved electives	3		
Approved electives	3				

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 450 Adv. Printmaking	5	Art 451 Adv. Printmaking	5	Art 320 Hist. of Sculpture	2
Art 463 Composition	3	Art 464 Composition	3	Art 452 Adv. Printmaking	5
Approved electives	7	Approved electives	7	Art 465 Composition	3
				Philos. 445 Philos. of Art	5

MASTER OF FINE ARTS

Students who intend to take a master's degree must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. The School of Art requires that applicants for candidacy have a grade average of B in the undergraduate art major.

The thesis is of the nature of a project, such as a series of paintings, prints, sculpture, or ceramic objects, the illustration of a book, design in metal, fabric, or other equivalent project executed with a background of research.

COURSES FOR UNDERGRADUATES

- 100 Introduction to Art (5)**
Lecture and studio work. For nonmajors.
- 105, 106, 107 Drawing (3,3,3)**
Perspective, light and shade, composition, pencil and charcoal. Prerequisites, 105 for 106; 106 for 107.
- 109, 110, 111 Design (3,3,3)**
Art structure as the basis for creative work. Organization of line, space, and color. Lectures, discussion, and supplementary reading. Prerequisites, 109 for 110; 110 for 111.
- 115, 116, 117 Laboratory Drawing (3,3,3)** **Brazeau**
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.
- 129 Appreciation of Design (2)** **Penington**
Lectures on design fundamentals, illustrated with slides and paintings, pottery, textiles, etc. Reading and reference work.
- 151 Figure Sketching (1)** **Welman**
Sketching from the posed model. Prerequisite, 3 credits in drawing.
- 201, 202, 203 Ceramic Art (3,3,3)** **Myers, Sperry**
Pottery design and construction: hand processes, coil, slab, glazing, packing and firing kiln. Prerequisite, sophomore standing in art, or 100.
- 205 Lettering (3)** **Anderson, Welman**
Design and composition of letters. Prerequisite, sophomore standing in art, or 100.
- 212, 213, 214 History of Western Art Through the Renaissance (2,2,2)** **Reed**
Survey of main developments in painting and sculpture from prehistoric times. Illustrated lectures. 212, Ancient World; 213, Medieval; 214, Renaissance. Prerequisite, sophomore standing.
- 253, 254, 255 Design and Materials (3,3,3)**
Materials as a factor in design. Class experimentation and research. Prerequisites, 107 and 111.
- 256, 257 Painting (3,3)**
Oil painting: still life and landscape. Prerequisites, 107 and 111.
- 258 Water Color (3)** **Mason, Patterson, Tsutakawa**
Prerequisites, 256 and 257 or permission.
- 259 Advanced Water Color (3)** **Mason, Patterson, Tsutakawa**
Prerequisite, 258.
- 261 Elementary Interior Design (2)** **W. Hill**
Problems, including floor and wall plans at scale, furnishings, and color schemes.

- 262 Essentials of Interior Design (2)** **Footo**
Illustrated lectures.
- 265, 266, 267 Drawing and Painting (3,3,3)**
Drawing and painting in oil or water color, outdoor sketching, and sketching from the model. Prerequisites, 107 and 111.
- 272, 273, 274 Sculpture (3,3,3)** **Du Pen, Tsutakawa**
Fundamentals of composition in the round and in relief. Creative work is stressed. Prerequisites, 107 and 111.
- 280, 281, 282 Furniture Design (3,3,3)** **Footo**
Study of materials and construction; execution of working drawings, color plates, and scale models. 280 is taken concurrently with 283. Prerequisites, 107 and 111.
- 283 History of Furniture and Interior Styles (2)** **Footo**
Illustrated lectures on the development of furniture and its architectural backgrounds, from the Renaissance to the present.
- 290, 291, 292 Art Education (2,2,2)**
General crafts for those preparing to teach art in the public schools. Exploration with a variety of materials suitable as educational media. Prerequisite, sophomore standing in art, or 100.
- 300 Design in Leather (2)** **Fuller**
Creative exploration through design and construction of simple to more complex problems in leather. Prerequisite, junior standing in art, or permission.
- 302 Bookbinding (2)** **Johnson**
Prerequisite, art major or permission.
- 307, 308, 309 Portrait Painting (3,3,3)**
Prerequisite, 362.
- 310, 311, 312 Interior Design (5,5,5)** **Footo**
Scale drawings of floor and wall plans; perspective; study of color and texture. Prerequisites, 262, Architecture 126.
- 316, 317, 318 Design for Industry (3,3,3)** **Smith**
Product design, working drawings, models, presentation drawings, product analysis, display, marketing. Prerequisites, junior standing in industrial design; 316 for 317; 317 for 318.
- 320 History of Modern Sculpture (2)** **Du Pen**
Since the Renaissance; lectures and slides. Prerequisite, sophomore standing in art.
- 322, 323, 324 Sculpture (3,3,3)** **Du Pen**
Prerequisites, 274 or permission.
- 326 History of Painting Since the Renaissance (2)** **Moseley**
Illustrated lectures. Prerequisite, junior standing in art.
- 327 History of Printmaking (2)** **Alps**
Origins and history of the woodcut, wood and metal engraving, etching, aquatint, intaglio, lithography and serigraphy in Western and Oriental art, contemporary printmaking.
- 332, 333, 334 Advanced Sculpture (3,3,3)** **Du Pen**
Prerequisite, 324.
- 340 Design for Printed Fabrics (3)** **Penington**
Hand-block and silk-screen printing; mass-production design. Prerequisite, 255 or permission.
- 341J Greek Archaeology and Art (2)**
Survey of major art forms from the Mycenaean to the Hellenistic period, with special attention to modern archaeological methods and excavations, illustrated by slides. Offered jointly with the Department of Classics.
- 342J Roman Archaeology and Art (2)**
Survey of major art forms, with special attention to modern archaeological methods and excavations, illustrated by slides. Offered jointly with the Department of Classics.
- 343J Greek Sculpture (2)**
An intensive study from the archaic to the Hellenistic period, illustrated by slides. Offered jointly with the Department of Classics. (Not offered 1962-63.)
- 350 Introduction to Printmaking (3)** **Alps**
Studio problems in design and composition, exploration and experimentation in media of etching, lithography, serigraphy, and the woodcut. Prerequisite, junior standing in art, or permission.
- 351 Printmaking—Etching (3)** **Alps**
Design and composition in the various media employed in working on metal plates. Prerequisite, 350.
- 352 Printmaking—Serigraph (3)** **Alps**
Design and composition in the medium of the silk screen. Prerequisite, 350.
- 353, 354, 355 Advanced Ceramic Art (5,5,5)** **Sperry**
Pottery design and construction with emphasis on design, shaping, decorating, and glazing. Prerequisite, 203.
- 357 Metal Design (3)** **Penington**
Construction includes processes of raising, soldering, forging in copper, pewter, silver. Lectures and research on historic and contemporary examples. Prerequisite, junior standing in art, or permission.

- 358 Jewelry Design (3)** Penington
Jewelry design and construction, including stone setting and forging in silver and gold. Lectures and research on historic and contemporary examples. Prerequisite, junior standing in art, or permission.
- 359 Enameling (3)** Penington
Enamel design for metal work or jewelry, champlevé, Plique-à-jour, Limoges, Cloisonné on copper, silver, or gold. Prerequisite, 357 or 358.
- 360, 361, 362 Life (3,3,3)**
Drawing and painting from the model. Prerequisites, 256, 257, and 258.
- 366, 367, 368 Commercial Design (3,3,3)** Erickson
366: advanced lettering; 367: poster design; 368: display design. Prerequisites, 205 for 366; 366 for 367; 367 for 368.
- 369, 370, 371 Costume Design (2,2,2)** Fujikado
Design of clothing with emphasis on line, color, materials, use. Prerequisites, 107, 111, Home Economics, 234.
- 375, 376, 377 Advanced Painting (3,3,3)**
Prerequisites, 265, 266, and 267.
- 382 Art of India (3)** Rogers
- 383 Art of China (3)** Rogers
- 384 Art of Japan and Korea (3)** Rogers
- 386 Art of the Ancient Near East (3)** Rogers
- 387 Islamic Art (3)** Rogers
- 388 Medieval Art (3)** Rogers
- 402J Greek and Roman Pottery (3)** Edmonson
The shapes, fabrics, and decorations from the Neolithic period to the sixth century A.D. Offered jointly with the Department of Classics. (Offered alternate years.)
- 404J Greek and Roman Sculpture (3)** Edmonson
The history and development of Greek sculpture and sculptors, their Roman copyists, and Roman portraits and sarcophagi. Emphasis will be on Greek sculpture of the fifth century B.C. Offered jointly with the Department of Classics. (Offered alternate years; offered 1962-63.)
- 410 Illustration (5)**
Book and magazine illustration. Composition and history. Prerequisite, senior standing in art.
- 423, 424, 425 Art History and Criticism (2,2,2)** Rogers
A critical discussion of significant material from the Renaissance through the most recent publications, with emphasis on specific periods and works of art. (Offered alternate years.)
- 426 Origins of Modern Art (2)** Rogers
Prerequisite, 326.
- 427 Art Since Cezanne (2)** Rogers
Prerequisite, 326.
- 428 Oriental Ceramic Art (2)** Rogers
Chinese, Korean, and Japanese ceramics from neolithic times to the present. Prerequisites, 383 and 384, or major in ceramic art.
- 436, 437, 438 Sculpture Composition (5,5,5)** Du Pen
Imaginative design; problems met in professional practice. Prerequisites, 332, 333, and 334.
- 445, 446, 447 Advanced Industrial Design (5,5,5)** Del Giudice
Market analysis and selected professional problems in industrial design. Consultation techniques; psychological, sociological, and economic factors involved in designing for consumer acceptance. Prerequisites, 318 for 445; 445 for 446; 446 for 447.
- 450, 451, 452 Advanced Printmaking (5,5,5)** Alps
Lithography, etching, serigraph, linoleum block, woodcut, and wood-engraving. Prerequisite, 352 or permission.
- 457, 458, 459 Advanced Metal and Jewelry (3,3,3)** Penington
Prerequisites, 357, 358, 359. Individual problems in metal design and construction.
- 453, 464, 465 Composition (3,3,3)** Brazeau, Hixson
Development of individuality in painting through creative exercises. Prerequisite, 3 credits from 360, 361, or 362.
- 466, 467, 468 Commercial Design (5,5,5)** Welman
Composition in advertising art; expression of ideas in terms of design. Variety of mediums and reproduction processes. Prerequisite, 368.
- 472, 473, 474 Advanced Interior Design (5,5,5)** Foote
Problems related to contemporary needs; research in period styles. For interior design students. Prerequisite, 312.
- 479, 480, 481 Fashion Illustration (2,2,2)** Caplan
Prerequisite, junior standing in art, or permission.
- 485, 486, 487 Advanced Ceramic Art (5,5,5)** Sperry
Pottery design and construction; stone ware; clay bodies; glazes. Prerequisite, 355.

- 490 Art Education in the Schools (3)** **Johnson**
 Planned especially for administrators and teachers needing help in problems relating to the teaching of art in the schools. Working in materials will be integrated with lectures and discussions. No previous art experience necessary.
- 498 Individual Projects (3 or 5, maximum 15)**
 Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 500, 501, 502 Seminar in Art Education (3 or 5), (3 or 5), (3 or 5)** **Johnson**
 Special problems in the teaching and supervision of art in the public schools. Prerequisite, graduate standing in art education.
- 507, 508, 509 Advanced Portrait Painting (3,3,3)**
- 510 Advanced Illustration (3 or 5)**
 Prerequisite, graduate standing.
- 522, 523, 524 Advanced Sculpture (3 or 5, 3 or 5, 3 or 5)**
- 530, 531, 532 Advanced Design (3 or 5, 3 or 5, 3 or 5)**
 Prerequisite, graduate standing.
- 550, 551, 522 Advanced Printmaking (3 or 5, 3 or 5, 3 or 5)** **Alps**
- 553, 554, 555 Advanced Ceramic Art (3 or 5, 3 or 5, 3 or 5)**
- 560, 561, 562 Advanced Life Painting (3 or 5, 3 or 5, 3 or 5)**
- 563, 564, 565 Composition (3 or 5, 3 or 5, 3 or 5)**
- 600 Research (*)**
- 700 Thesis (*)**

ASTRONOMY

Professor: THEODOR S. JACOBSEN, Observatory

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

COURSES FOR UNDERGRADUATES

- 101 Astronomy (5)** **Jacobsen**
 Celestial sphere, solar system, sidereal universe.
- 411 Spherical and Practical Astronomy (5)** **Jacobsen**
 Spherical triangles, precession, aberration. Prerequisites, 101 or equivalent, calculus, permission.
- 421 Solar System and Dynamical Astronomy (5)** **Jacobsen**
 Planetary motion, special subjects. Prerequisites, 101 or equivalent, calculus, permission.
- 431 Stellar Astronomy and Astrophysics (5)** **Jacobsen**
 Stellar spectra; motions, types of stars. Prerequisites, 101 or equivalent, calculus, physics, permission.
- 499 Undergraduate Research (*, maximum 15)** **Jacobsen**
 Current or special astronomical problems. Prerequisite, permission.

BASIC MEDICAL SCIENCE

Adviser, 121 Miller Hall

The program in basic medical science is designed to provide the bachelor's degree for students who enter the School of Medicine or of Dentistry at the University of Washington 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 have taken his preprofessional course at the University of Washington. He must also present a grade-point average of 2.50 or above.

Applicants for the degree must have completed the following undergraduate

requirements: general chemistry, through 160 and 170 (14 to 19 credits); organic chemistry, either of the complete sequences (10 or 13 credits); Zoology 111, 112, and 456 or 453-454; physics, a complete 15-credit sequence; mathematics, trigonometry (if not taken in high school), college algebra and, as a recommended course, analytic geometry and calculus; one foreign language (15 credits); required English composition, physical education activity, and ROTC courses; group requirements of the College; and upper-division courses (30 credits), of which at least 15 must be in one of the major fields in the College of Arts and Sciences. These upper-division courses should be chosen carefully and in consultation with the adviser to avoid duplicating courses which will be taught later in the professional curriculum.

For the fourth-year requirements, a maximum of 45 credits in subjects taught in the first-year curriculum at the University of Washington School of Medicine or Dentistry may be applied toward the degree.

BIOLOGY

Courses in biology are administered jointly by the Departments of Botany, Genetics, and Zoology (below and pages 94 and 199). There is no biology curriculum leading to a degree, 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 major academic field in biology as well as a major academic field for elementary education majors; see *College of Education Bulletin*.

BOTANY

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

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 major academic field in biology is offered for students in the College of Education, in addition to a minor academic field in botany; see *College of Education Bulletin*.

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

Students registering in 111 will be examined, with respect to their background in biology and other sciences, and special arrangements made to encourage the progress of those students who have exceptional preparation.

BACHELOR OF SCIENCE

In this elective curriculum, 40 credits in botany are required. Courses must include 111, 112, 113; 371 or 472; Biology 451; and a minimum of one year of college chemistry (the sequence Chemistry 140, 150, 151, 102 or its equivalent). More advanced organic chemistry is recommended in lieu of Chemistry 102 for students contemplating postgraduate studies.

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 as outlined in the *Graduate School Bulletin*. Organic chemistry is a requirement for an advanced degree in the Department of Botany.

COURSES FOR UNDERGRADUATES

BIOLOGY

101J-102J General Biology (5-5)

Kohn, Kruckeberg, Orians

Principles 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)

Gartler

For premedical students and those majoring in anthropology, psychology, and related fields dealing with human variation. Prerequisites, Botany 111 or Zoology 111 (or equivalent), and junior standing.

401 Cytology (3)

Cloney

Structure and function of the cell. Prerequisite, 451 or permission.

401L Cytology Laboratory (2)

Cloney

Must be accompanied by 401.

451 Genetics (3)

Roman

Prerequisite, 10 credits in biological science.

451L Genetics Laboratory (2)

Must be accompanied by 451.

452 Cytogenetics (3)

Roman

Chromosomal behavior in relation to genetics. Prerequisite, 451 or permission.

452L Cytogenetics Laboratory (2)

Hawthorne

Must be accompanied by 452.

453 Topics in Genetics (2, maximum 6)

Current problems and research. Prerequisites, 451, organic chemistry, or permission.

454 Evolutionary Mechanisms (3)

Kruckeberg

Mutation, isolation, and natural selection as determinants of evolutionary change; emphasis on plants. (Offered alternate years; offered 1962-63.) Prerequisite, 451.

472 Principles of Ecology (3)

Edmondson

Population biology, competition, predation, symbiosis, sociality, and relationship of community to environment. Prerequisites, Botany or Zoology 112, or permission, and upper-division standing.

472L Ecology Laboratory (2)

Edmondson

Must be accompanied by 472. Prerequisite, permission.

473 Limnology (5)

Edmondson

Biological, physical, and chemical features of lakes. Prerequisites, Botany or Zoology 112, one year of college chemistry, and upper-division standing.

BOTANY

105 Practical Botany (5)

Blaser, Walker

General theory and practice as applied to selection and cultivation of ornamental plants. Not open to those who have had 111. (Offered Summer Quarter only.)

111 Elementary Botany (5)

Structure, physiology, and reproduction of plants, with emphasis on seed producing groups. Open to those who have had 105 only by permission of instructor.

112 Elementary Botany (5)

Blaser, Neushul

Structure and relationships of the major plant groups. Prerequisite, 111, one year of high school botany, Biology 101J-102J, or Zoology 111 and 112.

113 Elementary Botany (5)

Hitchcock

An introduction to plant classification with emphasis on the local flora.

114, 115 Forestry Botany (3,3)

Blaser, Hitchcock

114: structure of seed plants. 115: morphology of the plant kingdom.

201, 202, 203 Plant Propagation (2,2,2)

Muhlick

201: propagation by seeds, cuttings, grafts, etc. 202: identification and culture of garden plants. 203: care and treatment of seeds and seedlings. Prerequisite for each course, 111, 114, or Biology 101J-102J, or permission.

216 Physiology of Seed Plants (4)

Walker

This course intended for majors in Forestry. Prerequisites, 114 and Chemistry 102.

331 Ornamental Plants (3)

Kruckeberg

Identification and use of trees and shrubs; plant exploration and origin of ornamentals. Prerequisite, 5 credits in biological science.

332 Taxonomy Field Trip (*, maximum 27)

361 Forest Pathology (5)

Stuntz

Common wood-destroying fungi and diseases of forest trees. Prerequisite, 115 or equivalent.

371 Elementary Plant Physiology (5)

Meeuse, Walker

For nonmajors. Not open to those who have had 216. Prerequisites, 111 and Chemistry 151 and 102, or permission.

- 431, 432 Taxonomy (5,5)** **Hitchcock**
The flowering plants. (Offered alternate years; offered 1961-62.) Prerequisite, 113 or equivalent.
- 441, 442, 443 Morphology (5,5,5)** **Blaser, Noushul**
441 and 442: vascular plants. 443: Algae and Bryophytes. (Offered alternate years; offered 1962-63.) Prerequisite for each course, 112 or equivalent.
- 444 Plant Anatomy (5)** **Blaser**
Tissues; origin and development of the stele. (Offered alternate years; offered 1961-62.) Prerequisite, 111.
- 445 Marine Algology (6)** **Noushul**
(Offered at Friday Harbor, Summer Quarter only.) Prerequisites, 112 and staff permission.
- 446 Algology (5)** **Noushul**
Classification, recognition, and cultivation of marine and freshwater algae. (Offered alternate years; offered 1961-62.) Prerequisite, 112 or 20 credits in biology.
- 461 Yeasts and Molds (5)** **Stuntz**
Classification, recognition, cultivation, and relationship to industries and man. Prerequisite, 15 credits in botany, microbiology, or zoology.
- 462, 463 Mycology (5,5)** **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)** **Walker**
Soil and culture solutions as nutrient media for the growth of plants. (Offered alternate years; offered 1962-63.) Prerequisites, 111 or 216, 10 credits in chemistry, and permission.
- 472 Plant Physiology (5)** **Meeuse, Walker**
Recommended for biology majors. Not open to those who have taken 371. Prerequisites, 111 or 216, and completion of or concurrent registration in Chemistry 232 and 242.
- 473 Plant Physiology (3)** **Meeuse**
Metabolism of organic compounds with emphasis on photosynthesis and cellular respiration. (Offered alternate years; offered 1962-63.) Prerequisites, 472 or 371, Chemistry 232 and 242, or permission.
- 473L Plant Physiology Laboratory (2)** **Meeuse**
Must be accompanied by 473.
- 474 Plant Physiology (3)** **Walker**
Permeability, mineral nutrition, water relations, and growth. (Offered alternate years; offered 1961-62.) Prerequisites, 472, or either 216 or 371 or equivalent, and permission.
- 474L Plant Physiology Laboratory (2)** **Walker**
Must be accompanied by 474.
- 475 Problems in Algal Physiology (6)** **Meeuse**
Metabolic activity of the algae. (Offered at Friday Harbor, Washington, Summer Quarter only.) Prerequisites, 472 or 371, Chemistry 232, 242, and permission.
- 498 Special Problems in Botany (1-15)**
Prerequisite, permission of instructor.

COURSES FOR GRADUATES ONLY

BIOLOGY

- 501 Advanced Cytology (5)** **Cloney**
(Offered alternate years; offered 1961-62.)
- 508 Cellular Physiology (3)** **Whiteley**
The cell membrane and permeability, cytoplasmic physiology, intracellular energetics and biosynthesis, physiology of cell division, cell movement. Prerequisite, Zoology 400 or permission.
- 508L Cellular Physiology Laboratory (2)** **Whiteley**
Prerequisite, concurrent registration in Biology 508 or 509, and permission.
- 509 Cellular Physiology (3)** **Whiteley**
Chemistry and physiology of the interkinetic and dividing nucleus, nucleocytoplasmic interactions, physiology of differentiated cells. Prerequisite, Zoology 400 or permission. (Biology 508 and 509 may be elected separately, or in either sequence.)
- 551 Genetics of Microorganisms (3)** **Stadler**
Prerequisite, 451 or permission.
- 552 Genetics of Microorganisms Laboratory (3)** **Stadler**
Methods of studying inheritance in fungi, bacteria, and viruses. Prerequisite, Biology 551 or permission.
- 573 Topics in Limnology (2)** **Edmondson**
May be repeated for credit.

BOTANY**520 Seminar (1)**

Prerequisite, permission.

521 Topics in Plant Physiology (2, maximum 10)

Modern trends and methods in plant physiology. Prerequisite, permission.

Meeuse, Walker**522 Seminar in Morphology and Taxonomy (*, maximum 5)**

Current research and trends in morphology and taxonomy of higher plants. Comparison of classical with modern approaches and concepts. Prerequisite, permission.

600 Research (*)

Original investigations of special problems in algology, genetics, morphology, mycology, taxonomy, or plant physiology.

700 Thesis (*)**CHEMISTRY****Executive Officer: GEORGE H. CADY, 101 Bagley Hall**

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 a professional career or for graduate study, 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 major and minor academic fields for students in the College of Education; see *College of Education Bulletin*.

Students planning to major in chemistry are advised to take $\frac{1}{2}$ unit each of algebra and trigonometry in addition to the requirements for entrance to the College of Arts and Sciences.

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

BACHELOR OF SCIENCE

Programs constituting the prescribed curriculum and leading to the Bachelor of Science degree are designed to prepare the student for a professional career in such diverse fields as chemical physics, nuclear chemistry, instrumental analysis, industrial chemistry, biochemistry, and the chemistry of medicinals as well as in the field of analytical, inorganic, organic, and physical chemistry.

After the basic courses in general chemistry, physics, and mathematics, the student will take intermediate courses selected appropriately from the following groups: mathematics and physics, physical chemistry, analytical, inorganic, and nuclear chemistry, organic chemistry, and biochemistry (offered in the Department of Biochemistry). He will later be encouraged to enroll in advanced courses (including undergraduate research) related to his intended area of specialization.

Owing to the diversity of options available, it is not feasible to present definite course programs here. Plans for the student's schedule of courses will be initiated in a conference with a departmental adviser who will have available selections of courses appropriate to the direction of interest and degree of experience of the entering student. The program is further developed from time to time, particularly at the beginning of the junior year.

The departmental requirements for the Bachelor of Science degree are: mathematics through 224; one year of college physics; and 65 credits in chemistry, which may include approved advanced electives in biochemistry, physics, and mathematics. For graduation, the student must demonstrate a reading knowledge of German or Russian; obtain a grade-point average of at least 2.50 in chemistry courses, with a C or better in each course; and achieve a total grade-point average of 2.50 or higher.

During the first two years, the program should include the following: 140, 150,

151, 160, 170, and either the group 335, 336, 337, 345, 346, 347, or the group 221 and 355; Health Education 110 or 175; English 101, 102, 103; one year of physics, including laboratory; and mathematics through 224.

The program for the junior year should complete the above and include, as well, 356, 357, and 358.

Advanced selections usually include 325, 395, 415, 416, 418, 419, 426, and 445. However, with approval, additions and substitutions may be made from the following: 427, 428, 429, 499; Biochemistry 481, 482, 483, 484, 499; Physics 323, 325, 326, 327, 371, 372, 461, 462, 463; Mathematics 221, 322, 324, 325, 401, 402, 403, 404, 427, 428, 429.

BACHELOR OF ARTS

The program leading to the Bachelor of Arts degree provides the student a broad choice of electives in fields other than science. It is especially adapted to the needs of students in premedicine, education, and of those wishing a liberal education with some concentration in science.

Requirements in the elective curriculum are: 140, 150, 151, 160, 170, 221, 231, 232, 241, 242, 355, 356, 357, and 358; one year of college physics; mathematics through 125; and 10 credits of German, French, or Russian. 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 as outlined in the *Graduate School Bulletin*. Candidates for advanced degrees are expected to take the qualifying and cumulative examinations. The qualifying, or entrance, examinations 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 Monday and Tuesday preceding the opening of Autumn Quarter and may be repeated during the first week of Winter Quarter and toward the end of Spring Quarter. All parts of this examination should be passed within a year. The cumulative examinations, given six times during each academic year, 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.

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

DOCTOR OF PHILOSOPHY. The cumulative examination requirement for this degree is satisfied when six examinations have been passed. The language requirement may be satisfied by passing examinations in German and in either Russian or French.

COURSES FOR UNDERGRADUATES

100 Chemical Science (5)

Atoms, molecules, and chemical reactions. A survey of fundamental principles. Designed both as a terminal course for nonscience majors and as an introductory course for those who wish to continue with 101 or 140. (Note Mathematics prerequisite for 140). No credit to those who have had one unit or more of high school chemistry.

101 General Chemistry (5)

For nonscience and non-engineering majors who plan to terminate their study of chemistry with 101 or 102. Molecular theory, quantitative relationships in chemical processes, solutions, ionic equilibria, acids, bases, and salts. Chemistry of common metals and non-metals. Prerequisite, one unit of high school chemistry or 100.

- 102 General and Organic Chemistry (5)**
Organic compounds; hydrocarbons, alcohols, aldehydes, ketones, ethers, acids, aromatics, fats and oils, proteins and carbohydrates. (Formerly 120). Students who plan to take 231 should not take 102. Prerequisite, 101.
- 120 General and Organic Chemistry (5)**
For students planning only two quarters of chemistry. Weight relations, solutions, acids and bases, compounds of biological importance. (Offered for the last time Autumn Quarter, 1961.) Prerequisite, 100.
- 140 General Chemistry (3)**
For science, engineering, and other majors who plan to take a year or more of chemistry courses. The structure of matter, atomic and molecular theory, the elements, valence and quantitative relationships. (Formerly 110.) Prerequisites, high school chemistry or 100, Mathematics 101 or passing score on algebra qualifying test.
- 141 General Chemistry Laboratory (1)**
Introduction to laboratory techniques and apparatus in chemistry. (Not offered 1961-62.) Prerequisites, high school chemistry or 100; 140 to be taken concurrently.
- 150 General Chemistry (3)**
Stoichiometry, aqueous solutions, kinetics, acid and base equilibria, electrochemistry, oxidation and reduction. Prerequisite, 140.
- 151 General Chemistry Laboratory (2)**
Experiments illustrating the quantitative relationships in chemistry. Prerequisites, 140 and concurrent registration in 150.
- 160 General Chemistry (3)**
Periodic system, phase equilibria, metals and nonmetals, metallurgy, and nuclear reactions. Prerequisite, 150.
- 170 Qualitative Analysis (3)**
Semi-microqualitative analysis for common cations and anions; separation and identification procedures. Prerequisite, 160, which may be taken concurrently.
- 199 Special Problems (1, maximum 6)**
Problems relating to experimental chemistry. For chemistry majors only. Prerequisite, permission of Chemistry adviser.
- 221 Quantitative Analysis (5)**
Volumetric and gravimetric. Prerequisite, 170.
- 231 Organic Chemistry (3)**
For students planning only two quarters of organic chemistry. Structure, nomenclature, reactions and synthesis of the main types of organic compounds. Prerequisite, 101 or 150.
- 232 Organic Chemistry (3)**
Continuation of 231. Prerequisite, 231.
- 241 Organic Chemistry Laboratory (2)**
Usually to accompany 231. Preparation of representative compounds. Prerequisite, 231, which may be taken concurrently.
- 242 Organic Chemistry Laboratory (2)**
Usually to accompany 232. Preparations and qualitative organic analysis. Prerequisites, 232 (which may be taken concurrently) and 241.
- 335 Organic Chemistry (3)**
For chemistry and chemical engineering majors and other qualified students planning three or more quarters of organic chemistry. Structure, nomenclature, reactions, and synthesis of organic compounds. Theory and mechanism of organic reactions. Prerequisite, 170, which may be taken concurrently.
- 336 Organic Chemistry (3)**
Continuation of 335. Prerequisite, 335.
- 337 Organic Chemistry (3)**
Continuation of 336. Prerequisite, 336.
- 345 Organic Chemistry Laboratory (1)**
Usually to accompany 335. Organic syntheses. Prerequisite, 335, which may be taken concurrently.
- 346 Organic Chemistry Laboratory (1)**
Continuation of 345. Usually to accompany 336. Prerequisites, 336 (which may be taken concurrently) and 345.
- 347 Organic Chemistry Laboratory (2)**
Continuation of 346. Usually to accompany 337. Prerequisites, 337 (which may be taken concurrently) and 346.
- 350 Elementary Physical Chemistry (5)**
Survey of some major topics in physical chemistry. Prerequisites, two quarters general chemistry, Physics 103, Mathematics 124.
- 355 Physical Chemistry (4)**
Introduction to quantum chemistry, statistical mechanics, kinetic theory of gases, thermodynamics. Prerequisites, 160, Mathematics 125, and college physics.
- 356 Physical Chemistry (3)**
Phase equilibria, colligative properties of solutions, chemical thermodynamics, electrolytes and electrochemistry. Prerequisites, 355 and Mathematics 126.

- 357 Physical Chemistry (3)**
Chemical kinetics, transport properties, molecular structure, the solid state, surfaces, and macromolecules. Prerequisite, 356.
- 358 Physical Chemistry Laboratory (4)**
Prerequisite, 357, which may be taken concurrently.
- 395 Radiochemical Techniques and Radioactivity Measurements (3)**
An introductory general-service course for students planning further work in nuclear or tracer applications. Safety procedures, detection and measurement of nuclear radiations, radiochemical and tracer techniques. Prerequisites, 160, Mathematics 124, Physics 103, or permission.
- 401 Principles of Chemistry (3)** **Lingafelter**
Primarily for high school teachers. Principles of chemistry, atomic and molecular nature of matter, periodic system, stoichiometry, chemical reactions, modern terminology and nomenclature. (Offered Summer Quarter only.)
- 402 Techniques of Chemistry (3)** **Crittenden**
Primarily for high school teachers. Discussion and demonstration of fundamental techniques, determination of composition and structure, analysis and synthesis, separation and purification processes, electrochemical processes, use of stable and radioactive isotopes. (Offered Summer Quarter only.)
- 415 The Chemical Bond (3)**
The nature of the chemical bond, complex compounds. Prerequisite, 357.
- 416 Inorganic Chemistry (3)**
Study of elements in relation to the periodic system. Prerequisite, 357.
- 418 Radiochemistry (3)** **Fairhall**
Natural radioactivity, nuclear systematics and reactions, radioactive decay processes, decay laws, statistical considerations, applications of radioactivity. Prerequisites, 170 and 356, or permission.
- 419 Radiochemistry Laboratory (2)** **Fairhall**
Safe handling and quantitative measurement of radioactivity, radiochemical separations, preparation of radioactive tracers, nuclear fission. Prerequisite, 395, 418 (which may be taken concurrently) or permission.
- 425 Quantitative Analysis (3)** **Robinson**
Special analytical methods. Prerequisite, 221.
- 426 Instrumental Analysis (3)** **Crittenden**
Introduction to electrical and optical methods of analysis. Prerequisites, 221 and 358.
- 427 Advanced Quantitative Theory (3)** **Crittenden**
Theoretical principles of analytical chemistry. Prerequisites, 221, 232 or 337, 357, or permission.
- 428 Chemical Microscopy (3)** **Robinson**
Theory of the polarizing microscope and its application to chemistry. Prerequisite, 357 or permission.
- 429 Microquantitative Analysis (3)** **Robinson**
Principles and techniques. Prerequisite, 425 or permission.
- 445 Qualitative Organic Analysis (3)**
Identification and characterization of simple organic compounds. Prerequisite, 242 or 347, or permission.
- 446 Advanced Organic Analysis (3)**
Advanced techniques of isolation, identification, and characterization of organic compounds. Prerequisite, 445 or permission.
- 447 Organic Synthesis (3)**
Advanced methods of preparation, separation, and purification of organic compounds. Prerequisite, 445 or permission.
- 499 Undergraduate Research (*, maximum 12)**
For qualified chemistry majors in the prescribed curriculum, especially those planning graduate work. Prerequisite, permission.

COURSES IN BIOCHEMISTRY

(OFFERED BY THE DEPARTMENT OF BIOCHEMISTRY)

- 361 Biochemistry (3)**
Lectures covering basic principles, including the structure and metabolism of biologically important compounds. For dental students; recommended for home economics, forestry, and fisheries students. Prerequisite, Chemistry 102 or 232.
- 363 Biochemistry Laboratory (2)**
Laboratory exercises in general biochemistry for home economics students and others. Prerequisite, 361, which may be taken concurrently.
- 481, 482, 483 Biochemistry (3,3,3)**
Lectures and conferences cover fundamentals, with emphasis upon chemical structure, enzymatic reactions, intermediary metabolism, and biochemistry of physiological functions. Recommended for advanced undergraduate or graduate students of chemistry and biological sciences. Prerequisites, Chemistry 337 for 481; 481 or permission for 482; 482 or permission for 483; introductory physical chemistry is recommended.

484 Biochemistry Laboratory (3)

Laboratory projects and conferences. For students of biochemistry, chemistry, and various biological sciences. Prerequisites, 481 and concurrent registration in 482.

499 Undergraduate Research (*)

Investigative work on enzymes, proteins, lipides, intermediary metabolism, physical biochemistry, and related fields. Prerequisite, permission.

COURSES FOR GRADUATES ONLY**511 Advanced Inorganic Chemistry (2)****Cady**

Halogens; less familiar metals; chelate, clathrate, interstitial and nonstoichiometric compounds; other selected topics. Prerequisite, 416 or permission.

512 Advanced Inorganic Chemistry (2)**Ritter**

Acid-base theory; mechanism of certain reactions; compounds of nonmetals of groups 3, 4, and 5. Prerequisite, 416 or permission.

513 Advanced Nuclear Chemistry (2)**Fairhall**

Nuclear reactions, fission, complex radioactive decay, absolute counting techniques, radiochemical separations, low-level techniques, geochemistry, cosmochemistry, chemistry of the synthetic elements. Prerequisite, 418 or permission.

526 Advanced Instrumental Analysis (3)**Crittenden**

Absorption and emission spectroscopy, polarography, potentiometry, and dielectric properties as applied to problems in analytical chemistry. Prerequisite, 426 or permission.

530, 531, 532 Advanced Organic Chemistry (3,3,3)

Consideration of synthetic methods, structure determinations, and reaction mechanisms for acyclic, alicyclic, and aromatic compounds of synthetic and natural origin, with emphasis on modern theory and practice. Prerequisites, 337 and 445, or permission.

543 Natural Organic Products (3)**Anderson**

Structure determination, properties, and synthesis of steroids and other natural organic products of current importance. Prerequisite, 532 or permission.

544 Theoretical Organic Chemistry (3)

Application of the theories of chemical bonding and equilibria to the structures and reactions of organic compounds. Prerequisite, 532 or permission.

545 Organic Synthetic Methods (3)**Dauben**

Consideration of carbon skeleton synthetic methods with emphasis on Diels-Alder, organometallic, and base-catalyzed condensation reactions. Prerequisite, 532 or permission.

546 Organic Radical Reactions (3)**Dauben**

Survey of reactions in solution involving radical intermediates. Prerequisite, 532 or permission.

547 Organic Heterocycles (3)**Stout**

Synthesis and reactions of organic heterocycles, with emphasis on those of natural origin. Prerequisite, 532 or permission.

548 Physical Organic Chemistry (3)**Schubert**

Interpretation and application of data obtained by combined methods of organic and physical chemistry to the problems of structures and mechanisms of organic compounds, and mechanisms of organic reactions. Prerequisite, 532 or permission.

550, 551, 552 Advanced Physical Chemistry (3,3,3)

Thermodynamics and statistical mechanics, atomic and molecular structure, kinetic theory, and chemical kinetics. Prerequisite, 357, 415 for 551, 550 for 552, or permission.

555 Quantum Chemistry (3)

Calculation of energy levels for simple systems, approximation methods. Prerequisite, 551 or permission.

560 Chemical Kinetics (3)**Rabinovitch**

Consideration of reaction rate theory and applications, including specialized aspects of topical interest. Prerequisite, 552 or permission.

561 Thermodynamics of Solutions (3)**Gregory**

The chemical potential and related partial molar thermodynamic properties, activity, thermodynamics of ions, electrochemical phenomena, theories of solutions. Prerequisite, 550 or permission.

562 Chemical Crystallography (3)**Lingafolter**

Crystal structure by diffraction of X rays, electrons, neutrons; crystal chemistry; spectra of crystals; theory of metals. Prerequisite, 551 or permission.

563 Electron Dynamics (3)**Simpson**

Chemical binding, dispersion forces, spectroscopy. Prerequisite, 555 or permission.

564 Molecular Dynamics (3)**Eggers**

Force constants, symmetry, selection rules, polar properties. Prerequisite, 555 or permission.

565 Statistical Mechanics (3)**Halsey**

Phase integral, quantum statistics, cooperative phenomena. Prerequisite, 555 or permission.

581 Topics in Inorganic Chemistry (3, maximum 18)

Open only to students accepted for doctoral work in chemistry.

582 Topics in Analytical Chemistry (3, maximum 18)

Open only to students accepted for doctoral work in chemistry.

- 583 **Topics in Organic Chemistry (3, maximum 18)**
Open only to students accepted for doctoral work in chemistry.
- 585 **Topics in Physical Chemistry (3, maximum 18)**
Open only to students accepted for doctoral work in chemistry.
- 590 **Seminar in General Chemistry (1, maximum 18)**
- 591 **Seminar in Inorganic Chemistry (1, maximum 18)**
- 592 **Seminar in Analytical Chemistry (1, maximum 18)**
- 593 **Seminar in Organic Chemistry (1, maximum 18)**
- 595 **Seminar in Physical Chemistry (1, maximum 18)**
- 600 **Research (*)**
- 700 **Thesis (*)**

CLASSICS

Executive Officer: JOHN B. McDIARMID, 218 Denny Hall

The Department of Classics offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. For the Provisional Teaching Certificate, it offers major and minor academic fields in Latin. Candidates for the Certificate may major in Latin in this Department, under the College of Arts and Sciences, or in the College of Education; see the *College of Education Bulletin*.

The undergraduate program is designed to allow a wide choice both for majors and for students in other departments and to provide a sound basis for teaching and for further study. It includes courses in the Greek and Latin languages and literatures, Classics in English, and Archaeology.

Instruction in the Greek and Latin languages and literatures is offered from the elementary to the graduate level. The intermediate and advanced courses in the literatures cover the chief literary, philosophical, and historical writings from Homer to the Medieval period. Intermediate literature courses (Greek and Latin 201, 202, 203) are open to students who have completed two years of high school study or the elementary year at the university. Students with advanced standing in another foreign language may, with permission, substitute the intensive introductory courses (Greek and Latin 300) for the first two quarters of the regular elementary courses.

Classics courses in English are intended primarily for students who have not studied Latin and Greek. The lower-division courses in literature and word derivation are general and introductory; the upper-division courses in literature, literary criticism, and mythology are recommended especially for majors in other literatures.

Undergraduate courses in Archaeology survey and interpret the physical remains of classical antiquity in the light of modern archaeological methods and excavation. No knowledge of Latin or Greek is required.

Students who are interested in taking courses in Latin or Greek should begin their study at the University as early as possible, since each advanced course in the literature is offered only once every other year. Those who are uncertain of their preparation for any course or who wish to review work done elsewhere should consult the Department before registering. The prerequisite for any course may be waived at the Department's discretion.

BACHELOR OF ARTS

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

GREEK MAJOR. The requirements are: 27 credits in upper-division Greek courses; and 9 credits chosen with the approval of the Department from courses in Latin and upper-division Greek, Classical Archaeology 341J, 342J, 343J, 402J, 404J, 406, Classics 422, 426, 427, 430, 440, courses in ancient history (Social Science 101,

History 201-202, 401, 402, 403, 404) and the history of ancient philosophy (Philosophy 320).

LATIN MAJOR. The requirements are: 27 credits in upper-division Latin courses; and 9 credits chosen with the approval of the Department from courses in Greek and upper-division Latin, Classical Archaeology 341J, 342J, 343J, 402J, 404J, 406, Classics 422, 426, 427, 430, 440, courses in ancient history (Social Science 101, History 201-202, 401, 402, 403, 404) and the history of ancient philosophy (Philosophy 320).

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*.

MASTER OF ARTS. Requirements are: a minimum of 27 credits in courses or seminars in Greek, Latin, and related subjects approved by the Department; either an acceptable thesis or 9 additional credits in Greek or Latin 599, Graduate Reading; a minimum of three full-time quarters of residence; a reading knowledge of either French or German.

DOCTOR OF PHILOSOPHY. Requirements are: a minimum of 72 credits in courses or seminars in Greek, Latin, and related subjects approved by the Department; an acceptable dissertation; a minimum of three academic years of resident study, two of them at the University of Washington of which one must be spent in continuous full-time residence; a reading knowledge of French and German. Candidates must pass preliminary qualifying examinations, both written and oral, before beginning work on the thesis and a final examination upon completion of the thesis.

COURSES FOR UNDERGRADUATES

GREEK

101-102, 103 Elementary Greek (5-5,5)

101-102: an intensive study of grammar, with reading and writing of simple Attic prose; 103: reading of selections from classical Greek literature.

201 Plato: Shorter Dialogues (3)

Selections from the Socratic dialogues. Prerequisite, 103.

202 Attic Orators (3)

Selections to illustrate the political and social background of Greece in the late fifth and early fourth centuries B.C. Prerequisite, 201.

203 Homer (3)

Selections from the *Iliad* or *Odyssey*. Prerequisite, 202.

207, 208 Grammar and Composition (2,2)

Systematic review of grammatical principles; exercises in prose composition. To be taken concurrently with 201 and 202.

209 Survey of Greek Literature (2)

A brief history of Greek literature, with an introduction to materials and methods of classical scholarship. Prerequisite, 202 or permission.

300 Greek Language, Accelerated (3)

Rapid survey of grammar, with readings in classical Greek. Prerequisite, junior standing and permission. **Wyatt**

309 Advanced Grammar and Composition (1, maximum 4)

Prerequisite, 208.

N391 Sight Reading (0)

Prerequisite, permission.

413 The Pre-Socratic Philosophers (3)

(Offered alternate years; offered 1962-63.) **McDiarmid**

414 Plato (3)

(Offered alternate years; offered 1962-63.) **Rosenmeyer**

415 Aristotle (3)

(Offered alternate years; offered 1962-63.) **McDiarmid**

420 Greek Epic (3)

(Offered alternate years; offered 1961-62.) **Edmonson**

422 Herodotus and the Persian Wars (3)

(Offered alternate years; offered 1961-62.) **Edmonson**

- 424 Thucydides and the Peloponnesian War (3)** Edmonson
(Offered alternate years; offered 1961-62.)
- 442, 443, 444 Greek Drama (3,3,3)** McDiarmid
Euripides, Sophocles, Aeschylus, Aristophanes. (Offered alternate years; offered 1961-62.)
- 451 Lyric Poetry (3)** Rosenmeyer
(Offered alternate years; offered 1962-63.)
- 453 Pindar: The Epinician Odes (3)** McDiarmid
(Offered alternate years; offered 1962-63.)
- 455 Hellenistic Poetry (3)** Rosenmeyer
(Offered alternate years; offered 1962-63.)
- 490 Supervised Study (3-6, maximum 18)**
Special work in literary and philosophical texts for graduates and undergraduates.
- 499 Undergraduate Research (*, maximum 15)**

LATIN

- 101-102, 103 Elementary Latin (5-5,5)**
101-102: an intensive study of grammar, with reading and writing of simple Latin prose;
103: reading of selections from classical Latin literature.
- 201 Intermediate Latin: Cicero (3)**
Readings from the speeches, philosophical works, and letters of Cicero. Prerequisite, two years of high school Latin or 103.
- 202 Intermediate Latin: Ovid (3)**
Readings from the works of Ovid and an introduction to the principles of Latin poetry. Prerequisite, 201 or permission.
- 203 Intermediate Latin: Vergil (3)** Read
Selections from the first six books of the *Aeneid*. Prerequisite, 202 or permission.
- 207, 208 Grammar and Composition (2,2)** Read
Systematic review of grammatical principles; exercises in prose composition. Prerequisite, two years of high school Latin or 103.
- 209 Survey of Latin Literature (2)**
A brief history of Latin literature, with an introduction to the materials and methods of classical scholarship. Prerequisite, 202 or permission.
- 300 Latin Language, Accelerated (3)** Wyatt
Rapid survey of grammar, with readings in classical and medieval Latin. Prerequisite, junior standing and permission.
- 309 Advanced Grammar and Composition (1, maximum 4)**
Prerequisite, 208.
- N391 Sight Reading (0)**
Prerequisite, permission.
- 401 Medieval Latin (3)** Pascal
Prerequisite, permission.
- 412 Lucretius (3)** Grummel
(Offered alternate years; offered 1961-62.)
- 413 Cicero's Philosophical Works (3)** Grummel
(Offered alternate years; offered 1961-62.)
- 414 Seneca (3)** Grummel
(Offered alternate years; offered 1961-62.)
- 422 Livy (3)** Edmonson
(Offered alternate years; offered 1962-63.)
- 423 Cicero's Orations (3)** Edmonson
(Offered alternate years; offered 1962-63.)
- 424 Tacitus (3)** Edmonson
(Offered alternate years; offered 1962-63.)
- 430 Latin Novel (3)** Fredricksmeier
(Offered alternate years; offered 1961-62.)
- 442 Roman Drama (3)** Pascal
(Offered alternate years; offered 1962-63.)
- 451 Roman Satire (3)** Pascal
(Offered alternate years; offered 1961-62.)
- 455 Catullus (3)** Grummel
(Offered alternate years; offered 1962-63.)
- 456 Horace (3)** Fredricksmeier
(Offered alternate years; offered 1962-63.)
- 458 Roman Epic (3)** Grummel
(Offered alternate years; offered 1961-62.)

- 475LJ Improvement of Teaching: Latin (5)** **Grummel, Pascal**
Survey of modern teaching techniques, materials, and linguistic theories, supplemented by lectures on the history of the Latin language and literature. Offered jointly with the College of Education. (Offered Summer Quarter only.)
- 475XJ Caesar for High School Teachers (2½)** **Grummel**
Interpretation of Caesar's works in the light of their historical, political, literary, and geographical background, with special reference to the problems of high school teaching. Offered jointly with the College of Education. (Offered Summer Quarter only.) Prerequisite, teaching experience or permission.
- 490 Supervised Study (3-6, maximum 18)**
Special work in literary and philosophical texts for graduates and undergraduates.
- 499 Undergraduate Research (*, maximum 15)**

CLASSICS COURSES IN ENGLISH

- 101 Latin and Greek in Current Use (2)**
Designed to improve and increase English vocabulary through a study of the Latin and Greek elements in English, with emphasis on words in current literary and scientific use. No knowledge of Latin or Greek required.
- 210 Greek and Roman Classics in English (5)**
Introduction to classical literature through the study of major works in translation.
- 422 Greek Historians and Philosophers in English (3)** **Rosenmeyer**
The development of Greek writing from mythical and poetic formulations to logical argument and scientific classification; based on a study of Hesiod, Hippocrates, the Pre-Socratic philosophers, Herodotus, Thucydides, and Plato's *Republic*. (Not offered 1961-62.)
- 426 Greek and Roman Epic in English (3)** **Rosenmeyer**
A study of the *Iliad*, the *Odyssey*, the *Aeneid*, and selections from other ancient epics.
- 427 Greek and Roman Drama in English (3)** **McDiarmid**
The origin and development, with particular emphasis on philosophical attitudes and structural principles of the major dramatists.
- 430 Greek and Roman Mythology (3)** **Grummel, Pascal**
The principal myths found in classical and later literature.
- 440 Greek and Roman Critics, in English (3)** **Grummel**
Problems of literary criticism as considered by Plato, Aristotle, Longinus, and other major classical writers.

CLASSICAL ARCHAEOLOGY

- 341J Greek Archaeology and Art (2)** **Edmonson**
A survey of the major art forms from the Mycenaean to the Hellenistic period, with special attention to modern archaeological methods and excavations, illustrated by slides. Offered jointly with the School of Art.
- 342J Roman Archaeology and Art (2)** **Edmonson**
A survey of major art forms, with special attention to modern archaeological methods and excavations, illustrated by slides. Offered jointly with the School of Art.
- 343J Greek Sculpture (2)** **Edmonson**
An intensive study from the archaic to the Hellenistic period, illustrated by slides. Offered jointly with the School of Art. (Not offered 1962-63.)
- 402J Greek and Roman Pottery (3)** **Edmonson**
Shapes, fabrics, and decorations from the Neolithic period to the sixth century A.D. Offered jointly with the School of Art. (Offered alternate years; offered 1962-63.)
- 404J Greek and Roman Sculpture (3)** **Edmonson**
History and development of Greek sculpture and sculptors, their Roman copyists, and Roman portraits and sarcophagi. Emphasis on Greek sculpture of the fifth century B.C. Offered jointly with the School of Art. (Offered alternate years; offered 1962-63.)
- 406 Greek Architecture (3)** **Edmonson**
A detailed study of Greek architecture from its beginnings, with special emphasis on the Periclean building program in fifth-century Athens. (Offered alternate years; offered 1962-63.)

COURSES FOR GRADUATES ONLY

GREEK

- 520 Seminar (3, maximum 27)**
- 599 Graduate Reading (*, maximum 18)**
Supervised reading in selected fields.
- 600 Research (3-5, maximum 15)**
- 700 Thesis (*)**
- 702 Degree Final (0)**
Limited to students completing a nonthesis degree program.

LATIN

- 520 Seminar (3, maximum 27)
- 599 Graduate Reading (*, maximum 18)
Supervised reading in selected fields.
- 600 Research (3-5, maximum 15)
- 700 Thesis (*)
- 702 Degree Final (0)
Limited to students completing a nonthesis degree program.

CLASSICAL ARCHAEOLOGY

- | | |
|------------------------------------------------------------------------------|----------|
| 511 Mycenaean Archaeology (3)
(Offered alternate years; offered 1961-62.) | Edmonson |
| 513 Athenian Topography (3)
(Offered alternate years; offered 1961-62.) | Edmonson |
| 515 Attic Epigraphy (3)
(Offered alternate years; offered 1961-62.) | Edmonson |

CLASSICAL LINGUISTICS

- | | |
|-------------------------------------------------------------------------------------------------|-------|
| 501 Comparative Phonology of Greek and Latin (3)
(Offered alternate years; offered 1961-62.) | Wyatt |
| 503 History of the Greek Language (3)
(Offered alternate years; offered 1961-62.) | Wyatt |
| 505 History of the Latin Language (3)
(Offered alternate years; offered 1961-62.) | Wyatt |
| 505 Italic Dialects (3)
(Offered alternate years; offered 1962-63.) | Wyatt |
| 503 Greek Dialects (3)
(Offered alternate years; offered 1962-63.) | Wyatt |
| 510 Mycenaean Greek (3)
(Offered alternate years; offered 1962-63.) | Wyatt |

COMMUNICATIONS

Acting Director: WILLIAM E. AMES, 133 Communications Building

The School of Communications, through its sequences in Advertising, Journalism, and Radio-Television, offers professional training through various curricula in these fields, leading to the degree of Bachelor of Arts. The School also offers courses leading to the degree of Master of Arts in Communications or toward the minor for the doctor's degree in another department. Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*.

Majors in communications will spend most of their freshman and sophomore academic years in fulfilling basic college group requirements. See page 23. They will complete the required lower-division credits of the School before the Winter Quarter of the junior year.

Transfer students from institutions not recognized as providing the equivalent of courses offered by the School of Communications may be accepted upon satisfactory completion of requirements established by the School.

It is assumed that all students will be able to use the typewriter exclusively in all courses, beginning with Communications 201.

Majors in the School must have completed the following courses in the freshman and sophomore years:

		CREDITS
Advertising 226	Introduction to Advertising	3
Communications 201	Communications Today	2
Journalism 200	News Writing	3

Thereafter, a major student in any sequence in the School may obtain the degree by completion of the 180 credits required by the University, including

the minimum sequence requirements and the credits in related fields required by the School of Communications.

No student may apply toward graduation more than 60 required and elective credits within any one division or sequence, or more than 70 credits within the School of Communications. Half the credits beyond the sequence requirements must be in 400-numbered courses.

REQUIRED CREDITS OUTSIDE THE SCHOOL

Minimum requirements outside the School of Communications are as follows:

General Requirements		CREDITS
English Composition 101, 102		6
English or American literature		8-9
Group III (science or 10 credits of mathematics)		10
Speech (as recommended)		4-6

Requirements in Related Fields

Related fields are those outside the School of Communications which should be of particular value to students of communications. Students in all sequences of the School will be required to earn 25 credits in *introductory* courses in related fields, distributed over at least five different fields. In addition, three advanced courses (9-15 credits) must be taken in any *two* of the related fields elected.

It should be clearly understood that the above figures are minimum credits. Students are urged to elect more courses in both the general and related field programs.

SUGGESTED RELATED FIELDS

The following related fields should provide most students with courses they need outside the School, in addition to the general requirements: anthropology, economics, geography, history, philosophy, political science, psychology, sociology.

Advertising

The work of the freshman and sophomore years is essentially the same for all students in the School of Communications (see page 57). Freshman and sophomore students planning to continue in the Advertising sequence should plan to take, in addition, General Business 101, Art 105 or 109; and Marketing 301. After completing the freshman and sophomore general communications requirements (Communications 201, Journalism 200, and Advertising 226), students in the Advertising sequence will be required to take the following courses as the minimum for a degree in journalism:

	CREDITS
Advertising 341 Advertising Copy	3
Advertising 342 Advertising Selling Laboratory	6
Advertising 440 Advertising Campaigns	3
Advertising 445 Special Copy Applications	3
Communications 303 Public Relations	3
Journalism 291 Photographic Laboratory	3
Journalism 300 Laboratory Work on University Daily	5
Journalism 381 Graphic Arts	2
Radio-TV 352 Radio and Television Advertising	5

Of the maximum of 60 credits a student may take within the sequence, or the 70 within the School, one-half of the credits beyond the sequence requirements must be in 400-numbered courses.

Journalism

The sequence in Journalism offers the curriculum below to majors in this field. In addition, the sequence offers major and minor academic fields for students in the College of Education; see the *College of Education Bulletin*.

Students in other fields who wish to obtain journalism training as a supporting

field for their major should elect Communications 201 and 303; Journalism 200, 301, and 404; and Advertising 226. Home economics students who wish to take a supporting field in journalism should see the Home Economics section, page 112 of this Bulletin, for recommendations concerning courses. Students in these special areas are required to maintain a 2.50 grade-point average in the above-listed group of courses.

BACHELOR OF ARTS

The work of the freshman and sophomore years is essentially the same for all students in the School of Communications.

Third- and fourth-year requirements for the Journalism sequence are as follows:

	CREDITS
Communications 414 History of Journalism	3
Journalism 291 Photographic Laboratory	3
Journalism 301 Copy Editing	3
Journalism 300 Laboratory Work on <i>University Daily</i> ...	maximum 7, minimum 5
Journalism 318 Reporting	3
Journalism 319 Reporting	3
Journalism 320 Legal Aspects of Journalism	3
Journalism 381 Graphic Arts	2
Journalism 413 Editorial Writing, Policies, and Research	3
Radio-TV 376 Radio and Television News Writing	3

Two of the following courses:

	CREDITS
Communications 402 Freedom of the Press and Communications Law	3
Communications 406 Press and Society	3
Communications 411 Introduction to Mass Communications Research	3
Communications 415 Comparative Communications	3
Communications 480 Propaganda	3

Of the maximum of 60 credits a student may take within the sequence, or the 70 within the School, one-half of the credits beyond the sequence requirements must be in 400-numbered courses.

Radio-Television

BACHELOR OF ARTS

The sequence in Radio-Television offers the curriculum below to majors in this field.

The work of the freshman and sophomore years is essentially the same for all students in the School of Communications (see page 57). Students majoring in the Radio-Television sequence are required to take:

	CREDITS
Radio-TV 250 Survey of Radio and Television	3
Radio-TV 260 Radio Production	3
Radio-TV 271 Radio Continuity	3
Radio-TV 350 Laboratory Work on KUOW	maximum 9, minimum 5
Radio-TV 352 Radio and Television Advertising	5
Radio-TV 376 Radio and Television News Writing	3
Radio-TV 450 Television Programming	3
Radio-TV 475 Station Organization	3

Two of the following courses:

	CREDITS
Communications 303 Public Relations	3
Communications 402 Freedom of the Press and Communications Law	3
Communications 406 Press and Society	3
Communications 411 Introduction to Mass Communications Research	3
Communications 414 History of Journalism	3
Communications 415 Comparative Communications	3
Communications 470 Theory and Criticism of Broadcasting	3
Communications 480 Propaganda	3

Of the maximum of 60 credits a student may take within the sequence, or the 70 within the School, one-half of the credits beyond the sequence requirements must be in 400-numbered courses.

COURSES FOR UNDERGRADUATES

Only those courses marked "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.

COMMUNICATIONS COURSES

- 201 Communications Today (2)** **Benson**
An elementary course in theory, including analysis of the communications process and a survey of contributions of the various disciplines as applied to mass media news, advertising, and editorial interpretation. A critical study of language use. Open to lower-division nonmajors.
- 303 Public Relations (3)** **Brier, Christian**
Principles and practice of public relations in business, industry, government, and social agencies; policy and conduct as fundamentals in good relationships. Open to nonmajors. Prerequisite, upper-division standing or permission.
- 312 Communications Theory (3)** **Benson**
Analysis of the factors affecting communications and its results, including relevant research in psychology, sociology, linguistics, anthropology together with significant studies in mass communications. Prerequisite, 201 or permission.
- 316 Contemporary Affairs (3)**
Background and significance of international, national, and local newsworthy events. Primarily a discussion course.
- 402 Freedom of the Press and Communications Law (3)** **Benson**
The Anglo-American concept of freedom of communication; its evolution under U.S. federal and state constitutions; present tension areas; judicial decisions; statutes and administrative regulations affecting publishing, broadcasting, etc. Open to nonmajors. Prerequisite, Journalism 320 or permission.
- 403 Problems in Public Relations (3)** **Christian**
Group application of principles to the field problems of local businesses or agencies, with reports and recommendations. Open to nonmajors. Prerequisite, 303 or permission.
- 406 Press and Society (3)** **Ames**
An analysis of the role of newspapers, magazines, radio, television, and movies, to determine how well they are fulfilling their functions.
- 411 Introduction to Mass Communications Research (3)** **Edelstein**
Recent developments in the study of mass communications content and audience, with emphasis on the printed media. Comparative studies. Introduction to research design, methods and techniques; individual projects in content analysis and audience measurement. Open to nonmajors. Prerequisites, Sociology 110 or 310, Sociology 443 or Psychology 345; Sociology 223 recommended.
- 414 History of Journalism (3)** **Ames, Smith**
Growth and development of the press, with emphasis on journalism in the United States. its social, political, and ethical responsibilities. Open to nonmajors. Prerequisite, 5 or more credits in American history or permission.
- 415 Comparative Communications (3)** **Smith**
Analysis of contemporary international, national, and regional media.
- 416 Press and World Affairs (3)**
Problems and projects in the coverage of national and international news; government and pressure group influences. Prerequisite, 316.
- 470 Theory and Criticism of Broadcasting (3)** **Niven**
The development of social, economic, and critical standards of broadcasting and the function of radio-television on the mass communications process. Two to four hours of laboratory by arrangement. Prerequisites, Radio-TV 450 and 461, or permission.
- 480 Propaganda (3)** **Edelstein**
Peacetime, wartime, and cold war programs of the United States and other nations, with emphasis on the period immediately prior to, during, and after World War II. Open to nonmajors. Prerequisites, 10 credits or more in area history or political science.
- 498 Problems of Communications (1-5, maximum 10)**
Research and individual study. Prerequisite, permission of director and staff.

ADVERTISING COURSES

- 226 Introduction to Advertising (3)** **Denis, Warner**
Economic and social aspects; organizational structure; comparison of major media, and the elements of creating and producing advertising. Open to nonmajors.
- 340 Advertising Procedures (5)** **Denis**
Fundamentals of copywriting, layout, and mechanical productions in the creation of printed advertising. Open to nonmajors. Prerequisites, 226 or Marketing 391.
- 341 Advertising Copy (3)** **Denis, Warner**
Principles of copywriting and layout and their interdependence; problems in the preparation of copy and layout, with emphasis on newspapers and direct mail.

- 342 Advertising Selling Laboratory (3, maximum 6)** **Denis**
Supervised field assignments in the analysis of advertising problems of specific businesses and in the servicing of advertising accounts for the *University Daily*.
- 440 Advertising Campaigns (3)** **Warner**
Planning and execution of national and local campaigns; research, keynote ideas, budgets; media selection, and merchandising. For nonmajors. Prerequisite, permission of instructor.
- 442 Advertising Management Laboratory (3, maximum 6)** **Warner**
Special problems in the management of local and national advertising departments; supervised assignments on the *University Daily*. Prerequisite, permission.
- 445 Special Copy Applications (3)** **Denis, Warner**
Analysis of principles and techniques of national advertising copy; problems in the preparation of trade, industrial, and consumer copy and layouts.
- 446 Problems of Communication in Advertising (3)** **Warner**
Individual study, research, and discussion of selected problems. Offered Spring Quarter only. Open to senior and graduate students. Prerequisite, permission of instructor.

JOURNALISM COURSES

- 200 News Writing (3)**
Structure of news and feature stories. Not open to freshmen. Open to nonmajors by permission. Reasonable proficiency in the use of the typewriter required.
- 291 Photographic Laboratory (3)**
Elementary news photography, photo processing, and picture editing. Open only to majors in the School of Communications.
- 300 Laboratory Work on University "Daily" (2-5, maximum 7)**
Practical work on the editorial staff. Prerequisites, communications major or permission.
- 301 Copy Editing (3)**
Editing news copy, writing cutlines, captions, and headlines; newspaper makeup. Open to nonmajors. Prerequisite, 200 or permission.
- 317 Reporting Legal Procedures (2)** **Benson**
An advanced reporting course concerned with pleadings, testimony, and procedural matters in trial and appellate courts. Open to nonmajors by permission.
- 318 Reporting (3)**
General techniques.
- 319 Reporting (3)** **Christian**
Covering the principal news beats for the press; operations of local governing institutions; supplementary city assignments. Prerequisite, 318 or permission.
- 320 Legal Aspects of Journalism (3)** **Benson**
Regulations governing publications.
- 347 Newspaper Operation (3)** **Brier**
Problems of the display, classified, circulation, plant, and promotion departments of large and small newspapers; finance and management trends.
- 375J Teachers' Course in Journalism (3)** **Brier**
For teachers in high schools and junior colleges, or for education students taking first or second teaching areas in journalism. Offered jointly with the College of Education, usually every other summer and every spring. Prerequisites, 200 and 301.
- 381 Graphic Arts (2)** **Murton**
Principles; printing processes, typography, copyfitting, engraving, paper, and coordination of production.
- 404 Magazine Article Writing (3)** **Brier**
Nonfiction writing for national magazines and for specialized publications. Open to nonmajors. Prerequisites, upper-division standing and permission.
- 405 Short Story Writing (3)**
Fiction writing for national magazines. Open only to upper-division students, with permission, and limited to twenty students. Open to nonmajors.
- 413 Editorial Writing, Policies, and Research (3)** **Benson**
Concepts of editorial responsibility; outstanding editorial pages; research for preparing editorial page material, including analytical, interpretive, and persuasive writing.

RADIO-TELEVISION COURSES

- 250 Survey of Radio and Television (3)** **Adams**
History of the media; organization and regulation of the industry; commercial aspects; educational use; programming. Open to lower-division nonmajors by permission.
- 260 Radio Production (3)** **Hopkins**
Studio and microphone setups; timing, use of sound effects and incidental music; performance.
- 270 Elements of Radio Writing (3)**
Announcements; script forms; principles of writing for listeners.
- 271 Radio Continuity (3)**
Writing radio continuity; responsibilities of station continuity chief. Not open to students who have credit in Drama 445. Prerequisite, 270.

- 350 Laboratory Work on KUOW (1-3, maximum 9)**
Practical work in programming and production with the University's FM radio station. Prerequisites, 260 and 270. Permission required for election in excess of 5 credits.
- 352 Radio and Television Advertising (5)** **Cranston**
Principles of both media as they apply to advertisers; planning a radio or television campaign; writing commercial copy. For majors only. Prerequisite, Advertising 226.
- 360 Advanced Radio Production (2)** **Hopkins**
Direction, production, and advanced performance.
- 372 Radio Dramatic Writing (3)**
Principles and their application. Prerequisites, 271 and permission.
- 373 Television Writing (3)** **Cranston**
Principles and techniques of writing material for television production. Practice in writing live and film presentations, with consideration of camera, direction, and production problems. Prerequisites, one approved university writing course and permission.
- 376 Radio and Television News Writing (3)** **Cranston, Niven, Ryan**
Gathering, writing, editing, and programming news for the broadcast media, including visual treatment for television and film. Prerequisite, 200.
- 450 Television Programming (3)** **Ryan**
A study of basic concepts and problems, including principles of development and visual treatment of ideas.
- 451 Television Performance (2)** **Niven**
Problems of performance, including techniques of demonstration and interviewing.
- 455 Television Film Techniques (2 or 3)** **Niven**
Film-camera and editing techniques; film selection and procurement; video recording. Lectures may be taken without laboratory for 2 credits. Prerequisite, permission.
- 456 Television Staging and Graphics (2 or 3)** **Niven**
The art phases of television production; set building and decoration; preparation of visual aids. Prerequisite, permission.
- 459J Television in the Schools (3)** **Adams**
To supplement classroom work; suitable receiving equipment for schools; the development of the American system of broadcasting; the development and significance of educational television, and the contribution schools can make to broadcasting. Offered jointly with the College of Education.
- 461 Television Production (3)** **Ryan**
Familiarization with camera and control equipment; experience in program directing through production of various types of programs. Prerequisite, permission.
- 465 Television Workshop Laboratory (2-4, maximum 8)** **Ryan**
Laboratory work in the educational television station. Prerequisites, 461 and permission.
- 475 Station Organization (3)** **Adams**
Functions and relationships of broadcast station departments. For majors only.
- 476 Advanced Radio News Laboratory (2, maximum 6)** **Cranston**
Writing and editing news for radio under broadcast conditions. Prerequisites, 376 and permission.

GRADUATE COURSES IN COMMUNICATIONS

- 502 Government and Mass Communications Seminar (3)** **Benson**
Directed independent research into, and analysis of, legal problems in mass communications, institutional and media operations. Open to nonmajors. Prerequisite, Communications 402 or permission.
- 506 Press and Society Seminar (3)** **Ames**
Use of current documents and data in examining and evaluating the functions of the press. Open to nonmajors. Prerequisite, Communications 406 or permission.
- 511 Mass Communications Research Seminar (3)** **Edelstein**
Advanced individual projects in quantitative research design, methods, and techniques. Reports on new developments in research. Topics will vary each year. Open to nonmajors. Prerequisites, Communications 411 and a course in statistics, or permission.
- 514 Journalism and History Seminar (3)** **Ames, Smith**
Aspects of the American press through a study of original source material. Open to nonmajors. Prerequisite, Communications 414 or permission.
- 570 Seminar in Theory and Criticism of Broadcasting (3)** **Niven**
Evaluation and criticism of the function and operation of broadcasting in the mass communications process. Use of primary sources, including data gathering and analysis. Prerequisite, Communications 470 or permission.
- 580 Seminar in Propaganda (3)** **Edelstein**
Topics for individual study. Prerequisite, Communications 480 or permission.
- 598 Selected Readings (1-5, maximum 5)**
Open to qualified graduate students by permission.
- 600 Research (3-5)**
- 700 Thesis (*)**

DENTAL HYGIENE, PREPROFESSIONAL PROGRAM

Adviser, 121 Miller 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.

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; Biology 101J-102J; Chemistry 101, 102; Health Education 110; Physics 170 or 100; Psychology 100; and Speech 220. Of the remaining 45 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. The student should choose elective subjects which are of greatest interest and give the broadest educational background.

The two-year General Education program may be used as preparation for dental hygiene. Students who take this program must include Chemistry 101 and 102 and Speech 220 in their curriculum.

A dental hygiene aptitude test is required prior to application. Information is available from the Department of Dental Hygiene in the School of Dentistry.

The major in dental hygiene is described in the *School of Dentistry Bulletin*.

DENTISTRY, PREPROFESSIONAL PROGRAM

Adviser, 121 Miller 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). 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 military training.

Students who are interested in attending a particular dental school should choose electives to meet the requirements of that school. The adviser should be consulted about the dental aptitude test which is taken prior to filing applications.

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 76.)

DRAMA

Director: GREGORY FALLS, 113 Drama-TV Building

The School of Drama offers courses leading to the degrees of Bachelor of Arts and Master of Arts. In addition, it offers major and minor academic fields and a major academic field for elementary education majors; see the *College of Education Bulletin*.

BACHELOR OF ARTS

In this elective curriculum, in addition to the group requirements of the College of Arts and Sciences, 58 credits in approved courses are required. Courses must include: 101, 146, 247, 151, 152, 253, 201, 405, 406, 441, 442, 443, 481, 497, and 300 (or 403, 404, and 409). During the junior and senior years, the student will elect an emphasis in one of three areas of drama—acting-directing, technical, or children's drama—to complete the required number of credits for the major. Required courses for these areas of emphasis respectively are: acting-directing, 248, 349, 421, 422, and 481L; technical, 403, 404, 409 (instead of 300), 414, 418,

and either 408 or 419; and children's drama, 335, 338, 435, 435L, and 438.

Students in all areas of emphasis will be required to earn 30 credits from among the following selected courses in related fields (those outside the School of Drama which should be of particular value to students of drama): Humanities 102 or Liberal Arts 111, Music 107 or Art 100, English 264 or 265, English 370, 372, and 5 credits from among the following: Classics 427, Japanese 423, Russian 422, German 462, Philosophy 445, French 417, Spanish 420, and Scandinavian 382, 480, or 481. In fulfillment of physical education requirements, students will be encouraged to register for classes in swimming, folk dancing, modern dance, and fencing, if such are offered in the curriculum.

No student may apply toward graduation more than 60 credits earned in the School of Drama, unless a comparable number of credits for those in excess of 60 have been elected from among nondrama courses, over and above the 180 credits required for graduation.

The School requires all senior students with a major in drama, regardless of college, to pass a comprehensive examination in drama before he is certified for graduation.

For students majoring in other fields, the following School of Drama courses are recommended: 101, 102, 103, 146, 151, 152, 201, 247, 248, 300, 307, 404, 405, 406, 407, 408, 416, 426, 431, 432, 434, 437, 440, 441, 442, 443, and 497. Practical experience in all phases of the theater is open to all University students, as an activity, through productions at the Showboat, Penthouse, and Playhouse theaters.

MASTER OF ARTS

Candidates for this degree must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin* and present a background of undergraduate study acceptable to the department. Normally, although not necessarily, a major in drama is supported by a minor in English, speech, radio-television, or comparative literature.

COURSES FOR UNDERGRADUATES

- 101, 102, 103 Introduction to the Theater (2,2,2)** **Hughes**
Significant aspects of the modern theater, including long-run (Broadway) plays, touring companies, films, opera and ballet, repertory theater, radio and television, circus, marionettes, contemporary American playwrights and critics, community and college theaters. Open to nonmajors.
- 146, 247, 248 Stage Speaking: Theory and Practice (3,2,2)** **Carr, Galstaun, Gray**
Stage vocal techniques and exercises in practical application; 247 focuses on styles of speaking for realistic acting; 248 on poetic drama, Greek and Shakespeare. Open to nonmajors. (Formerly 147, 148.) Prerequisites, 146 for 247; 247 for 248.
- 151, 152, 253 Acting (3,3,3)** **Carr, Gray, Harrington**
Theory and practice of fundamentals; 151, analysis and practice in aptitudes necessary in acting (focus, recall, imagination, characterization) through improvisation; 152, analysis and practice in rhythm, theory, stage deportment; and 253, analysis and practice in styles for modern realistic acting. (Formerly 251, 252.) Prerequisites, 146 and 151 for 152; 247 and 152 for 253.
- 201 Introduction to Children's Drama (2)** **Carr, Haaga, Siks, Valentineti**
Survey of the history and development, the philosophy and fundamental practices, and its significance in the twentieth century to include both children's theater and creative dramatics.
- 300 Fundamentals of Stagecraft (5)** **Conway, Davis, Lounsbury**
Elementary problems, principles, and practices in technical aspects of production based upon the box-set; design, construction, decoration, and lighting. Open to nonmajors. (Not open to students having credit in 403, 404, or 409.)
- 307 Fundamentals of Puppetry (2)** **Valentineti**
Construction and use of simple puppets—hand, string, and rod—as a visual aid in education, recreation, and therapy at the elementary level. Open to nonmajors.
- 338, 438, 438L Creative Dramatics and Laboratory (3,2,1)** **Haaga, Siks**
Analysis of basic principles and techniques of the creative process in informal drama; observation of children and youth; 438, application through leadership experience within the class, 438L, practical leadership experience with children and youth. Prerequisites, 201 for 338; 338 for 438; 438 and permission for 438L.
- 349 Advanced Stage Speaking (2)** **Carr, Galstaun, Gray**
Intensive study through practice of the fundamentals of speech, styles of speech necessary for the Comedy of Manners, and a comprehensive study of dialects. Prerequisite, 248.

- 335, 434 Children's Theater (3,3)** **Carr**
Reading and analysis of children's plays; preparation of prompt script; discussion and analysis of problems unique to children's theater; 434, includes some practical exercises in fundamentals of play direction. Prerequisite, 201 for 335; 434 open to nonmajors only.
- 403 Scene Construction (3)** **Lounsbury**
Principles and theory. Laboratory includes demonstrations and application through actual construction of stage scenery.
- 404 Scene Design (3)** **Conway, Davis**
Theory, practice, and rendering with emphasis on perspective and isometric drawing.
- 405 Historic Costume and Movement (3)** **Crider**
Survey of historic costume in the Western world and the manners and movements associated therewith, beginning with Greece and continuing to the end of the nineteenth century. Open to nonmajors.
- 406 Theatrical Make-up (2)** **Davis**
Basic principles, with intensive practice in application of make-up for use on proscenium and arena stages.
- 407 History of Theatrical Costume (2)** **Crider**
Survey of costumes worn on stage from the Attic theater to end of nineteenth century, including drama, opera, ballet, and a brief history of oriental clothing. Open to nonmajors.
- 408 Stage Costume Construction (2)** **Crider**
Techniques of costume construction, including study of fabrics, color, and fundamentals of pattern making and draping for historic clothing reconstruction. Prerequisite, 405 or permission of instructor.
- 409 Stage Lighting (3)** **Conway, Lounsbury**
Theories and practice, with work in lighting plots as well as practical experience. The use of various instruments is demonstrated and discussed.
- 413 Advanced Scene Construction (2, maximum 4)** **Lounsbury**
A project course offering practical experience. Prerequisite, 403 or permission.
- 414 Applied Scene Design (2, maximum 4)** **Conway**
Work with plays of medium complexity. Analysis of different methods of design and production. Prerequisite, 404 or permission.
- 415 Costume Projects (2, maximum 4)** **Crider**
Practical experience with special problems or aspects of stage costume—millinery, footwear, jewelry, etc. Prerequisite, 408 or permission.
- 416 History of Masks and Mask Making (2)** **Davis**
Open to nonmajors. Prerequisite, 406 or permission.
- 417 History of Wigs and Wig Making (2)** **Crider**
Prerequisite, permission.
- 418 Scene Painting (2, maximum 4)** **Davis**
Pigments, color mixing, and techniques of application to stage scenery. Prerequisites, 300 or 403, and permission.
- 419 Advanced Stage Lighting (2)** **Lounsbury**
A project course designed to give practical experience in lighting stage productions. Prerequisite, 409 or permission.
- 421, 422 Advanced Acting (3,3)** **Harrington**
Theory and practice of period styles; 421, tragedy, particularly Shakespeare; 422, comedy, particularly Restoration. Prerequisites, 253 and 248 for 421; 253 and 349 for 422.
- 423 Acting Projects (2)**
Prerequisites, 421, 422, and permission.
- 426 High School Play Direction (3)** **Gray, Harrington**
A practical course for prospective and practicing high school teachers who may be required to direct plays. For nonmajors only.
- 431 Advanced Puppetry (2)** **Valentinetti**
Construction and use of intermediate puppets—clay, plaster, and wood; play improvisation and writing; classroom-type production and staging. (Formerly 308.) Prerequisite, 307.
- 432 Applied Puppetry (2, maximum 6)** **Valentinetti**
Presentation of student-produced shows in schools and on television; field work (craft and drama) in hospitals, speech and hearing clinics, and with exceptional children. (Formerly 309.) Prerequisite, 431 or permission.
- 435, 435L Children's Theater Directing and Laboratory (2,1)** **Carr**
Theory and technique, using adult and child casts, play selection and analysis, and rehearsal procedures. Practical experience in the laboratory. Prerequisites, 335 for 435; 435 and permission for 435L.
- 436 Children's Theater Production (3)** **Carr**
Designed to give the student director practical experience through the classroom in all aspects of production other than direction, with particular attention to college, secondary schools, and community theater. Prerequisites, senior or graduate standing and permission.
- 437 Creative Dramatics (3)** **Haaga, Siks**
Introduction to philosophy and techniques of creative dramatics, with emphasis on correlation in school and community programs. Observation of children and youth an integral part of course. For nonmajors only.

- 440 History and Aesthetics of the Motion Picture (3)** **Galstaun**
Lectures and exhibition of important and representative films, foreign and American, illustrating the evolution of this art form. Open to nonmajors. (Formerly 491.) Prerequisite, senior standing.
- 441, 442, 443 History of World Theater and Drama: Classic and Oriental, Medieval and Renaissance, Modern (5,5,5)** **Conway, Hughes**
Great playwrights and dramatic literature correlated with the history and development of world theater, the physical playhouse, and methods of production. (Formerly 427, 428, 429, 451, 452, 453.) Open to nonmajors.
- 445 Playwrighting (3, maximum 9)** **Hughes**
A professional course. (Formerly 410, 411, and 412.) Prerequisites, English 328, 329, and permission.
- 461 Theory and Fundamentals of Musical Comedy (2)**
History and development of the American musical form from 1800 to the present; discussion of the adaptation of material to the musical-comedy form, story emphasis, and dance integration. Open to nonmajors. Prerequisite, 152 or permission.
- 462 Musical Comedy Direction (3)**
Lectures and practical exercises dealing with the staging problems related to the components of drama, dance, and music in the musical-comedy form. Prerequisite, 461.
- 479 Special Studies (1-5, maximum 5)**
Prerequisite, permission.
- 481, 481L Theory and Fundamentals of Directing and Laboratory (2,1)** **Harrington**
Lectures and required reading on the principles of dramatic directing. Practical application in the laboratory. Prerequisites, 253 for 481; 421, 422, 481, and senior standing for 481L.
- 482 Projects in Directing (2)** **Harrington**
Prerequisite, 481L.
- 497 Theater Organization and Management (2)** **Hughes**
Personnel, box-office procedures, advertising, production costs, royalties, and executive policies. Prerequisite, senior standing.
- 499 Undergraduate Research (1-5, maximum 10)**
Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 500 Seminar in Production (3)** **Conway, Crider, Davis, Harrington, Lounsbury**
Prerequisites, senior or graduate standing and permission.
- 504 Advanced Stage Design (3)** **Conway**
Prerequisites, 404, 414, and permission.
- 505 Advanced Stage Costume Construction and Design (3)** **Crider**
Prerequisite, 405, or 408, or permission.
- 509 Scenic Projection (3)** **Conway**
Prerequisite, 409 or permission.
- 513 Technical Direction (3, maximum 9)** **Lounsbury**
Prerequisites, 300 or 403, 413, and permission.
- 519 Lighting Research and Development (3, maximum 9)** **Lounsbury**
Prerequisites, 409, 419, and permission.
- 551-552-553 Teaching of Acting (2-2-2)** **Harrington**
Prerequisites, 421, 422, and permission.
- 581 Advanced Directing (3)** **Harrington**
Prerequisites, 482 and permission.
- 600 Research (*)**
Prerequisite, permission.
- 700 Thesis (*)**

ECONOMICS

Executive Officer: J. BENTON GILLINGHAM, 331 Savery Hall

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

For undergraduate students, the Department offers a four-year general curriculum leading to a bachelor's degree for students who want a broad economics background with opportunity to develop interests in other social sciences or in related business fields.

Within this general curriculum, the fields of specialization are: economic theory and history of economic thought; money, banking, and cycles; government regula-

tion and public utilities; labor economics; public finance and taxation; economic history; international trade; economic systems and development; and statistics and econometrics. In addition, the Department offers major and minor academic fields and a major academic field (for elementary education majors) in the College of Education; see the *College of Education Bulletin*.

BACHELOR OF ARTS

Requirements in the field of economics are: 200, 201, 300, and 301, plus 25 additional credits. Of the 25 credits, 20 are to be taken in four fields other than theory, and the remaining 5 are to be taken either in one of the four fields so chosen or in the field of theory. Other requirements are: Mathematics 105 and 281; Accounting 210, 220, and 230.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. Requirements for both advanced degrees include work in the Graduate Core Program of the Department and in some of these fields of specialization: economic theory and the history of economic thought; money, banking, and cycles; government regulation and public utilities; labor economics; public finance; economic history; international trade; economic systems and development; statistics and econometrics.

A beginning graduate student with a four-year degree (B.A., B.S., etc.), and no prior economics or economic theory should expect to take 300 and 301, and such other preliminary work in each field selected as is necessary to begin graduate work in that field.

MASTER OF ARTS

Candidates must complete a portion of the Graduate Core Program (which shall include 501, 502, and one course from among 503, 504, or 481), and two fields, one of which must be in economics. Those who choose two fields in economics will be expected to complete a minimum of 14 credits in 500-level courses in economics (8 in the Graduate Core Program). Those who take a field in a related subject will be expected to take a minimum of 11 credits in 500-level courses in economics (8 in the Graduate Core Program). All candidates must meet the Graduate School's general requirements of 27 credits in graduate course work in addition to the 9 credits for thesis and the language requirement.

The requirements for a minor in economics for a Master's degree include a minimum of 8 credits in graduate economics courses (400- and 500-level).

DOCTOR OF PHILOSOPHY

Candidates must complete the Graduate Core Program and three fields, two of which must be in economics. One of the three fields may be economic theory and the history of economic thought, which includes work in economic doctrine that is not covered in the Graduate Core Program. A candidate may offer a minor in another department related to his field of major interest, or, with permission of his graduate advisory committee, he may offer a program of selected courses outside of economics as the third field.

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 work offered will include the Graduate Core Program and one field in economics, 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 of Economics.

Doctoral candidates offering a minor in economics must demonstrate competence in a portion of the Graduate Core Program (which shall include 501 and 502 and one course from among 503, 504, and 481), and one field in economics. While normally 25 credits in 400- or 500-level courses will be required, candidates with an adequate background may offer less. In any case, a minimum of 11 credits in 500-level courses (8 in the Graduate Core Program) must be offered. Normally one 500-level course will be required in the field in economics.

COURSES FOR UNDERGRADUATES

INTRODUCTORY COURSES

- 160 American Economic History (5)** **Morris, 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)**
Organization, operation, and control of the American economy; problems of inflation, unemployment, taxation, the public debt, monopoly, trade unions, and international trade. American capitalism compared with communism and socialism. Not open to freshmen, except by permission.
- 201 Principles of Economics (5)**
Operation of the American economy, with emphasis on prices, wages, production, and distribution of income and wealth; problems of the world economy. Prerequisite, 200 or equivalent, or permission.
- 202-203 Economic Principles and Price Determination (3-3)**
Condensation of 201, plus additional aspects of the economics of the firm, with special reference to the determination of product prices. Primarily for business administration students; other students by permission. No credit for 202- until -203 has been completed. Prerequisites, 200, Mathematics 156 and one quarter of mathematics beyond 156, or equivalent, or permission. No credit is allowed if 201 has been taken.
- 211 General Economics (3)**
Condensation of 200. Primarily for engineering and forestry students; other students by permission. No credit is allowed if 200 has been taken.

ECONOMIC THEORY

- 300 Intermediate Economics (5)**
Fundamental concepts and principles. 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. Prerequisites, 201 and Mathematics 105 (or equivalent), or permission.
- 301 National Income Analysis (5)**
Analysis of the determinants of the aggregate level of employment, output, and income of an economy. Prerequisites, 201 and Mathematics 105, or equivalent, or permission.
- 306 Development of Economic Thought (5)** **Gordon**
From the early modern period to the present, with some discussion of its relation to natural science and other social sciences. The main subjects treated will be Adam Smith and the classical school, Karl Marx, later Marxism, and the transition to J. M. Keynes. Prerequisite, 200 or equivalent, or permission.
- 312 Current Economic Problems (5)**
Economic principles applied to such problems as booms and depressions, the federal budget and debt, foreign trade policies, farm problems, public versus private power development, government control of "big business," labor-management relations, and social security. Primarily for nonmajors. Prerequisite, 200 or equivalent, or permission.
- 404 Advanced Price Analysis (5)** **Crutchfield**
Study of selected market structures. Directed toward developing more precise predictive techniques and more adequate bases for analysis of public policy. Prerequisite, 300 or equivalent, or permission.
- 411 Introduction to the Use of Mathematics in Economic Theory (5)**
Elementary mathematical analysis used in economics. Designed to develop ability to read the literature most relevant to developments in general economic theory for those who already have some grounding in theory. Prerequisites, 300 and 301 (or equivalent), or permission.

MONEY, BANKING, AND CYCLES

- 320 Money and Banking (5)** **Crutchfield**
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 or equivalent, or permission.
- 421 Money, Credit, and the Economy (5)** **Crutchfield**
Supply and the 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, 300, 301, and 320 (or equivalent), or permission.

- 329 Russia and the Muslim World (5)** **Spector**
The land and peoples, religion, culture, customs, and historical background, with emphasis on the Near and Middle East and on Russian relations with the Muslim world from 1453 to the present.
- 332J Islands of the Pacific (3)** **Earle**
Geography. Analysis of major islands and groups with respect to resources, settlement, population composition, role in modern transportation and communications, current political status. Offered jointly with the Department of Geography.
- 333J The Soviet Union (5)** **Jackson**
Geography. Analysis of geographical development with particular reference to settlement, agricultural and industrial resources, economic structure, and urbanization. Offered jointly with the Department of Geography.
- 335J Japanese Foreign Policy in Asia (3)** **Maki**
Analysis of modern Japanese expansion in Asia; its political, diplomatic, and economic impact on Asia; the "Greater East Asia Co-Prosperity Sphere." Offered jointly with the Department of Political Science. Prerequisites, Political Science 201 and 202, or permission.
- 345J Japanese Government (3)** **Maki**
Premodern; characteristics from 1868 to 1945; governmental changes since 1945. Offered jointly with the Department of Political Science. Prerequisite, Political Science 201, 202, or permission.
- 378 Russia in Asia (3)**
Relations of tsarist Russia and the Soviet Union with eastern Asia. (Offered alternate years; offered 1961-62.)
- 382J Civilization of India: Indian Thought (5)**
A history of ideas in India. Offered jointly with the Department of History.
- 383J Civilization of India: Impact of Islam and the West (5)**
Offered jointly with the Department of History.
- 384J Civilization of India: Literature and Arts (5)**
From earliest times to the present. Offered jointly with the Department of History.
- 401 Marxism, Leninism, Stalinism, and Maoism (3)** **Wittfogel**
A critical survey of ideologies as guides to action. Historical development and institutional meaning of communist thought.
- 410 Far Eastern Workshop (3)**
Far Eastern teaching methods and materials. (Offered Summer Quarter only.)
- 412J South Asia (5)** **Murphey**
Geography. Analysis of the origins, development and present outlines of settlement, cultures, resource use, and economic structures in the Indian subcontinent, the Indo-Chinese peninsula, and insular Southeast Asia. Offered jointly with the Department of Geography.
- 413J East Asia (5)**
Geography. The nature and geographic setting of Far Eastern civilization with particular reference to origins, development and present outlines of settlement, cultures, resource use, and economic structures in China, Japan, and Korea. Offered jointly with the Department of Geography. (Not offered 1961-63.)
- 421J Kievan and Muscovite Russia, 850-1700 (5)** **Treadgold**
Development of Russia from earliest times to the reign of Peter the Great. Offered jointly with the Department of History. Prerequisite, Social Science 103, or History 306, or permission.
- 422J Imperial Russia, 1700-1905 (5)** **Treadgold**
Development of Russia from Peter the Great to Nicholas II. Offered jointly with the Department of History. Prerequisite, Social Science 103, or History 306, or permission.
- 423J Twentieth-Century Russia (5)** **Treadgold**
Russia and the U.S.S.R. from Nicholas II to the present. Offered jointly with the Department of History. Prerequisite, Social Science 103, or History 306, or permission.
- 424J Modern Russian Intellectual History (5)** **Treadgold**
Development of Russian social and political thought and philosophy from the seventeenth century to the Revolution of 1917. Offered jointly with the Department of History.
- 425J History of Eastern Orthodoxy (5)** **Treadgold**
Development of Eastern Orthodox Christian churches and doctrines from the Roman Empire to the present. Offered jointly with the Department of History. (Offered Summer Quarter only.)
- 429 The Soviet Union and the Muslim World (5)** **Spector**
Soviet-Muslim relations from the Russian Revolution of 1917 to the present, with emphasis on the Soviet impact on Turkey, Iran, Afghanistan, Pakistan, Indonesia, and the Arab States.
- 430 Survey of Mongol Culture (3)** **Poppe**
Nomadic culture and tribal organization in ancient times; present state and cultural life of Mongolia. (Offered alternate years; offered 1961-62.)
- 433J Problems in the Geography of the Soviet Union (3 or 5)** **Jackson**
Analysis of geographical aspects of selected agricultural, industrial, and other contemporary developments in the Soviet Union. Lectures, 3 credits; independent study, 2 additional credits, with permission of instructor. Offered jointly with the Department of Geography. Prerequisite, 333J.

- 434J Problems in the Geography of Southeast Asia (5)** Earle
Analysis of regional and political structures, resources, economic activities and problems of development, overseas and internal relationships. Offered jointly with the Department of Geography.
- 435J Problems in the Geography of China (5)** Murphey
Origins and development of Chinese civilization in its geographic base and areal spread; political China and the Chinese sphere; physical base and resources; problems of agriculture, population, industrialization, urbanization, transportation, and contemporary development; communist China. Offered jointly with the Department of Geography.
- 437J Problems in the Geography of Japan (5)** Kakiuchi
Regional structure of Japanese urban, industrial, and agricultural geography. Analysis of contemporary patterns considering cultural and physical factors and selected aspects of their historical development. Offered jointly with the Department of Geography.
- 440 Tibetan Cultural History: Dynastic Period (3)** Wylie
Political, religious, and cultural history of the royal dynastic period: earliest times to the ninth century.
- 441 Tibetan Cultural History: Hegemonic Period (3)** Wylie
Political, religious, and cultural history of the sectarian hegemonic period: ninth to the seventeenth century.
- 442 Tibetan Cultural History: Theocratic Period (3)** Wylie
Political, religious, and cultural history of the theocratic period: seventeenth century to the present.
- 443 Chinese Social Institutions (5)** Hsiao
General survey of traditional institutions and their changes in modern times. (Offered alternate years; offered 1961-62.)
- 444 Chinese History: Earliest Times to 221 B.C. (5)** Wilhelm
Pre-imperial China. (Offered alternate years; offered 1962-63.)
- 445 Chinese History: 221 B.C. to 906 A.D. (5)** Wilhelm
Development of the imperial Chinese state. (Offered alternate years; offered 1962-63.)
- 446 Chinese History: 906 A.D. to 1840 A.D. (5)** Wilhelm
The Wu Tai, Sung, Yuan, Ming, and early Ch'ing periods. (Offered alternate years; offered 1962-63.)
- 447 Modern Chinese History (5)** Michael
Modern Chinese society from 1840 to the present.
- 450 Survey of Turkic Culture of Central Asia (3)**
Nomadic culture of the Turks of Central Asia, their history, social organization, present state and cultural life under Soviet Russia's or China's dominance. Prerequisites, 110 or 310, Anthropology 202, or permission.
- 452J Early Japanese History (5)** Butow
Development of Japan from earliest times to 1868 A.D. Offered jointly with the Department of History.
- 453J Modern Japanese History (5)** Butow
Development of Japan from 1868 to the present. Offered jointly with the Department of History.
- 456J Diplomatic History of the Far East (5)** Butow
International relations in Eastern Asia, with special emphasis on the period since 1793. Offered jointly with the Department of History.
- 482J History of India: Earliest Times to 647 A.D. (5)**
India in ancient times; emphasis on forms of political organizations and economic life, social organizations and cultural developments. Offered jointly with the Department of History.
- 483J History of India: 647 to 1525 (5)**
Medieval India; emphasis on forms of political organizations and economic life, social organizations and cultural developments. Offered jointly with the Department of History.
- 484J History of India: 1525 to the Present (5)**
Modern India; emphasis on forms of political organizations and economic life, social organizations and cultural developments. Offered jointly with the Department of History.
- 490 Undergraduate Seminar on China (3)** 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)**
For Far Eastern majors. Prerequisite, permission.

The following courses may be used for credit toward a Far Eastern major or minor:

Anthropology 317 Ethnology of Southeast Asia (3)

Art 382 Art of India (3)

Art 383 Art of China (3)

Art 384 Art of Japan and Korea (3)

Art 428 Oriental Ceramic Art (2)

- Economics 495 The Economy of Soviet Russia (5)**
Philosophy 428 Chinese Philosophy (5)
Philosophy 429 Neo-Confucianism (5)
Political Science 344 Chinese Government (5)
Political Science 414 Oriental Political Thought (5)
Political Science 420 Foreign Relations of the Soviet Union (5)
Political Science 429 International Relations in the Far East (5)
Political Science 432 American Foreign Policy in the Far East (5)
Political Science 441 Political Institutions of the Soviet Union (5)

COURSES FOR GRADUATES ONLY

- 504J Research Seminar: Japan (3, maximum 6)** Kakiuchi
Geography. Offered jointly with the Department of Geography.
- 505J Research Seminar: China and Northeast Asia (3, maximum 6)** Murphy
Geography. Offered jointly with the Department of Geography.
- 506J Research Seminar: Southeast Asia (3, maximum 6)** Earle
Geography. Offered jointly with the Department of Geography.
- 507J Research Seminar: Soviet Union (3, maximum 6)**
Geography. Offered jointly with the Department of Geography.
- 519J Seminar on Asia (3, maximum 6)**
 The large cultural regions of the continent are studied in succession, with special reference to anthropological problems. Offered jointly with the Department of Anthropology. (Offered alternate years; offered 1962-63.)
- 520J Seminar on the Foreign Policy of the Soviet Union (3)** Reshetar
 Offered jointly with the Department of Political Science. Prerequisite, permission.
- 521, 522, 523 Seminar on Modern Asian History (3,3,3)** Taylor
- 525, 526 Seminar on Far Eastern Diplomacy (3,3)** Williston
- 530, 531 Seminar on China (3,3)** Hsiao, Wilhelm
 Chinese historiography. Prerequisite, permission.
- 533 Seminar on Chinese Society (4)**
 Institutional analysis of representative periods and key aspects of Chinese society. (Offered when demand is sufficient.)
- 534J Modern European History: Russia (3-6)** Treadgold
 Offered jointly with the Department of History.
- 535J-536J-537J Seminar in Russian History (3-6)-(3-6)-(3-6)** Treadgold
 Seminar in modern Russian history. Offered jointly with the Department of History. Prerequisites, reading knowledge of Russian and permission.
- 538 Seminar on Modern China (3)** Michael
 Studies of problems in Chinese government, politics, ideology, and social and economic issues from 1911 to the present.
- 541J The Soviet Political System (4)** Reshetar
 Critical appraisal of the principal research methods, theories, and types of literature dealing with the government and politics of the Soviet Union. Offered jointly with the Department of Political Science. Prerequisite, permission.
- 542J Personality Patterns in Japanese Culture (3)**
 The nature and content of Japanese social life as it bears upon Japanese character. Offered jointly with the Department of Anthropology. Prerequisite, permission.
- 543 Seminar on Russia in Asia (3)**
 Selected topics on relations of Russia and the Soviet Union with Asia. (Offered alternate years; offered 1962-63.) Prerequisite, permission.
- 545J Seminar on Japanese Government and Diplomacy (3, maximum 6)** Maki
 Offered jointly with the Department of Political Science.
- 549J Japanese History (3-6)** Butow
 Field course. Offered jointly with the Department of History.
- 550J-551J-552J Seminar in Japanese History (3-6)-(3-6)-(3-6)** Butow
 Offered jointly with the Department of History. Prerequisite, permission.
- 553J Analysis of Linguistic Structures (3)** Jacobs, Li
 Offered jointly with the Department of Anthropology.
- 598 Inner Asia Research Colloquium (5, maximum 15)** Chang, Hurvitz, Li, Poppe, Wylie
- 599 Modern China Research Colloquium (5, maximum 15)** Hsiao, Lo, Michael, Shih, Taylor, Wilhelm
 A research seminar that deals with various aspects of Chinese society, modern and contemporary. Prerequisite, permission.

600 Research (*)
Prerequisite, permission.

700 Thesis (*)

The following course may be used for credit toward a Far Eastern major:

Economics 595 Soviet Economics (3)

FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE

Executive Officer: GEORGE E. TAYLOR, 406 Thomson Hall

The Department of Far Eastern and Slavic Languages and Literature works closely with the Far Eastern and Russian Institute. The Department offers courses in the humanities; the Institute offers courses 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 two degree programs: a regional studies curriculum which combines training in a discipline with specialization in a particular area and language; a language and literature curriculum in one of the Far Eastern or Slavic languages and cultures.

Major and minor academic fields and a major academic field for elementary education majors are offered in Russian language and literature. A minor academic field is also offered in Far Eastern studies. See the *College of Education Bulletin*.

BACHELOR OF ARTS

In the regional studies curriculum, the requirements are: 110 or 310; at least 40 credits in one of the disciplines of the social sciences or humanities (excluding languages), including both basic courses in the discipline and courses in which it is applied to Asia or Russia; at least 15 credits in other disciplines on Asia and Russia (excluding languages); and 30 credits or the equivalent in one Far Eastern or Slavic Language.

In the language and literature curriculum, the requirements are: 110 or 310; at least 55 credits in a Far Eastern language or 55 credits in Russian language; and at least 20 credits in courses dealing with the literature and culture of the area of the major language.

Students preparing to teach Russian language in the public schools should present 65 credits in the language and the appropriate courses in the College of Education.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*.

Graduate students who are required to take intensive Chinese or Russian (10-credit courses) must obtain the written approval of the executive officer of the Department and the approval of the Graduate School should their program call for more than 15 credits.

MASTER OF ARTS. The department offers courses leading to the Master of Arts degree in the fields of language and literature and in regional studies.

The Master of Arts degree in the field of languages and literature is offered in any language and literature for which the Department is responsible and for which there are staff, curriculum, and library holdings necessary for research on the Master's level. A prerequisite for this degree is the ability to do research in the language appropriate to the student's field of interest. In addition to course work and seminars in the appropriate language and literature, students are expected to take work relating to the history and culture of the area and in the fields of linguistics or comparative literature. General requirements are 45 credits (including a minimum of 12 in seminar work) and a thesis.

The Master of Arts degree in the area of regional studies is offered with the support of the Far Eastern and Russian Institute and the various cooperating departments. Students working toward this degree continue their training in one discipline but also take supporting courses in other disciplines dealing with the area of concentration (either the Far East or Russian). Such course work is available in anthropology, economics, geography, history, linguistics, philosophy, literature, and political science. For regional studies, a working knowledge of the appropriate language is required. General requirements are a minimum of 45 credits (including at least 12 in seminar work) and a thesis.

For some students—high school teachers, for example—it is possible to arrange a Master of Arts degree in Far Eastern regional studies without a working knowledge of a Far Eastern language. Strong training in a discipline is required.

DOCTOR OF PHILOSOPHY. The Department of Far Eastern and Slavic Languages and Literature offers a program leading to the Doctor of Philosophy degree with a specialization in any of the languages or literatures for which the Department is responsible and for which there are available the staff, curriculum, and library holdings necessary for research on the doctoral level.

Students interested in working for this degree must have, as a minimum requirement for beginning their programs, the equivalent of an undergraduate major in any language or literature or in Far Eastern or Russian regional studies.

Each candidate must present a program covering four fields of study. The fields may be in a single language and literature for which the Department is responsible, or in a combination of such languages and literatures, or in a combination of three fields within the Department plus a field in either linguistics or comparative literature.

The Department requires all students to have some familiarity with a second Far Eastern or Slavic language and culture and recommends work in either linguistics or general and comparative literature.

All candidates are expected to be familiar with the history, society, and culture of the country whose language and literature they are studying. In cases where it would be appropriate, a field may be approved in another discipline dealing with the area involved.

COURSES FOR UNDERGRADUATES

CHINESE

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 101 Chinese, Intensive AB (10) | Li, Hung |
| Introduction to sounds and structure of modern Chinese (Mandarin) by the inductive method. After acquiring a certain familiarity with the language, students are introduced to the written language. | |
| 150 Accelerated Chinese ABC (15) | |
| Introduction to sounds and structure of modern Chinese (Mandarin) by the inductive method. After acquiring a certain familiarity with the language, students are introduced to the written language. This course is especially recommended for students (particularly graduates) who plan to devote more time to other subjects during the regular academic year. (Offered Summer Quarter only.) | |
| 200 Chinese, Non-Intensive D (5) | Hung |
| Continuation of 150. Prerequisite, 150 or permission. | |
| 206 Chinese, Intensive CD (10) | Hung, Li |
| Continuation of 101. Prerequisite, 101 or equivalent. | |
| 250 Chinese, Non-Intensive E (5) | Hung |
| Continuation of 200. Prerequisite, 200 or permission. | |
| 300 Chinese, Non-Intensive F (5) | Hung |
| Continuation of 250. Prerequisite, 250 or permission. | |
| 301 Chinese, Intensive EF (10) | Hung, Li |
| Continuation of 206. Rapid learning of Chinese characters and reading of texts. Students should learn about 1,500 characters by the end of the year. Prerequisite, 206. | |
| 302, 303, 304 Intermediate Modern Chinese (5,5,5) | Yen |
| Selected readings in modern Chinese literature, philosophy, history, and political science (including newspaper materials). Prerequisite, 300 or 301, or equivalent. | |

- 405, 406, 407 Classical and Documentary Chinese (5,5,5)** **Reifler**
 Syntactical analysis, translation from literary Chinese into English and vice versa. To be taken in sequence only. Prerequisite, 300 or 301, or equivalent.
- 408 Chinese Reference Works and Bibliography (3)** **Wilhelm**
 Introduction to the methodology of Sinology. (Offered alternate years; offered 1962-63.) Prerequisite, 300 or 301, or equivalent.
- 430 Readings in Chinese Philosophical Texts (5)** **Shih**
 Prerequisite, permission.
- 455, 456, 457 Chinese Literature (5,5,5)** **Shih**
 455: lectures on Chinese literature from earliest time to the end of Han. 456: lectures on Chinese literature from the end of Han to the end of T'ang. 457: lectures on Chinese literature since T'ang times. (Offered alternate years; offered 1961-62.) Prerequisite, 300 or 301, or equivalent.
- 460 Advanced Modern Chinese (5, maximum 15)** **Yen**
 Selections from communist publications where a large amount of new terminology is introduced and a great number of abbreviated characters used. Prerequisite, 304.
- 499 Undergraduate Research (3-5, maximum 15)**
 For Far Eastern majors. Prerequisite, permission.

JAPANESE

- 101-102, 103 First-Year Conversational Japanese (5-5,5)** **Tatsumi**
 Introduction to conversation, pronunciation, oral composition, and grammar; reading of romanized Japanese; conversation, composition, and grammar; introduction to *kana* syllabaries and Chinese characters.
- 210, 211, 212 First-Year Reading Japanese (5,5,5)** **McKinnon**
 Reading and translation of modern Japanese. Prerequisites, 101-102 or permission for 210; 210 for 211; 211 for 212. Or this series may be taken concurrently with 101-102, 103.
- 251, 252, 253 Second-Year Conversational Japanese (5,5,5)** **Tatsumi**
 Advanced conversation, grammar, and composition; introduction to literary and epistolary styles; introduction to calligraphy. Prerequisite, 212.
- 301, 302, 303 Second-Year Reading Japanese (5,5,5)** **Hurvitz**
 Reading and translation of primary and secondary source materials. Prerequisites, 212 or equivalent for 301; 301 for 302; 302 for 303.
- 401, 402, 403 Advanced Reading Japanese (5,5,5)** **Hurvitz**
 Reading of modern materials, mostly in expository prose; some reading in "classical" style. Prerequisites, 303 or permission for 401; 401 or equivalent for 402; 402 or equivalent for 403.
- 460 Readings in Modern Japanese Literature (3-5, maximum 15)** **McKinnon**
 Close reading and discussion of representative works of twentieth-century poetry, fiction, and drama in the original text. (Offered alternate years; offered 1962-63.) Prerequisite, permission.
- 499 Undergraduate Research (3-5, maximum 15)**
 For Far Eastern majors. Prerequisite, permission.

KOREAN

- 302-303 Elementary Spoken Korean Language (5-5)** **Suh**
- 304 Intermediate Korean (5)** **Suh**
 Prerequisite, -303 or equivalent.
- 405 Korean Grammar (5)** **Suh**
 Phonetics, grammar, and syntax of the language, both colloquial and written. Prerequisite, 304 or equivalent.
- 406, 407 Advanced Korean Reading (5,5)** **Suh**
 Composition, literature, and advanced reading. Prerequisite, permission.
- 499 Undergraduate Research (3-5, maximum 15)** **Suh**
 For Far Eastern majors. Prerequisite, permission.

MONGOLIAN

- 302 Introduction to Mongolian (5)** **Poppe**
 (Offered alternate years; offered 1962-63.)
- 303 Modern Mongolian Literary Language (5)** **Poppe**
 Grammar, syntax, and styles of modern Mongolian language based on colloquial. Prerequisite, 302. (Offered alternate years; offered 1962-63.)
- 304 Colloquial Mongolian (5)** **Poppe**
 Grammar of colloquial Mongolian spoken in Outer and Inner Mongolia. Reading of colloquial texts with translation into English; conversation in Mongolian. Prerequisite, 303. (Offered alternate years; offered 1962-63.)
- 305 Classical Mongolian (5)** **Poppe**
 Grammar, syntax, and styles of the Mongolian written language of the seventeenth to twentieth centuries. Prerequisite, 304. (Offered alternate years; offered 1962-63.)

- 499 Undergraduate Research (3-5, maximum 15)**
For Far Eastern majors. Prerequisite, permission.

Poppe

POLISH

- 401, 402 Phonetics, Grammar, and Vocabulary (5,5)**
Acquaints the student with the principal morphological and syntactic features of the Polish language through the medium of a basic vocabulary.
- 411 Readings in Polish (5)**
Designed to enlarge the student's general vocabulary by the reading of short texts selected from Polish authors of the nineteenth and twentieth centuries. Prerequisite, 402.

RUSSIAN

- 100-105 Russian, Non-Intensive A-B (5-5)** **Novikow, Pahn**
Covers material of 110 in two quarters. Recommended for students who know from experience that they assimilate foreign languages slowly, or for those who find a 10-credit course would interfere seriously with their schedules.
- 110 Russian, Intensive AB (10)** **Novikow, Pahn**
Introduction to Russian. Extensive oral practice to afford assimilation of basic structural features. Two hours weekly: lectures on pronunciation, grammar, and writing; opportunities for student questions (conducted in English). Eight hours weekly: practice sessions conducted entirely in Russian. For continuation, see 210.
- 130 Scientific Russian (5)** **Gershevsky**
Introduction to written Russian as a research tool for science students. Readings in chemistry and physics, etc. Closed to Russian majors.
- 150 Accelerated Russian ABC (15)** **Pahn**
Covers material of 100-105, 200 in one quarter. Recommended for students who want to acquire rapidly a considerable proficiency. For continuation, see 205, 300, 305.
- 200 Russian, Non-Intensive C (5)** **Novikow, Pahn**
Continuation of 100-105. Prerequisite, -105, 110, or permission.
- 205 Russian, Non-Intensive D (5)** **Novikow, Pahn**
Sequel to 200. Introduction to Russian prose reading; extensive oral and writing practice based on reading. Systematic review of grammatical principles. For continuation, see 300, 305. Prerequisite, 150, 200, or permission.
- 210 Russian, Intensive CD (10)** **Novikow, Pahn**
Continuation of 110. Presentation of remaining basic structural features; introduction to Russian prose reading. For continuation, see 310. Prerequisite, 110 or -105.
- 230 Scientific Russian, Intensive (10)** **Gershevsky**
Introduction to written Russian as a research tool for science students only. Readings in chemistry and physics. Closed to Russian majors.
- 300, 305 Russian, Non-Intensive E, F (5,5)** **Novikow, Pahn**
Continuation of 205. Prerequisite, 205.
- 310 Russian, Intensive EF (10)** **Novikow, Pahn**
Continuation of 210. Extensive oral and writing practice based on Russian prose readings. Systematic review of grammatical principles.
- 311, 312, 313 Intermediate Russian A, B, C (5,5,5)** **Gribanovsky, Novikow, Pahn**
Oral and writing practice based on Russian prose readings. Intensive review and supplementation of structural knowledge. One hour weekly conducted in English, four hours weekly in Russian. Prerequisite, 305, 310, or permission.
- 330 Scientific Russian Readings (5, maximum 10)** **Gershevsky**
Reading and translation of articles, mainly in the fields of chemistry and physics. (Offered each quarter.) Prerequisite, 305, 310, or permission.
- 341 Social Science Russian (5)** **Pahn**
Introduction to Russian materials in the social sciences. Review of grammatical essentials. Reading, translation, and discussion of texts; limited oral practice. (Offered Autumn Quarter only.) Prerequisite, 200 or permission.
- 342 Social Science Russian Readings (5)** **Pahn**
Readings in anthropology, economics, geography, history, and sociology. (Offered Winter Quarter only.) Prerequisite, 341 or permission.
- 345 Social Science Russian, Intensive (10)** **Gribanovsky, Novikow**
Advanced readings in social science material, combined with review of grammar and composition. (Offered Summer Quarter only.) Prerequisite, 310 or equivalent, or permission.
- 361, 362, 363 Russian Readings A, B, C (3,3,3)** **Gribanovsky**
Reading of texts from Russian literature and press; discussion and analysis; writing of essays on related topics. Conducted in Russian. Prerequisite, 313 or permission.
- 451, 452 Advanced Russian Grammar and Composition (5,5)** **Erlich**
451: structural description of the Russian noun. 452: structural description of the Russian verb. Prerequisite, 313 or equivalent.
- 455 History of Russian Standard Language (5)**
An outline of phonological, morphological, and lexical developments of the Russian literary language from earliest literary documents to the present. Prerequisite, 451 or 452.

- 465 Modern Russian Poetry (3)** **Erlich**
A study of Russian poetry in its renaissance, from 1890 to 1925. (Offered alternate years; offered 1961-62.) Prerequisite, 363 or equivalent.
- 468 Contemporary Russian Literary Criticism (3)** **Erlich**
Recent trends in the Russian study of literature. (Offered alternate years; offered 1962-63.)
- 475 Russian Literature and Area (3)**
Some of the masterpieces of Russian literature; social and cultural backgrounds, having the central purpose of giving an insight into the culture and national life of the people. Conducted in Russian. (Offered Summer Quarter only.) Prerequisite, permission.
- 499 Undergraduate Research (3-5, maximum 15)**
For Far Eastern majors only. Prerequisite, permission.

SERBO-CROATIAN

- 401-402 Phonetics, Grammar, and Vocabulary (5-5)**
A comprehensive introduction to both spoken and written literary Serbo-Croatian.
- 411 Reading in Serbo-Croatian (5)**
Designed to increase the student's vocabulary and enhance his knowledge of grammar through the reading of short stories in the modern literary idiom. Prerequisites, 401-402.

SLAVIC

- 450 Introduction to Slavic Philology (3)**
Slavic languages and their geographical and dialectical distribution; Slavic civilization throughout prehistoric and early historic periods; principal phonological and morphological features of Slavic as Indo-European languages. Prerequisite, Russian 451 or 452.

TIBETAN

- 401-402-403 Colloquial Tibetan (3-3-3)** **Wylie**
Introduction to phonology, morphology, and syntax of spoken Tibetan (Central dialect) by the inductive method. One hour lecture, four hours practice. Prerequisite, permission.
- 404-405-406 Literary Tibetan (3-3-3)** **Wylie**
Introduction, with discussion of Indic influences. Close reading of selected material for rapid development of reading knowledge. Prerequisite, permission.
- 414 Readings in Modern Tibetan (3, maximum 9)** **Wylie**
Selections from modern newspapers and magazines. Prerequisites, 403 or 406, and permission.
- 499 Undergraduate Research (3-5, maximum 15)** **Wylie**
For Far Eastern majors. Prerequisite, permission.

TURKIC

- 301, 302, 303 Introduction to Central Asian Turkic (3,3,3)**
Recommended to students of the Mongolian, Russian, or Chinese areas. Prerequisite, any foreign language.

LITERATURE COURSES IN ENGLISH

- Chinese 320 Chinese Literature in English (5)** **Shih**
A general survey with special attention to historical, philosophical, and cultural background; emphasis upon modern literary movements stimulated by China's contact with the West. No knowledge of the Chinese language is required. (Offered alternate years; offered 1962-63.)
- Japanese 420 Japanese Literary Tradition (5)** **McKinnon**
A broad inquiry into the literary heritage of Japan through reading and discussion of representative works available in English in prose, poetry, and drama from ancient beginnings to mid-nineteenth century.
- Japanese 421 Modern Japanese Literature in English (5)** **McKinnon**
Survey, chiefly of prose fiction of nineteenth and twentieth centuries.
- Japanese 422 Studies in Japanese Poetry in English (5)** **McKinnon**
Traditions and techniques; systematic investigation of the major poetic forms, focusing on representative poets and their works. (Offered alternate years; offered 1962-63.)
- Japanese 423 Studies in Japanese Drama in English (5)** **McKinnon**
Principal forms and techniques of Nō, Kyōgen, Jōruri and Kabuki; also the contemporary theater. History of Japanese drama, its various stage requirements, and its representative playwrights and performers. (Offered alternate years; offered 1961-62.)
- Korean 320 Korean Literature in English (5)** **Suh**
Historical development of Korean literature. Special consideration to the relationship with Chinese and Japanese literature.
- Mongolian 320 Mongolian Literature in English (5)** **Poppe**
(Offered alternate years; offered 1961-62.)
- Russian 320 Russian Literature in English (5)**
Introduction, from 1782 to the present. Representative prose and poetical works of the foremost Russian and Soviet writers are discussed and analyzed.
- Russian 421 Contemporary Russian Literature in English (5)** **Erlich**
From Gorky to Sholokov.

- Russian 422 Russian Plays in English (5)**
From 1782 to 1948.
- Russian 426 The Russian Novel in English (5)** Erlich
Gogol, Goncharov, Turgenyev.
- Russian 427 The Russian Novel in English (5)** Erlich
Dostoevsky and Tolstoy.
- Slavic 320 Polish Literature in English (5)** Erlich
Historical outline from the Middle Ages to our time, in English translation. (Offered alternate years; offered 1962-63.)

COURSES FOR GRADUATES ONLY

CHINESE

- 522, 523, 524 Readings in Classical Chinese (5,5,5)** Reifler
- 525 Structure of Chinese Characters (5)** Reifler
- 526, 527, 528 Studies in Chinese Literature (5,5,5)** Cheng
526: literature of the Chou and Han periods. 527: literature from Wei to T'ang times.
528: literature since the end of T'ang. (Offered alternate years; offered 1961-62.)
- 529 Chinese Phonology (3)** Li
- 530 Studies in Chinese Prose (5)** Cheng
(Offered alternate years; offered 1961-62.)
- 531 Studies in Chinese Poetry (5)** Shih
(Offered alternate years; offered 1962-63.)
- 532 Studies in Chinese Drama and Novel (5)** Shih
(Offered alternate years; offered 1962-63.)
- 535 Chinese Epigraphy (3, maximum 6)** Reifler
Introduction to texts in ancient character forms; selected readings of inscriptions on bronzes and oracle bones.
- 536, 537, 538 Readings in Chinese Political Thought and Institutions (5,5,5)** Hsiao
For students wishing to develop proficiency in using Chinese source material. Different texts each quarter, selected primarily on basis of students' needs. (Offered alternate years; offered 1962-63.) Prerequisite, permission.
- 550 Seminar on Chinese Literature (4, maximum 8)** Shih
- 555 Seminar on Chinese Linguistics (3, maximum 9)** 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.
- 560 Modern Chinese Readings (5, maximum 15)** Chang
Selections from learned journals in intermingled style, (colloquial and literary Chinese). Prerequisite, 304.
- 600 Research (*)**
Prerequisite, permission.
- 700 Thesis (*)**

JAPANESE

- 522, 523, 524 Readings in Documentary Japanese (5,5,5)** McKinnon
Readings in documents of the Tokugawa and Meiji periods in the literary and epistolary styles; introduction to *kambun*. (Offered when demand is sufficient.) Prerequisite, permission.
- 550 Readings in Classical Japanese Literature (3-5, maximum 15)** McKinnon
Readings in prose, poetry, and drama, antiquity to nineteenth century. Prerequisite, permission. (Offered alternate years; offered 1961-62.)
- 570 Seminar in Japanese Literature (3-5, maximum 15)** McKinnon
Close examination of selected periods, writers, or genres, including problems of literary criticism in Japanese literature. Prerequisite, 15 credits in 460 or 550. (Offered alternate years; offered 1962-63.)
- 600 Research (*)** Hurvitz, McKinnon
Prerequisite, permission.
- 700 Thesis (*)**

KOREAN

- 501, 502, 503 Seminar in Korean (3-5,3-5,3-5)** Suh

MONGOLIAN

- 521 Ancient Mongol: hPhagspa Script (3)** Poppe
Script and grammar of hPhagspa texts; reading and translation. Prerequisite, 304. (Offered alternate years; offered 1961-62.)

- 522 Mongol Ancient Texts (3)** **Poppe**
Grammar and reading of Mongol texts of the fourteenth to seventeenth centuries. Historical texts are emphasized. (Offered alternate years; offered 1961-62.)
- 580 Comparative Grammar of the Altaic Languages (3)** **Poppe**
Comparative phonology and morphology of Mongol and Turkic and other related languages. (Offered alternate years; offered 1961-62.)
- 600 Research (*)** **Poppe**
Prerequisite, permission.

RUSSIAN

- 551 Advanced Russian Syntax (3)** **Poppe**
Detailed structural analysis of sentence types in the Russian literary language, with emphasis on grammatical categories and word classes. (Offered alternate years; offered 1962-63.)
- 557 Seminar in Russian Language (3)**
Examination and discussion of Russian masterpieces.
- 560 Studies in Early Russian Literature (3)**
(Offered alternate years; offered 1961-62.)
- 565 Russian Eighteenth-Century Literature (5)**
Discussion of representative works of poetry, prose, fiction, and criticism in the formative period in history of Russian letters. Prerequisite, 320 or permission.
- 566 Pushkin (4)** **Erllich**
Analysis of the works of Alexander Pushkin. (Offered alternate years; offered 1962-63.)
- 567 Studies in Russian Prose (4)** **Erllich**
Close analysis of representative works of nineteenth-century prose fiction in original texts. (Offered alternate years; offered 1961-62.)
- 569 Russian Oral Epic Tradition (3)** **Erllich**
Introduction to folklore. (Offered every three years; offered 1962-63.)
- 590 Seminar in Russian Literary History (4)** **Erllich**
Close examination of selected periods or figures. (Offered alternate years; offered 1961-62.) Prerequisite, 10 graduate credits in Russian literature.
- 600 Research (*)**
Prerequisite, permission.
- 700 Thesis (*)**

SLAVIC

- 552 Phonetic Structure of Slavic Languages (3)**
A detailed analysis of the phonological evolution from earliest period of the Common Slavic language. (Offered alternate years; offered 1961-62.)
- 553 Morphological Features of Slavic Languages (3)**
Development of various grammatical forms of the Slavic languages from the Common Slavic period. (Offered alternate years; offered 1961-62.)
- 555 Old Church Slavonic (3)**
Rise and development of earliest Slavic literary language and a descriptive study of its orthography, phonology, morphology, and syntax. (Offered alternate years; offered 1962-63.)
- 556 Readings in Old Church Slavonic (3)**
Reading and grammatical interpretation of a selected group of texts. (Offered alternate years; offered 1962-63.)

TIBETAN

- 500 Advanced Literary Tibetan (3, maximum 9)** **Wylie**
Reading of manuscripts and xylographs with emphasis on biographical, historical, and geographic material. Prerequisites, 406 and permission.
- 502, 503, 504 Comparative Study of Chinese, Mongolian, Tibetan, and Sanskrit Texts (5,5,5)** **Li, Poppe**
- 534 Buddhistic Tibetan (2, maximum 6)** **Chang**
Reading of Tibetan translations of Buddhist literature. Knowledge of Sanskrit desirable but not required. Prerequisites, 406 and permission.
- 544 Ancient Tibetan Documents (2, maximum 6)** **Chang**
Reading of selections from ancient treaties, edicts, and annals. Knowledge of Chinese desirable but not required. Prerequisites, 406 and permission.
- 600 Research (*)**
Prerequisite, permission.

TURKIC

- 501, 502 Comparative Grammar of Central Asian Turkic (3,3)**
Comparative phonology, morphology, and syntax of the Turkic languages (Uighur, Kazakh, Tatar, Kirghiz, Uzbek, Eastern Turki). History of the Turkic languages. Prerequisites, 303, German, and Russian.
- 503 Seminar on Central Asian Turkic Literature (3)**
Prerequisites, 502, German, and Russian.

GENERAL AND COMPARATIVE LITERATURE

Chairman: FRANK W. JONES, 119A Parrington Hall

This program is centered administratively in the Department of English. It leads to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy.

BACHELOR OF ARTS

Requirements for a major in General Literature are: some upper-division credit or the equivalent in one foreign language, ancient or modern; 15 credits in General Literature 300, 301, 302, or equivalents; and not less than 35 credits in other subjects selected with the chairman to form a coherent program.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*.

MASTER OF ARTS. Candidates for the degree of Master of Arts with a major in General Literature should ordinarily present a Bachelor of Arts in English, in a foreign language, or in General Literature.

Course requirements are 35 credits (of which 25 must be in courses numbered 500 or above): 10 credits in General or Comparative Literature (including Comparative Literature 510 or 511) and 25 credits in two or more literatures or related fields. With the permission of the Chairman of the Program and the departments concerned, a thesis may be presented for 10 of the 35 credits.

By the time the candidate has fulfilled the course requirements, and before he takes the M.A. examination, he must pass the graduate reading tests in at least two of the languages included in the program: Chinese, Danish, French, German, Greek, Italian, Japanese, Korean, Latin, Norwegian, Russian, Spanish, and Swedish. The candidate's native language may not be one of those by which he meets this requirement.

The candidate must pass a written examination consisting of questions on two or more literatures and on the relations between them.

DOCTOR OF PHILOSOPHY. The degree of Doctor of Philosophy with a major in Comparative Literature is awarded through the candidate's major department and his Supervisory Committee. The following departments are authorized to sponsor candidates: English, Classics, Far Eastern and Slavic Languages and Literature, Germanic Languages and Literature, and Romance Languages and Literature.

Before taking his qualifying examination, the candidate must complete a minimum of 70 credits in graduate course work. These must include Comparative Literature 510 and 511; 35 credits in the candidate's major literature (including English 505 if the major literature is English); and 25 credits in his minor field or fields. The major literature must be Chinese, English, French, German, Greek, Italian, Latin, Japanese, Russian, or Spanish. The minor field may be in any of the languages listed under the M.A. requirements.

The candidate must know at least two languages in the program sufficiently well for graduate study of their literatures. The languages are those listed under the M.A. requirements.

The qualifying examination is to be taken within three quarters (Summer Quarter excepted) after completing course work. It is based on the assumption that the reading and study of the candidate have prepared him for the following: a critical essay of about 5,000 words on a comparative topic; a written examination testing the candidate's knowledge of a genre as represented in the major and minor literatures; an oral examination in the major and minor fields.

The candidate's major department will recommend a dissertation committee to the Dean of the Graduate School. The candidate may request any member of the

graduate faculty in his major or minor field to supervise his dissertation. The supervisor will not be a member of the dissertation committee.

A final oral examination on the dissertation, and on the field or fields with which it is concerned, must be completed at least two weeks before the end of the quarter in which the degree is to be granted.

COURSES FOR UNDERGRADUATES

300	Masterpieces of European Literature: Epic (5) (Offered 1961-62 only.)	Jones
301	Masterpieces of European Literature: Drama (5) (Offered 1961-62 only.)	Jones
302	Masterpieces of European Literature: Lyric (5) (Offered 1961-62 only.)	Jones
450, 451	Romanticism and the Nineteenth Century in Europe (5,5)	Jones
480	The Symbolist Movement (5)	Jones

COURSES FOR GRADUATES ONLY

510, 511	Studies in General and Comparative Literature (5, maximum 10; 5 maximum 10)	Jones
600	Research (*)	
700	Thesis (*)	

LITERATURE COURSES IN OTHER DEPARTMENTS

CLASSICS

210	Greek and Roman Classics in English (5)
422	Greek Historians and Philosophers in English (3)
426	Greek and Roman Epic in English (3)
427	Greek and Roman Drama in English (3)
430	Greek and Roman Mythology (3)
440	Greek and Roman Critics in English (3)

FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE

Chinese 320	Chinese Literature in English (5)
Japanese 420	Classical Japanese Literature in English (5)
Japanese 421	Modern Japanese Literature in English (5)
Japanese 422	Studies in Japanese Poetry in English (3)
Japanese 423	Japanese Drama in English (5)
Korean 320	Korean Literature in English (5)
Mongolian 320	Mongolian Literature in English (5)
Russian 320	Russian Literature in English (5)
Russian 421	Contemporary Russian Literature in English (5)
Russian 422	Russian Plays in English (5)
Russian 426, 427	The Russian Novel in English (5,5)
Slavic 320	Polish Literature in English (5)

GERMANIC LANGUAGES AND LITERATURE

350	Masterpieces of German Literature in English (3)
351	Contemporary German Literature in English (3)
462	Goethe in English (3)
464	Thomas Mann in English (3)

ROMANCE LANGUAGES AND LITERATURE

French 419	Nineteenth-Century Fiction in English (3)
French 420	Twentieth-Century Fiction in English (3)
French 416	Rabelais and Montaigne in English (3)

- French 417 Racine and Molière in English (3)
 French 418 Literature of the Enlightenment in English (3)
 Italian 318 Italian Literature in English (5)
 Italian 384 Renaissance Literature of Italy in English (2)
 Italian 481, 482 Dante in English (2,2)
 Spanish 315 Latin-American Authors in English (5)
 Spanish 318 Don Quijote in English (3)
 Spanish 345 Spanish Literature of the Renaissance in English (3)
 Spanish 420 Contemporary Spanish Essay and Drama in English (3)
 Romance 460 The Literature of the Renaissance in English (5)

SCANDINAVIAN LANGUAGES AND LITERATURE

- 309, 310, 311 The Scandinavian Novel in English (2,2,2)
 382 Twentieth-Century Scandinavian Drama in English (2)
 480 Ibsen and His Major Plays in English (2)
 481 Strindberg and His Major Plays in English (2)

GENERAL EDUCATION

Chairman: SPENCER MOSELEY, 314 Art Building

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 the 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. 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. The courses are taught by regular members of the faculties of the departments involved.

This 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.

Some General Education courses, but not all of them, may be applied toward specific majors. Students who plan to offer these courses in partial fulfillment of the requirements for departmental majors should obtain permission to do so from the departments involved. Courses presently offered in this program include the following:

<i>Humanities</i>	<i>Social Sciences</i>	<i>Natural Sciences</i>	<i>Expression and Methodology</i>
Hum. 101 Literature	Soc. Sci. 101 Hist. of Civilization:	Chem. 100 Chemical Science or 101 General Chemistry	Engl. 101 Comp.
Hum. 102 The Arts	The Great Cultural Traditions	Phys. Sci. 101 The Physical Universe	Engl. 102 Comp.
Hum. 103 Philos.	Soc. Sci. 102 Hist. of Civilization: Western Tradition in World Civilization	Biol. 101J-102J Gen. Biology	Engl. 103 Comp.
Hum. 201 Literature	Soc. Sci. 103 Hist. of Civilization: The Contemporary World		

COURSES FOR UNDERGRADUATES

BIOLOGICAL SCIENCE

Biology 101J-102J General Biology (5-5)

This course is offered jointly by the Departments of Botany and Zoology and is described in the course announcements of both departments.

CHEMISTRY**100 Chemical Science (5)**

Atoms, molecules, and chemical reactions. A survey of principles fundamental to the science. Designed both as a terminal course for nonscience majors and as an introductory course for those who wish to continue with 101 or 140. No credit given to those who have had one unit or more of high school chemistry.

101 General Chemistry (5)

For nonscience and nonengineering majors who plan to terminate their study of chemistry with 101 or 102. Molecular theory, quantitative relationships in chemical processes, solutions, ionic equilibria, acids, bases, and salts. Prerequisite, one unit of high school chemistry or 100.

ENGLISH**English 101, 102, 103 English Composition (3,3,3)****Irmscher****HUMANITIES****101 Literature (5)****Adams, Brown, Hilen**

An introduction to literary forms and techniques through analysis of representative examples of narrative and poetic art, with emphasis upon relationship of content and expression. (Identical to English 110.)

102 The Arts (5)**Ferrin, Moseley, Verrall**

Painting, sculpture, music, architecture, the dance, and drama studied through example, discussion, and criticism.

103 Philosophy (5)**Boler, Dietrichson, Greenberg, Keyt**

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. (Identical to Philosophy 100.)

201 Literature (5)**Brown**

Reading and critical discussion of some of the greatest works in world literature. (Identical to English 210.)

PHYSICAL SCIENCE**101 The Physical Universe (5)****Clark**

The universe as a unit; the stars; the solar system; the earth; the basic process; the atom. (Identical to Physics 100.)

SOCIAL SCIENCE**101 History of Civilization: The Great Cultural Traditions (5)****Alden, Bridgman,****Burke, Griffiths, Kaminsky, Katz, Levy, Sugar, Willis**

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. 101, 102, and 103 may be offered in partial fulfillment of the requirements for a major in history.

102 History of Civilization: The Western Tradition in World Civilization (5)**Alden, Bridgman,****Burke, Griffiths, Kaminsky, Katz, Levy, Sugar, Willis**

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.

103 History of Civilization: The Contemporary World (5)**Alden, Bridgman,****Burke, Griffiths, Kaminsky, Katz, Levy, Sugar, Willis**

The meeting of East and West: the "one-world" community in the twentieth century; imperialism, communism, facism, democracy, internationalism; twentieth-century science; present-day philosophy; religion, literature, and art; the meaning of history for the citizen of the contemporary world.

GENERAL STUDIES**Director: W. GLEN LUTEY, 229 Denny Hall**

Enrollment in the Division of 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. In addition to major programs especially constructed to meet the needs of students possessing individual

and unique educational objectives, and to those curricula developed as preparation for the School of Librarianship and the School of Social Work (*see below*), several organized curricula exist in General Studies. To be admitted to the Division, the student must have maintained at least a 2.00 grade-point average in his previous educational experience; to be accepted as a major pursuing a curriculum tailored to meet an individual educational objective, a student must currently possess and must maintain at least a 2.50 cumulative grade-point average. Transfer to the Division must be completed not later than the third quarter before graduation.

The preprofessional curriculum in social welfare may achieve the educational objective not only of students anticipating graduate study in the School of Social Work, but also of students interested in appointment to social welfare positions which do not require professional education. This undergraduate curriculum seeks to provide a broad, liberal, educational experience with particular emphasis on the social sciences. Requirements include at least 10 credits of selected coursework in each of the following fields: anthropology, sociology, history, psychology, philosophy, political science, and economics. Social work faculty members, as well as the General Studies staff, are available to advise students planning careers in this area. Inquiries concerning this major program may be addressed either to the General Studies Office or to Professor Richard G. Lawrence, Assistant Dean of the School of Social Work.

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. A major program in the area of the behavioral sciences—social aspects of personnel—focuses on an understanding of interpersonal relations as evident both between individuals and in larger groups. 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. Inquiries concerning the Latin American studies program may 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.

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 senior study giving evidence of the student's competence in his major field.

COURSES FOR UNDERGRADUATES

391 Supervised Study in Selected Fields (*, maximum 6)

Special supervised study in a field represented in the College of Arts and Sciences. Prerequisites, permission of major department, supervisor of study, and General Studies Office.

451 Sources of Modern Cultural Crisis (2-6)

Interdepartmental Staff

Individual reading assigned by members of the interdepartmental staff. May be repeated in various fields. Prerequisites, either anticipated or current enrollment in 455-456 and permission.

455-456 Critical Problems of Our Culture (3-3)

Interdepartmental Staff

Economic, psychological, scientific and technological, artistic, moral, religious aspects; essential conflicts; the problem of synthesis. Open to seniors; juniors by permission.

493 Senior Study (1-5)

For majors only. Prerequisites, permission of supervisor of study and General Studies Office.

GENETICS

Executive Officer: HERSCHEL L. ROMAN, 338 Johnson Hall

The Department of Genetics offers a graduate program leading to the degrees of Master of Science and Doctor of Philosophy. In addition, courses are given by the Department for undergraduates majoring in the biological sciences and in related areas. The Department does not offer an undergraduate major in genetics. However, it is suggested that students who foresee the possibility of graduate work in genetics consult with the executive officer of the Department concerning an undergraduate curriculum best suited for this purpose.

COURSES FOR UNDERGRADUATES

BIOLOGY

- 351 Human Genetics (3)** **Gartler**
For premedical students and those majoring in anthropology, psychology, and related fields dealing with human variation. Prerequisites, Botany 111 or Zoology 111, or equivalent, and junior standing.
- 451 Genetics (3)** **Roman**
A general course recommended for majors in the biological sciences. Prerequisite, 10 credits in biological science.
- 451L Genetics Laboratory (2)**
Must be accompanied by 451.
- 452 Cytogenetics (3)** **Roman**
Chromosomal behavior in relation to genetics. Prerequisite, 451 or permission.
- 452L Cytogenetics Laboratory (2)** **Hawthorne**
Must be accompanied by 452.
- 453 Topics in Genetics (2, maximum 6)**
Current problems and research methods. Prerequisites, 451, organic chemistry, or permission.

GENETICS

- 499 Undergraduate Research (*)**
Prerequisite, permission.

COURSES FOR GRADUATES ONLY

GENETICS

- 520 Seminar (1)**
Prerequisite, permission.
- 551 Genetics of Microorganisms (3)** **Stadler**
The contributions of research with microorganisms are discussed in relation to basic genetic concepts. Prerequisite, Biology 451 or permission.
- 552 Genetics of Microorganisms Laboratory (3)** **Stadler**
The student learns how to use a variety of microorganisms as research tools for problems in genetics. Prerequisite, 551 or permission.
- 600 Research (*)**
- 700 Thesis (*)**

GEOGRAPHY

Executive Officer: G. DONALD HUDSON, 406 Smith Hall

The Department of Geography offers programs of instruction and training leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. In addition, the Department offers major and minor academic fields (and a major academic field for elementary education majors) in the College of Education; see the *College of Education Bulletin*. Also offered are courses supplementary to programs offered in other fields, particularly the social sciences.

As a discipline, or area of learning, geography is generally divided into three closely allied and interrelated fields: the systematic (topical), the regional (area studies), and the technical. The departmental program is designed to provide

the student on lower-division levels with an understanding of the nature and content of geography (Geography 100) and to introduce him to the three fields that comprise the whole. On upper-division levels the student is provided intermediate studies (300-level) in the three fields and advanced studies (400-level) selected by the Department for particular emphasis: economic geography, Anglo-America, East and Southeast Asia, the Soviet Union, and cartography.

The primary objective of the Department's undergraduate program is to serve the student's broad intellectual interests. These may be in geography, or in another field, academic or professional, with which geography is closely allied. Incidental to this primary objective, the undergraduate program prepares the student for professional training appropriate to the advanced degrees of Master of Arts and Doctor of Philosophy. A secondary, though significant, objective of the undergraduate program is preparation for careers in cartography and, through the College of Education, public school teaching.

BACHELOR OF ARTS

The Department has no fixed program for all students electing to major in geography. Each student is expected to complete 50 credits in the Department, but the composition of the program which the student follows is developed jointly in consultations between the student and the departmental adviser.

Programs of study will follow this general pattern: (1) Geography 100; three courses on the 200-level, including 207, 258; three courses on the 300-level; and three courses on the 400-level, including 426; (2) emphasis on a field within geography; (3) a minimum of three courses in at least two related fields: anthropology, economics, Far Eastern and Russian studies (the Far Eastern and Russian Institute), history, geology, mathematics, meteorology and climatology, oceanography, political science, and sociology.

It is recommended that students complete an introductory course either in geography or in one of the other social sciences before registering for upper-division courses in geography.

PREREQUISITES

In addition to specified prerequisites, where they are stated in connection with individual courses, the following general prerequisites must be adhered to:

1. 100-level: open to all students.
2. 200-level: open to sophomores and upperclassmen; open to freshmen who have completed Geography 100.
3. 300-level: open to juniors and seniors; open to sophomores who have completed one or more courses in geography on the 200-level.
4. 400-level: open to seniors; open to juniors who have completed one or more courses in geography on the 300-level.
5. 500-, 600-, 700-level: open only to graduate students.

ADVANCED DEGREES

Undergraduates who intend to work toward advanced degrees should consult the general requirements set forth in the *Graduate School Bulletin*. Essential to preparation for advanced degrees is not only basic training in geography, but also competence in a pertinent foreign language and studies in the social and earth sciences, and in mathematics. Again, there is no set program leading to advanced degrees. The composition of individual programs is developed jointly by the student and the adviser who represents the field within geography in which the student has special interests. Training in research is an essential part of study leading to the Master of Arts degree. Programs leading to the Doctor of Philosophy degree are oriented primarily to training and experience in research.

COURSES FOR UNDERGRADUATES

INTRODUCTION TO GEOGRAPHY

100 Introduction to Geography (5)

Major concepts and methods in the field; analysis of selected problems and types of regions.

INTRODUCTION TO FIELDS IN GEOGRAPHY

200 World Regional Geography (5)

A study of the world's regional structure; analysis and interpretation of the world's cultural, economic, and resource patterns.

205 Physical Geography (5)

Survey of character and location of different types of land forms, climates, soils, vegetation, minerals, and water resources; their significance to human occupation.

207 Economic Geography (5)

Martin, Thomas, Ullman

World survey of extractive, manufacturing, and distributing activities; regional characteristics relating to the availability of resources and markets and the utilization of technological skills.

258 Maps and Map Reading (2)

Heath, Sherman

Categories of maps and aerial photographs and their special uses; map reading and interpretation.

277 Cities of the United States (3)

Martin

Major cities, with an analysis of location, settlement, growth, and present function.

INTERMEDIATE AND ADVANCED COURSES

Systematic Fields

325 Historical Geography of America (3)

Martin

Exploration, migration routes, pioneer settlement, and the moving frontier in relation to geographic phenomena. Criteria for differential development of regional cultures.

370 Conservation of Natural Resources (5)

Thomas

Principles and practices in effective utilization of resources; public policies relating to conservation.

375 Political Geography (5)

Jackson

A study of location, resources, space relationships, and other geographical factors having a bearing on the functioning of the modern state.

440J Manufacturing (3 or 5)

Thomas

Analysis of linkages, structure, and distribution of manufacturing; study of selected industries focusing attention on factors which influence their development and location. Lectures, 3 credits; independent study, 2 additional credits with permission of instructor. Offered jointly with the Department of Economics.

442 Regional Specialization (3 or 5)

Morrill

Analysis of world patterns of extractive and selected service industries and factors basic to their development; resulting linkages and geographic patterns of regional specialization. Lectures, 3 credits; independent study, 2 additional credits with permission of instructor.

444 Geography of Water Resources (3 or 5)

Marts

Analysis and appraisal of water resources in land and industrial development; problems and policies of river basin planning with emphasis on the Pacific Northwest. Lectures, 3 credits; independent study, 2 additional credits with permission of instructor.

448 Geography of Transportation (5)

Ullman

Circulation geography, principles of spatial interaction emphasizing commodity flow, the nature and distribution of rail and water transport, the role of transport in area development.

477 Urban Geography (5)

Ullman

Analysis of urban and other agglomerated settlements in terms of nature, economic base, principal functions, distribution, supporting areas, and internal structure.

Regional Fields

301 Anglo-America (5)

Examination of the United States-Canada resource base and geographical implications of economic activities. Geographical aspects of contemporary problems and the future development of both countries.

302 The Pacific Northwest (3)

Survey of the economy of the Pacific Northwest in the light of factors of location, resources, resource-oriented industries, and resource policies. An introduction to regional studies on a local scale.

303J Monsoon Asia (5)

Earlo, Kakiuchi

Historical and current patterns and development of settlement and human activities in Monsoon Asia. Regional frameworks; resources; problems of urban and agrarian development, industrialization, and economic growth. Offered jointly with the Far Eastern and Russian Institute.

- 304 Europe (5)** **Martin**
Distribution of urban and rural settlement, 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 Latin America (5)** **Heath**
Present and future development and problems of Caribbean and South America in terms of their natural resources, economic activities, and ethnic and settlement patterns.
- 306 Africa (5)**
Historical and economic geography, emphasizing the role of natural resources in settlement and economic development; problems of colonization, the foundations of commercial agriculture, and trends in industrial development.
- 307 Australia and New Zealand (5)** **Earle**
Pastoral and agricultural development; industrial potential; urbanization; immigration and trade policies; external economic and political relations.
- 332J Islands of the Pacific (3)** **Earle**
Analysis of major islands and groups with respect to resources, settlement, population composition; role in modern transportation and communications; current political status. Offered jointly with the Far Eastern and Russian Institute.
- 333J The Soviet Union (5)** **Jackson**
Analysis of geographical development of the Soviet Union with particular reference to settlement, agricultural and industrial resources, economic structure, and urbanization. Offered jointly with the Far Eastern and Russian Institute.
- 402 United States (5)** **Martin**
Analysis of resources of the United States with particular reference to population patterns, economic activities, and regional structures.
- 412J South Asia (5)** **Murphy**
Analysis of origins, development, and present outlines of settlement, cultures, resource use, and economic structures in the Indian subcontinent, the Indo-Chinese peninsula, and insular Southeast Asia. Offered jointly with the Far Eastern and Russian Institute.
- 413J East Asia (5)**
Nature and geographic setting of Far Eastern civilization with reference to origins, development, and present outlines of settlement, cultures, resource use, and economic structures in China, Japan, and Korea. Offered jointly with the Far Eastern and Russian Institute. (Not offered, 1961-63.)
- 433J Problems in the Geography of the Soviet Union (3 or 5)** **Jackson**
Analysis of geographical aspects of selected agricultural, industrial, and other contemporary developments. Lectures, 3 credits; independent study, 2 additional credits with permission of instructor. Offered jointly with the Far Eastern and Russian Institute. Prerequisite, 333J.
- 434J Problems in the Geography of Southeast Asia (5)** **Earle**
Analysis of regional and political structures; resources, economic activities, and problems of development; overseas and internal relationships. Offered jointly with the Far Eastern and Russian Institute.
- 435J Problems in the Geography of China (5)** **Murphy**
Origins and development of Chinese civilization in its geographic base and areal spread; political China and the Chinese sphere; physical base and resources; problems of agriculture, population, industrialization, urbanization, transportation, and contemporary development; communist China. Offered jointly with the Far Eastern and Russian Institute.
- 437J Problems in the Geography of Japan (5)** **Kakiuchi**
Regional structure of Japanese urban, industrial, and agricultural geography. Analysis of contemporary patterns considering cultural and physical factors and selected aspects of their historical development. Offered jointly with the Far Eastern and Russian Institute.

Cartography

- 360 Principles of Cartography (5)** **Heath, Sherman**
Map scales, grid systems, symbolism, and map reproduction. Laboratory experience in application of these principles to map design and construction.
- 361 Experimental Cartography (5)** **Heath, Sherman**
Application of and experimentation with cartographic techniques and materials. Problems of relief representation, mapping of quantitative data, and their relation to reproduction processes. Prerequisite, 360.
- 363 Aerial Photographs as Source Materials (2)** **Heath, Sherman**
Training in the use of aerial photographs as source materials in map compilation. Prerequisite, 360.
- 425J Graphic Techniques in the Social Sciences (5)** **Schmid**
Theory and practice of presenting statistical data in graphic form. Construction of bar, line, pictorial, and other types of charts and graphs, and areal distribution maps, etc., used for research and publicity purposes in sociology, geography, economics, education, and community planning. Offered jointly with the Department of Sociology. Prerequisite, Sociology 223 or equivalent.
- 458 Map Intelligence (3)** **Sherman**
Analysis and appraisal of United States and foreign maps and atlases; mapping agencies, coverage, organization, and indexing; symbolism, scales, projections, and military grids; map library problems and operation.

- 462 Problems in Map Compilation and Design (5)** **Heath, Sherman**
Application and analysis of map intelligence procedures as related to map compilation. Measurement and experimental study of psycho-physiological factors in design of map elements. Prerequisite, 360.
- 464 Problems in Map Reproduction (3)** **Heath**
Processes, and photographic techniques, as applied to cartography. Prerequisite, 360.
- Introductory Research Techniques**
- 426 Statistical Measurement and Inference (5)** **Morrill**
Identification of geographic problems and selection of data; tests of simple hypotheses; applications of unequation, simultaneous equation, and variance models; evaluation of findings. Prerequisite, an introductory course in statistics or permission.
- 490 Field Research (6, maximum 12)**
Development and application of skills essential to geographic field investigations: (1) training in the use of field techniques and base materials; (2) evaluation of these in a variety of research situations; (3) analysis and interpretation of field data; and (4) presentation of results of field investigations. (Not offered 1961-63.)

COURSES FOR GRADUATES ONLY

INTRODUCTION TO PROFESSIONAL TRAINING

- 500 Contemporary Geographic Thought (3)**
- 501 Geographic Analysis (3)**
- 502 Professional Writing in Geography (*, maximum 6)**
- 503 Source Materials in Geographic Research (3)**

PROFESSIONAL TRAINING

Systematic Geography

- 510 Research Seminar: Settlement and Urban Geography (3, maximum 9)** **Ullman**
- 530 Research Seminar: The Economic Geographer and Lesser-Developed Areas (3, maximum 6)** **Thomas**
- 537 Research Seminar: Quantitative Methods in Economic Geography (3, maximum 6)** **Morrill**
- 538 Research Seminar: Geography of Transportation (3, maximum 6)** **Ullman**
- 539 Research Seminar: Utilization of Water Resources (3, maximum 6)** **Marts**
- 540 Research Seminar: Geography of Manufacturing (3, maximum 6)** **Thomas**
- 575 Research Seminar: Political Geography (3, maximum 6)** **Jackson**

Regional Geography

- 504J Research Seminar: Japan (3, maximum 6)** **Kakiuchi**
Offered jointly with the Far Eastern and Russian Institute.
- 505J Research Seminar: China and Northeast Asia (3, maximum 6)** **Murphy**
Offered jointly with the Far Eastern and Russian Institute.
- 506J Research Seminar: Southeast Asia (3, maximum 6)** **Earle**
Offered jointly with the Far Eastern and Russian Institute.
- 507J Research Seminar: Soviet Union (3, maximum 6)** **Jackson**
Offered jointly with the Far Eastern and Russian Institute.
- 508 Research Seminar: Anglo-America (3, maximum 6)** **Hudson, Marts**

Cartography

- 520 Research Seminar: Cartography (3, maximum 6)** **Heath, Sherman**

Nonthesis and Thesis Research

- 600 Research (*)**
- 700 Thesis (*)**

GEOLOGY

Executive Officer: HOWARD A. COOMBS, 42 Johnson Hall

The Department of Geology offers courses leading to the degrees of Bachelor of Science, Master of Science, and Doctor of Philosophy. In addition, the Department offers major and minor academic fields for students in the College of Education; see the *College of Education Bulletin*.

A grade-point average of 2.50 is required for entrance to the Geology Department and a cumulative grade-point average of 2.50 is required for graduation.

BACHELOR OF SCIENCE

Candidates for the Bachelor of Science with a major in geology must fulfill the College and departmental requirements tabulated below.

A student intending to take graduate work should take French, German, or Russian as an undergraduate.

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 100 Chem. Science		Chem. 150 General	3	Chem. 160 General	3
or Chem. 140. General	5-3	Chem. 151 Gen. Lab.	2	Chem. 170 Qual. Anal.	3
Engl. 101 Composition	3	Engl. 102 Composition	3	Engl. 103 Composition	3
Math. 103 Intermed.		Gen. Engr. 101 Engr.		Gen. Engr. 103 Descript.	
Algebra & Trig. or 104		Drawing	3	Geom.	3
Plane Trig.	3	Math. 105 College		Health Educ. 110 or 175	
Elective	5	Algebra	5	Health or elective	2
Phys. Educ. activity	†	Phys. Educ. activity	†	Phys. Educ. activity	†
ROTC	‡	ROTC	‡	ROTC	‡

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Geol. 205 Rocks & Min.	5	Geol. 206 Elem. Physiog.	5	Geol. 207 Historical Geol.	5
Physics 121 and 131		Physics 122 and 132		Geol. 222 Mineralogy	3
Physics and Lab. for		Physics and lab. for		Physics 123 and 133	
Science Majors	5	Science Majors	5	Physics and lab. for	
Approved electives	5	Geol. 221 Crystallography	3	Science Majors	5
ROTC	‡	Approved electives	2	Approved electives	2
		ROTC	‡	ROTC	‡

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Geol. 308 Struct. Geol.	5	Geol. 330 Gen. Paleon.	5	Geol. 401 Field Course	
Geol. 320 Sed. Petrol.	5	Geol. 361 Stratigraphy	5	or approved electives	15
Approved electives	5	Approved electives	5		

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Geol. 412 Physiog. of U.S.	5	Geol. 424 Petro. & Petro.,		Approved electives	15
Geol. 423 Optical Min.	5	Igneous Rocks	5		
Approved electives	5	Approved electives	10		

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. All candidates for advanced degrees in geology must have completed essentially the same academic work as outlined in the undergraduate curriculum. Examinations for both the master's and the doctor's degree will include subjects from the whole field of geology. All candidates must present an approved field course such as 401 or other field experience which is approved by the Department. Candidates for advanced degrees should take the following courses: 414, 443, 480, 481, and a second course in paleontology, or the equivalents of these courses.

MASTER OF SCIENCE. The language requirement for this degree may be met with French, German, or Russian. Of the 45 credits required, a minimum of 36 credits must be in work other than field geology. Either a thesis or a research paper (Geology 600, 5 credits) is required.

DOCTOR OF PHILOSOPHY. Candidates must present any two of the following languages: Russian, French, German. All Ph.D. candidates must have either an M.S. or M.A. degree.

† See page 23 for Physical Education activity requirement.

‡ See page 23 for ROTC requirement.

COURSES FOR UNDERGRADUATES

- 101 Survey of Geology (5)** Barksdale, Mallory, McKee
- 102 Geology in World Affairs (5)** Ellis
Geological occurrence, world distribution, and production of coal, petroleum, and the important industrial materials. Prerequisite, 101 or 205.
- 103 Earth History (5)** Mallory
Geology through time, including the elements of stratigraphy and paleontology. Prerequisite, 101 or 205.
- 205 Rocks and Minerals (5)** Ellis
Prerequisite, high school chemistry.
- 206 Elements of Physiography (5)** Mackin
Processes and agencies affecting the earth's surface; relationship of topography to structure. Prerequisite, 101 or 205.
- 207 Historical Geology (5)** Wheeler
Origin and evolution of the earth, with emphasis on geological history of North America. Prerequisite, 205 or permission.
- 221 Crystallography and Sulfide Mineralogy (3)** Ellis
Study of crystal morphology, the relation of crystal form to the space lattice, and introduction of the mineralogy of the sulfides. Prerequisite, 205.
- 222 Mineralogy (3)** Ellis
Descriptive mineralogy of more than one hundred common minerals (excluding sulfides). Prerequisite, 221.
- 223 Mineralogy for Metallurgical Engineers (3)** Ellis
Study of crystallography and descriptive mineralogy (for metallurgical engineers only).
- 308 Structural Geology (5)** McKee
Interpretation of rock structures and their genesis. Prerequisites, 205, 206, 207, and General Engineering 103.
- 310 Geology for Engineers (5)** Barksdale
Elements for civil engineers. Prerequisite, civil engineering major or permission.
- 320 Sedimentary Petrology (5)** Barksdale
Origin and classification of sedimentary rocks; emphasis on field identification. Prerequisite, 222.
- 330 General Paleontology (5)** Mallory
Systematic study of invertebrate fossils and the principles of paleontology. Prerequisites, 205, 206, and 207, or permission.
- 344 Field Methods (5)** Barksdale
Geologic and topographic surveying and recording. Prerequisite, 308.
- 361 Stratigraphy (5)** Wheeler
Systematic study of spatial relations of surface-accumulated rocks and their space-time implications. Prerequisites, 205, 206, 207, and 320.
- 401 Field Course (15)**
Advanced or field work in general geology. (Offered Spring Quarter only.) Prerequisite, permission.
- 412 Physiography of the United States (5)** Mackin
Regional geology as it applies to surface forms. Prerequisites, 205, 206, and 207.
- 414 Map Interpretation (5)** Mackin
Principles of geologic interpretation of topographic maps and photos. Prerequisites, 205, 206, and 207.
- 423 Optical Mineralogy (5)** Vance
Petrographic microscope and recognition of common minerals in thin section. Prerequisites, 205 and 222.
- 424 Petrography and Petrology of Igneous Rocks (5)** Vance
Systematic study with the petrographic microscope. Prerequisite, 423.
- 425 Petrography and Petrology of Metamorphic Rocks (5)** Vance
Systematic study of metamorphic rocks and their origin. Prerequisite, 424.
- 427 Ore Deposits (5)** Ellis
Form, structure, mineralogy, petrology, and mode of origin. Prerequisites, 222 and 424.
- 436 Micropaleontology (5)** Mallory
Principles of paleontology as applied to micropaleontology; the systematic study of foraminifera. (Offered odd-numbered years.) Prerequisites, 330 and permission.
- 443 Advanced Structural Geology (5)** Misch
Analysis in space and time; genetic interpretation; principles of geotectonics. Prerequisite, 308.
- 450 Elements of Seismology (5)** Neumann
Theory of seismograph, seismic wave propagation and deep earth structure.
- 480 History of Geology (3)** Barksdale
For those contemplating graduate study. Prerequisites, senior standing in geology and permission.

- 481 Preparation of Geologic Reports and Publications (3)** **Coombs**
 Organization, writing, and illustration of geologic reports. Prerequisites, senior standing in geology and permission.
- 498 Undergraduate Thesis (5)**
 The thesis must be submitted at least one month before graduation.
- 499 Undergraduate Research (*, maximum 5)**
 Prerequisites, senior standing and permission.

COURSES FOR GRADUATES ONLY

- 503 Advanced Petrography and Petrology of Sedimentary Rocks (3)** **Barksdale**
 (Offered even-numbered years.)
- 510 Advanced Studies in Physiography (*, maximum 10)** **Mackin**
- 515 Fluvial Morphology (*, maximum 5)** **Mackin**
- 516 Glacial Geology (5)** **Mackin**
- 520 Seminar (*)**
- 521 Metamorphic Minerals (5)** **Misch**
 (Offered odd-numbered years.)
- 522 Regional Metamorphism and Granitization (5)** **Misch**
 (Offered even-numbered years.)
- 524 Advanced Igneous Petrography and Petrology (3 or 5)** **Vance**
 (Offered odd-numbered years.)
- 530 Advanced Studies in Paleontology (*)** **Mallory, Wheeler**
 (Offered odd-numbered years.)
- 531 Biostratigraphy (5)** **Mallory**
 (Offered even-numbered years.)
- 540 Advanced Studies in Structural Geology (*)** **McKee**
- 545 Structure of Europe (5)** **Misch**
 (Offered even-numbered years.)
- 546 Structure of Asia and West Pacific Rim (5)** **Misch**
 (Offered odd-numbered years.)
- 547 Literature on Structural Geology (3 or 5)** **Misch**
- 550 Advanced Studies in Geophysics (*, maximum 9)** **Neumann**
- 560 Advanced Studies in Stratigraphy (*)** **Mallory, Wheeler**
- 563 West Coast Cenozoic Stratigraphy (4)** **Mallory**
 (Offered even-numbered years.)
- 565 Paleozoic Stratigraphy (4)** **Wheeler**
 (Offered even-numbered years.)
- 568 Mesozoic Stratigraphy (4)** **Wheeler**
 (Offered odd-numbered years.)
- 570 Advanced Studies in Mineralogy, Petrography, and Petrology (*)** **Coombs, Misch, McKee**
- 571 Engineering Geology (3)** **Coombs**
- 572 Geochemistry (3)** **McKee**
- 580 Advanced Studies in Economic Geology (*)** **Coombs**
- 600 Research (*)**
- 700 Thesis (*)**
- 702 Degree Final (0)**
 Limited to students completing a nonthesis degree program.

GERMANIC LANGUAGES AND LITERATURE

Executive Officer: WILLIAM H. REY, 340 Denny Hall

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 major and minor academic fields for students in the College of Education; see the *College of Education Bulletin*.

The educational objectives for a major in German leading to the Bachelor of Arts degree in the College of Arts and Sciences are: competence in the use of the language (oral fluency, facility in reading and writing); familiarity with master-

pieces of representative German authors from the eighteenth century to the present; an enlightened understanding of the German people and their culture in comparison to our own.

BACHELOR OF ARTS

In this elective curriculum, at least 50 credits are required for the major and 39 credits for the minor. First-year German courses, scientific German, and courses in English translation are not counted toward the major or minor. Students who enter with two years of high school German begin with the second-year sequence.

Lower-division courses are designed to develop the basic language skills through the oral-aural approach. Second-year German is offered in a split-level series; second-year reading (201, 202, 203; 3 credits each) and grammar and conversation (205, 206, 207; 2 credits each). The division in the second-year offering is made so that nonmajors may adapt the reading sequence into their programs. Prospective majors and minors are required to take both sequences.

Upper-division courses emphasize conversation and composition with a series in each year (301, 302, 303; 401, 402, 403; 2 credits each). In addition, the sequence in literature (310, 311, 312; 3 credits each) introduces juniors to the study of classical writers. This is followed in the senior year by the sequence 410, 411, 412, which is devoted to Modern German Literature and Civilization. The following electives are available: 404, 405, 416, 417, 431, 434, 435, 438.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. Candidates for advanced degrees in Germanics must have the equivalent of an undergraduate major in German.

MASTER OF ARTS. Candidates must, in addition to fulfilling general requirements of the Graduate School, complete a program of 36 credits. If the student minors in some other department, he may take a minimum of 24 credits in Germanics. If his entire program lies within the field of Germanics, he must elect 24 credits in modern literature and 12 credits in philology and medieval literature or vice versa.

The M.A. program is designed for three quarters and consists of a compact schedule of courses, which are repeated every year. The courses in the modern field are devoted to Lessing (431), Schiller (438), Goethe (434, 435), Romanticism (515), nineteenth-century drama (416), nineteenth-century prose (417) and twentieth-century literature (518). They are complemented by courses in Middle High German language and literature (556, 557), bibliography (501) and German linguistics (405). The candidate must pass a comprehensive written examination covering his main fields of study. In addition, he must submit in final form, at least one month prior to final examination, an acceptable thesis giving evidence of the mastery of scholarly procedure and worth at least 9 credits.

A minor in Germanics for the M.A. degree must consist of a minimum of 12 credits in acceptable courses beyond an undergraduate minor in the field. In no instance, however, may a minor in Germanics for the master's degree be less than a major for the bachelor's degree at the University of Washington.

DOCTOR OF PHILOSOPHY. For a major in Germanics, the student must complete all of the stated requirements of the Graduate School, pursue his studies for at least three graduate years, pass general examinations on the field, and submit a satisfactory dissertation which demonstrates a mastery of scholarly procedure and is an acceptable contribution to knowledge. The candidate must complete a minimum of 81 credits in course work after admission to the Graduate School (45 credits beyond the M.A.) before taking his general examinations. If he minors in another department, he may elect a minimum of 30 credits in Germanics. If his entire program lies within the field of Germanics, he must elect 30 credits in

modern literature (since 1500) and 15 credits in philology and the older literature or vice versa. Furthermore, he is expected to earn at least 9 credits in supervised research (600). The general examinations, which are both written and oral, will not be confined to courses taken at the University or elsewhere, but will endeavor to demonstrate the student's breadth of knowledge, which he has acquired by independent reading and study. His intensive training in areas of special interest and his abilities in critical evaluation will also be tested.

For a minor in Germanics, a minimum of 15 credits is required. In no instance, however, may a minor in Germanics for the doctor's degree be less than the course requirements stated for the M.A. major.

COURSES FOR UNDERGRADUATES

101-102, 103 First-Year German (5-5,5)

The methods and objectives are primarily oral-aural. Students with one year of high school German may receive only 2½ credits in -102.

121, 122 First-Year Reading German (5,5)

A special beginning course devoted exclusively to the reading objective. For graduate students only.

201 Basic Second-Year Reading (3)

Readings in German literature. Majors and minors take concurrently with 205. Prerequisite, 103 or two years of high school German.

202 Intermediate Second-Year Reading (3)

Majors and minors take concurrently with 206. Prerequisite, 201.

203 Advanced Second-Year Reading (3)

Majors and minors take concurrently with 207. Prerequisite, 202 or equivalent.

205 Basic Second-Year Conversation (2)

Grammar review and conversation. Prerequisite, 103 or two years of high school German.

206 Intermediate Second-Year Conversation (2)

Grammar review and conversation. Prerequisite, 205.

207 Advanced Second-Year Conversation (2)

Discussion of general topics to develop oral fluency. Prerequisite, 206.

260 Lower-Division Scientific German (3)

Prerequisite, 202 or permission.

301, 302, 303 Grammar and Conversation (2,2,2)

The materials used aim not merely at an increase in ability to speak, write, and understand German, but also at broadening the student's understanding of the culture of German-speaking countries. Primarily for majors and minors. Prerequisites, 15 credits in second-year German.

307 Third-Year Composition (5)

Not open to those who have had 301, 302, 303. (Offered Summer Quarter only.)

310, 311 Introduction to the Classical Period (3,3)

Sauerlander

Lessing, Schiller, Goethe. Prerequisite, 15 credits in second-year German.

312 Introduction to the German Novelle (3)

Sauerlander

Representative writers, such as Keller, Meyer, and Storm; theory of the Novelle. Prerequisite, as for 310.

330 Conversational German (5)

For participants in the Living-Language Group program only. (Offered Summer Quarter only.)

401, 402, 403 Grammar and Composition (2,2,2)

Primarily for majors and minors. Prerequisites, 301, 302, and 303.

404 History of the German Language (5)

Meyer

From early Germanic to the present. Open to junior majors.

405 Linguistic Analysis of German (3)

Reed

Prerequisite, permission.

407 Advanced Composition (5)

Not open to those who have had 401, 402, 403. (Offered Summer Quarter only.)

410, 411, 412 Survey of Modern German Literature and Culture (3,3,3)

Literature since 1800, with special consideration of its cultural background and political significance. Prerequisite, 15 credits of third-year German or permission.

416 Nineteenth-Century Drama (3)

Sauerlander

Prerequisite, permission.

417 Nineteenth-Century Prose (3)

Roy

Prerequisite, permission.

- 430 Advanced Conversational German (5, maximum 10)**
For participants in the Living-Language Group program only. (Offered Summer Quarter only.) Prerequisite, 303, 330, or permission.
- 431 Lessing (3)** Buck
- 434 Goethe I (3)** Loeb
- 435 Goethe II (3)** Loeb
- 438 Schiller (3)** Kahn
- 497 Studies in German Literature (1-5, maximum 15)**
- 498 Studies in the German Language (1-5, maximum 15)**

COURSES FOR GRADUATES ONLY

- 500 Methodology (3)** Sommerfeld
(Offered 1961-62.)
- 501 Bibliography (3)** Sommerfeld
- 502 History of German Criticism (3)** Rey
(Offered 1962-63.)
- 503 Modern Poetry (3)** Sommerfeld
(Offered 1961-62.)
- 515 Romanticism (3)** Immerwahr
- 518 Twentieth-Century Literature (3)** Rey
- 520 Seminar in Medieval Literature (3)** Hruby
(Offered 1962-63.)
- 521 Seminar in the Literature of the Reformation and Renaissance (3)** Wilkie
(Offered 1961-62.)
- 522 Seminar in Baroque (3)**
- 524 Seminar in Eighteenth-Century Literature (3)**
- 525 Seminar in Romanticism (3)** Immerwahr
(Offered 1961-62.)
- 526 Seminar in Nineteenth-Century Drama (3)** Sauerlander
(Offered 1962-63.)
- 527 Seminar in Nineteenth-Century Prose (3)** Rey
(Offered 1961-62.)
- 558 Studies in Medieval Literature (3)** Rey
(Offered 1962-63.)
- 544 Seminar in Goethe (3)** Loeb
(Offered 1962-63.)
- 550 Gothic (3)** Meyer
(Offered 1961-62.)
- 552 Old High German (3)** Reed
(Offered 1961-62.)
- 555 Old Saxon (3)** Reed
(Offered 1962-63.)
- 556 Middle High German (3)** Meyer
- 557 Middle High German Literature in the Original (3)** Hruby
- 558 Studies in Medieval German Literature (3)** Hruby
(Offered 1961-62.)
- 560 Modern Dialects (3)** Reed
(Offered 1962-63.)
- 590, 591, 592 Seminar in Literary History (1-5, 1-5, 1-5)**
- 595, 596, 597 Seminar in Germanic Philology (1-5, 1-5, 1-5)**
- 600 Research (*)**
- 700 Thesis (*)**
- 702 Degree Final (0)**
Limited to students completing a nonthesis degree program.

COURSES IN ENGLISH

- 350 Masterpieces of German Literature in English (3)**
- 464 Thomas Mann in English (3)** Rey

HISTORY

Acting Executive Officer: GORDON GRIFFITHS, 308 Smith Hall

The Department of History offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. History majors in the College of Arts and Sciences may take the courses in the College of Education required for the teaching certificate. In addition, the Department of History offers major and minor academic fields (and a major academic field for elementary education majors) in the College of Education; see the *College of Education Bulletin*.

BACHELOR OF ARTS

A student majoring in history should plan his program in consultation with a faculty adviser in the Department of History. This program should combine variety with intensity. It should introduce the student to a variety of periods and situations in the history of Europe, Asia, and the Americas; it should also enable him to concentrate intensely on times and places which particularly interest him.

For the degree of Bachelor of Arts, 50 credits in history are required. Courses must include (1) either the General Education sequence, Social Science 101, 102 and 103 (History of Civilization), or History 101 and 102; (for 102, 305 and 306 may be substituted); (2) either 241 or 341, 342, and 343; and (3) at least 25 credits in upper-division history courses.

In addition to the 50 credits in history courses, the student should select from the offerings of other departments elective courses in related subjects which support and illuminate his major field. Thus a program in history might include courses in the humanities, such as philosophy or literature or the arts, and in the social studies, such as economics or political science. Such courses should be chosen as part of the whole plan of study with the counsel of the history adviser and should meet the individual student's needs and interests. The program leading to the degree of Bachelor of Arts should include 20 to 25 credits in these related electives.

Students who plan to undertake graduate work in history should begin to acquire a reading knowledge of foreign languages, especially French and German.

A student may elect at the beginning of his senior year to be a candidate for the departmental award of History Honors if he has a cumulative grade-point average of at least 3.00 and is approved for this purpose by the Department. He should then enroll in 490-491, in the course of which he should complete a senior essay. If his work in those courses and his essay are adjudged to be of honors quality, the Department will certify that fact.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. 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 the 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, United Kingdom, British Empire, and Commonwealth history; American history is the third division; subjects within the fourth division are the history of science, historiography, and the philosophy of history; subjects within a fifth division, Asian history, may be selected by arrangement with the Department of History and the Far Eastern and Russian Institute.

MASTER OF ARTS. In history, there are two programs leading to the degree of Master of Arts. The professional program is planned as the first year of a scholar's career, and the assumption is that the student expects to continue working for the degree of Doctor of Philosophy. The second or general program is designed to meet the interests and purposes of secondary school teachers and other students who think of the M.A. as a terminal degree. The major emphasis is placed upon reading and lecture courses which will enrich and broaden the student's knowledge of history rather than upon technical problems of research and original scholarship.

The candidate in the professional program must complete 500, 501, and 502, one seminar, and graduate courses in three fields selected for special study. The subjects from which the candidate selects the fields should be in different divisions of history, as described above. In addition, he must have a reading knowledge of one foreign language and must submit an acceptable thesis, the writing of which should involve original research and the fundamentals of historical method.

The candidate in the general program must complete 500, 501 and 502, four courses numbered in the 400's (two in each of two divisions of history), and one graduate course in a field selected for special study. In addition, he must have a reading knowledge of a foreign language and must submit an acceptable thesis, the emphasis of which may be on interpretation rather than on research.

Students majoring in Far Eastern history must meet the requirements for the professional program, except that they may take 500, or 501, or 502. One of the three fields 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 in courses numbered 400 and 500, subject to the approval of the Department.

DOCTOR OF PHILOSOPHY. Candidates must complete 500, 501, 502, and at least two years of seminar work, participate in the work of the advanced seminar, and prepare at least four fields from subjects in the five divisions of history described above. Candidates may choose two fields in only a single division. In addition, they must have a reading knowledge of two foreign languages related to their major fields of study, and they are expected to complete a minor in another department.

Students majoring in Far Eastern history are expected to satisfy the same requirements, except that only one year of seminar work in the History Department is required, and they are expected to take 502 and either 500 or 501. Two fields are arranged in cooperation with the Far Eastern and Russian Institute.

A history minor for the doctor's degree requires 25 credits in courses numbered 400 and 500, subject to the approval of the Department.

COURSES FOR UNDERGRADUATES

INTRODUCTORY COURSES

Social Science 101 History of Civilization: The Great Cultural Traditions (5)

Alden, Bridgman, Burke, Griffiths, Kaminsky, Katz, Levy, Sugar, Willis

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.

Social Science 102 History of Civilization: The Western Tradition in World

Civilization (5) Alden, Bridgman, Burke, Griffiths, Kaminsky, Katz, Levy, Sugar, Willis

The beginning of modern civilization: the Renaissance; the Protestant Revolt; the state; commercial revolution and mercantilism; the rise of science; the "era of revolutions"; the Industrial Revolution and the rise of democracy.

Social Science 103 History of Civilization: The Contemporary World (5)

Alden, Bridgman, Burke, Griffiths, Kaminsky, Katz, Levy, Sugar, Willis

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.

(The three courses above are offered in the General Education program.)

- 101 Medieval European History (5)** Griffiths, Kaminsky, 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)** 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. Not open to students who have taken 305 and 306.
- 201-202 Ancient History (5-5)** 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)** 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)** Costigan
England from the earliest times to the present, stressing the origins of American institutions and social patterns.

ANCIENT HISTORY

- 201-202 Ancient History (5-5)** Katz
See Introductory Courses above.
- 401 Greece in the Age of Pericles (3)** Edmonson, Katz
(Offered alternate years; offered 1962-63.)
- 402 Alexander the Great and the Hellenistic Age (3)** Edmonson, Katz
Political, social, economic, and cultural history of the Greco-Oriental world from Alexander to the Roman conquest, with special emphasis on the change from city-state to world-state and the fusion of Greek and Oriental cultures. (Offered alternate years; offered 1961-62.)
- 403 The Roman Republic (3)** 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)** Katz
- 410 The Byzantine Empire (5)** 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.

EUROPEAN HISTORY

Medieval Period

- 101 Medieval European History (5)** Griffiths, Kaminsky, Lytle
See Introductory Courses above.
- 408 Church and State in the Middle Ages (5)** Kaminsky
Changing theories and realities of relationship between religious and secular elements of medieval civilization. (Offered 1961-62.)
- 410 The Byzantine Empire (5)** Katz
See Ancient History above.
- 411 Medieval Europe, 500-1100 (5)** Kaminsky
(Not offered 1961-62.)
- 412 Medieval Europe, 1100-1300 (5)** Kaminsky
Europe in the High Middle Ages: culture of cathedrals and universities, formation of national states, development of urban society. (Offered 1962-63.)
- 413 Medieval Europe, 1300-1500 (5)** Kaminsky
(Offered 1962-63.)
- 426 Central Europe in the Middle Ages (5)** Kaminsky
Origins and medieval history of Germany, Austria, Bohemia, and Poland, considered as a region within the sphere of Western European civilization. (Offered 1962-63.)

Early Modern Period

- 305 Early Modern European History (5)** Bridgman, Emerson, Griffiths, Levy, Lytle, Treadgold, Willis
Political, social, economic, and cultural history of Europe from 1450 to the French Revolution (1789). Not open to students who have taken 102.
- 414 Culture of the Renaissance (5)** Griffiths
Art, literature, politics, philosophy, science, and religion in Italy from 1300 to the death of Michelangelo.

- 415 The Reformation (5)** **Griffiths**
Political and religious crisis; Lutheranism, Zwinglianism, Anglicanism, Anabaptism, Calvinism, Catholic reform; beginnings of Baroque art.
- 421J Kievan and Muscovite Russia, 850-1700 (5)** **Treadgold**
Development of Russia from earliest times to the reign of Peter the Great. Offered jointly with the Far Eastern and Russian Institute. Prerequisite, 306, or Social Science 103, or permission.
- 429 France, 1429-1789 (5)** **Lytle**
Political and cultural history, from Joan of Arc to the eve of the French Revolution. (Villon, Rabelais, Montaigne, Molière, Voltaire, Rousseau, de Tocqueville.)

Modern Period

- 102 Modern European History (5)** **Bridgman, Emerson, Levy, Lytle, Sugar, Treadgold, Willis**
See Introductory Courses, above.
- 306 Europe Since the French Revolution (5)** **Bridgman, Emerson, Levy, Lytle, Sugar, Treadgold, Willis**
Political, social, economic, and cultural history from the French Revolution (1789) to the present. Not open to students who have taken 102.
- 422J Imperial Russia, 1700-1905 (5)** **Treadgold**
Development of Russia from Peter the Great to Nicholas II. Offered jointly with the Far Eastern and Russian Institute. Prerequisite, 306, Social Science 103, or permission.
- 423J Twentieth-Century Russia (5)** **Treadgold**
Russia and the U.S.S.R. from Nicholas II to the present. Offered jointly with the Far Eastern and Russian Institute. Prerequisite, Social Science 103, or History 306, or permission.
- 424J Modern Russian Intellectual History (5)** **Treadgold**
Development of social and political thought and philosophy from the seventeenth century to the Revolution of 1917. Offered jointly with the Far Eastern and Russian Institute.
- 425J History of Eastern Orthodoxy (5)** **Treadgold**
Development of Eastern Orthodox Christian churches and doctrines from the Roman Empire to the present. Offered jointly with the Far Eastern and Russian Institute.
- 427- History of Eastern Europe, 1772-1918 (5-)** **Sugar**
Poland, Czechoslovakia, Hungary, Rumania, Yugoslavia, Bulgaria, and Albania, from the first partition of Poland to the end of World War I. (Not offered 1962-63.)
- 428 History of Eastern Europe, 1918-58 (-5)** **Sugar**
Poland, Czechoslovakia, Hungary, Rumania, Yugoslavia, Bulgaria, and Albania, from the end of World War I to the present.
- 430 The French Revolution and Napoleonic Era, 1789-1815 (5)** **Lytle**
The transformation of France under the Revolution of 1789; the Reign of Terror and Napoleon; the impact of the Revolution and Napoleon upon Europe.
- 431 Europe, 1814-70 (5)** **Emerson, Lytle, Sugar**
The development of Europe during the age of Metternich, the revolutions of 1848, and the emergence of new national states.
- 432 Europe, 1870-1914 (5)** **Emerson, Sugar**
The impact of population increase and technological change on European society; stresses and strains in European life and outlook.
- 433 Europe, 1914-45 (5)** **Emerson**
The politics and society of Europe in the age of the concentration camp.
- 434 Europe Since 1945 (5)** **Willis**
Political, economic, and military developments in Europe under the impact of the cold war.
- 436 Germany, 1648-1914 (5)** **Emerson**
A survey of the society, economy, and political problems of Central Europe from the Thirty Years' War to the First World War, with particular emphasis on the nineteenth century. (Offered alternate years; offered 1962-63.)
- 437 Germany, 1914-45 (5)** **Emerson**
Politics and society from the collapse of the Bismarckian empire to the collapse of Hitler's empire. (Offered alternate years; offered 1961-62.)
- 438- History of the Near East, 622-1789 (5)** **Sugar**
The Arab countries (Turkey, Iran), from the emergence of Islam to the accession of Sultan Selim III.
- 439 History of the Near East, 1789-1959 (5)** **Sugar**
The Arab countries (Turkey, Iran), from the first westernizing reform movements to the present.
- 444 France Since 1815 (5)** **Willis**
Political, economic, and social history since the Congress of Vienna. Special emphasis will be laid upon the continuity of the revolutionary tradition.
- 460J Economic History of Europe (5)** **Morris**
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; patterns of European economic organization. Offered jointly with the Department of Economics.

UNITED KINGDOM, BRITISH EMPIRE, AND COMMONWEALTH HISTORY

271-272, 273 English Political and Social History (5-5,5) **Costigan**
See Introductory Courses above.

371 Constitutional History of England (5) **Levy**
The development of legal and governmental institutions through the Stuart period.

381 History of India, 1600 to the Present (5)
Impact of British trade upon Hindu and Moslem life; changes in economic, social, and political institutions; evolution of nationalism; partition, independence, and new international status. Special emphasis on the period since 1784.

382J The Civilization of India: Indian Thought (5)
Main currents of Indian thought: a history of ideas in India. Offered jointly with the Far Eastern and Russian Institute.

383J The Civilization of India: Impact of Islam and the West (5)
Offered jointly with the Far Eastern and Russian Institute.

384J The Civilization of India: Literature and Arts (5)
From earliest times to the present. Offered jointly with the Far Eastern and Russian Institute.

469 England in the Sixteenth Century (5) **Levy**
Political, administrative, and social history from Henry VII to Elizabeth I, with emphasis on the Reformation and its effects and on conditions of life in Elizabethan England.

470 England in the Seventeenth Century (5) **Levy**
Political, administrative, and social history from the accession of James I to the Glorious Revolution.

471 England in the Eighteenth Century (5) **Costigan**

472 England in the Nineteenth Century (5) **Costigan**
Political, social, and cultural development; the agrarian, industrial, and French revolutions; the rise of parliamentary democracy; the Victorian age; political thought from Utilitarianism to Fabianism; Irish Home Rule.

473 England in the Twentieth Century (5) **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) **Costigan**
Growth of Irish national feeling in the nineteenth century through the Home Rule and Sinn Féin movements; establishment of the Irish Free State and the Republic of Eire; background of the Irish literary renaissance; establishment of Northern Ireland.

475 History of Canada (5)
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.

477 History of Australia and New Zealand (5)
The techniques of overseas colonization of the nineteenth century and development of egalitarian democratic communities in the late nineteenth and twentieth centuries.

478 Africa South of the Sahara (5)
Political and cultural evolution of the peoples inhabiting these lands.

480 History of the British Empire Since 1783 (5)
Britain in the Caribbean, Southeast Asia, Africa, and the Pacific: the dependent empire as a phase of modern capitalism; evolution of imperial policy from autocracy toward self-government and from laissez faire toward economic planning.

481 History of the Commonwealth of Nations (5)
The advancement of dependencies of Great Britain to the status of independent nations associated with Great Britain.

482J History of India: Earliest Times to 647 A.D. (5)
The emphasis will be on forms of political organizations and economic life, social organizations and cultural developments. Offered jointly with the Far Eastern and Russian Institute.

483J History of India: 647 to 1525 (5)
The emphasis will be on forms of political organizations and economic life, social organizations and cultural developments. Offered jointly with the Far Eastern and Russian Institute.

484J History of India: 1525 to the Present (5)
The emphasis will be on forms of political organizations and economic life, social organizations and cultural developments. Offered jointly with the Far Eastern and Russian Institute.

AMERICAN HISTORY

241 Survey of the History of the United States (5) **Holt, Pressly, Savolle**
See Introductory Courses above.

340 The American People and Their Institutions (2) **Pressly**
A study of the American people and their dominant institutions. (Open to foreign students only.)

- 341 Foundation of American Civilization (5)** 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)** 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)** Burke, 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.
- 386 Latin American History: The Colonial Period (5)** Alden
Discovery and founding of Spanish and Portuguese empires in the New World and their development until the eve of independence.
- 387 Latin American History: The National Period (5)** Alden
Struggle for independence and later political, economic, social, and cultural history of the principal Latin American nations; their relations with each other, the United States, and other powers.
- 441 American Revolution and Confederation (5)** Savelle
Causes of separation of the United States from the British Empire; political theory of the Revolution; its military history; diplomacy of the Revolution; the Revolution as a social movement; intellectual aspects; readjustment after independence; the formation of the American union; the Constitution.
- 442 The Colonial Mind (5)** Savelle
- 443 The Intellectual History of the United States (5)** Savelle
Lectures and discussions devoted to the development of the American mind, from historical beginnings to the present.
- 447 History of the Civil War and Reconstruction (5)** Pressly
The struggle between sections and rival nationalisms in mid-nineteenth-century America.
- 450 Twentieth Century America (5)** Burke, Pressly
Political, social, economic, and intellectual developments in the United States from 1900 to the present. Not open to students who have taken 343.
- 458 The United States in World Affairs, 1776-1865 (5)** Holt
World politics and the balance of power; background of major episodes in American foreign relations.
- 459 The United States in World Affairs, 1865 to the Present (5)** 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)** Burke, Pressly
Comparative study of aims and accomplishments of four major reform movements in the United States: Jeffersonian democracy, Jacksonian democracy, Progressivism, the New Deal.
- 463 The Westward Movement (5)** Burke, 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)** Burke, Gates
Exploration and settlement; economic development; growth of government and social institutions; statehood.
- 486 The History of Mexico, 1517 to the Present (5)** Alden
Political, social, and economic history of Mexico from its discovery by the Spanish to the present.

HISTORY OF SCIENCE

- 316 Science in Civilization: Antiquity to 1600 (5)**
From preclassical antiquity to the end of the Middle Ages, stressing the growth of scientific ideas, the cultural context in which they take shape, and their relationship to other movements of thought in the history of civilization.
- 317 Science in Civilization: Science in Modern Society (5)**
The growth of modern science since the Renaissance, emphasizing the scientific revolution of the seventeenth century, the development of methodology, and the emergence of new fields of interest and new modes of thought.
- 420 Science and the Enlightenment (5)**
The role of science in relation to intellectual, social, economic, and religious forces in the eighteenth century, and growth of the international community in science during the same period.

JAPANESE HISTORY

- 452J Early Japanese History (5)** Butow
Development from earliest times to 1868 A.D. Offered jointly with the Far Eastern and Russian Institute.
- 453J Modern Japanese History (5)** Butow
Development from 1868 to the present. Offered jointly with the Far Eastern and Russian Institute.

- 456J Diplomatic History of the Far East (5)** **Butow**
 International relations in East Asia with special emphasis on the period since 1793.
 Offered jointly with the Far Eastern and Russian Institute.
(For other courses in Far Eastern history see Far Eastern and Russian Institute.)

UNDERGRADUATE RESEARCH

- 490-491 Historical Method (5-5)** **Lytle**
 The purposes, materials, and techniques of historical scholarship. Theory, practice, and criticism.
499 Undergraduate Research (1-5, maximum 10)

COURSES FOR GRADUATES ONLY

HISTORIOGRAPHY

- 500 Historiography: Ancient and Medieval European (3)**
501 Historiography: Early Modern European (3)
502 Historiography: Early Modern European and American (3)

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 examinations in the fields selected.

- 510 Greek, Roman, or Byzantine History (3-6)** **Katz, Edmonson**
514 Medieval History (3-6) **Griffiths, Kaminsky**
515 Renaissance and Reformation History (3-6) **Griffiths**
520 History of Science (3-6)
532 Modern European History: Germany (3-6) **Emerson**
533 Modern European History: France (3-6) **Lytle**
534J Modern European History: Russia (3-6) **Treadgold**
 Offered jointly with the Far Eastern and Russian Institute.
541 American History: Early (3-6) **Saville**
542 American History: Western (3-6) **Burke, Gates**
543 American History: Civil War (3-6) **Pressly**
544 American History: National Period (3-6) **Gates, Holt**
545 American History: Twentieth Century (3-6) **Burke, Pressly**
549J Japanese History (3-6) **Butow**
 Offered jointly with the Far Eastern and Russian Institute.
575 English History (3-6) **Costigan, Levy**
576 British Empire History (3-6)

SEMINARS

- 503-504 Seminar in Philosophy of History (3-6)-(3-6)** **Costigan**
 (Offered alternate years; offered 1961-62.)
517-518-519 Seminar in Medieval History (3-6)-(3-6)-(3-6) **Kaminsky, Griffiths**
521-522-523 Seminar in Modern European History (3-6)-(3-6)-(3-6) **Emerson, Lytle**
525-526-527 Seminar in the History of Science (3-6)-(3-6)-(3-6)
535J-536J-537J Seminar in Russian History (3-6)-(3-6)-(3-6) **Treadgold**
 Offered jointly with the Far Eastern and Russian Institute. Prerequisites, reading knowledge of Russian and permission.
550J-551J-552J Seminar in Japanese History (3-6)-(3-6)-(3-6) **Butow**
 Offered jointly with the Far Eastern and Russian Institute. (Offered 1961-62.) Prerequisite, permission.
553-554-555 Seminar in American History: Early (3-6)-(3-6)-(3-6) **Saville**
563-564-565 Seminar in American History: Western (3-6)-(3-6)-(3-6) **Burke, Gates**
590-591-592 Seminar in American History: National Period (3-6)-(3-6)-(3-6) **Holt**
593-594-595 Advanced Seminar (3-6)-(3-6)-(3-6) **Holt**

RESEARCH

- 600 Research (*)**
700 Thesis (*)

HOME ECONOMICS

Director: MARY LOUISE JOHNSON, 201 Raitt Hall

The School of Home Economics offers several major curricula leading to bachelor's and master's degrees, as well as elective courses for the general student. Undergraduate students majoring in home economics may choose from eight curricula, six of which lead to professional degrees, two to nonprofessional degrees.

Major and minor academic fields are offered for students in the College of Education; see the *College of Education Bulletin*. In addition, a variety of elective courses and programs are available for students majoring in other fields.

The School maintains a Home-Management House in which home economics students spend three or five weeks gaining practical experience in management and group living.

BACHELOR OF SCIENCE IN HOME ECONOMICS AND BACHELOR OF SCIENCE IN HOME ECONOMICS EDUCATION

CURRICULUM IN HOME ECONOMICS EDUCATION. Students who plan to teach home economics in Washington high schools follow this prescribed curriculum, which meets the course requirements (a total of 60 credits in home economics) for the Vocational Certificate, as well as the course requirements for the Provisional Certificate, Secondary Level, which is issued through the College of Education (see the *College of Education Bulletin* for other requirements for certification).

First Year		Second Year	
	CREDITS		CREDITS
Home Ec. 125 Textiles	3	Home Ec. 216 Food Prep. and Meal Mgmt.	1-3
Home Ec. 134 Clothing	3-5	Home Ec. 234 Costume Design	3
Home Ec. 148 The Home, Its Equip. & Mgmt.	3	Econ. 200 Introduction	5
Art 109 Design	3	Educ. 188 Principles of Education	3
Chemistry 100 or high school chemistry	5	Educ. 209 Educational Psychology	3
Chemistry 101 General	5	Music Appreciation	2-5
Chemistry 102 General & Organic	5	Psych. 100 General	5
Engl. 101, 102, 103 Composition	9	Zool. 208 or 118 Physiology	5
Health Educ. 110 Health	2		
Speech 100 Basic Improvement	5		
Phys. Educ. activity	3		
Third Year		Fourth Year	
	CREDITS		CREDITS
Home Ec. 307 Nutrition	3 or 5	Home Ec. 338 Clothing for the Family	3
Home Ec. 315 Adv. Food Select.	5	Home Ec. 348 Home-Management House	3
Home Ec. 316 Demonstration Techniques	3	Home Ec. 457 Child Nutrition & Care	3
Home Ec. 347 Home Furnishing	5	Home Ec. electives at 400 level	2-3
Home Ec. 354 Family Economics and Finances	5	Educ. 332 Teachers' Course in Home Ec.	5
Home Ec. 356 Family Relationships	3	Educ. 371S Directed Teaching	12
Educ. 370S Secondary School Methods	3	Educ. electives chosen from: 360, 374S, 390, 401, 408, 410, 447, 455, 456, 475H	6
Educ. 405 Problems of Adolescence	3	Hist. 464 Wash. & Pac. N.W. (may be taken during fifth year)	5
Micro. 301 General	5	Psych. 320 Dir. Obs. of Child Behavior in Nurs. School	3
		Prev. Med. 461 School & Comm. Health	5

Approved elective credits to complete the minimum of 180 credits plus 3 Phys. Educ. activity credits for graduation.

CURRICULUM IN INSTITUTION ADMINISTRATION, A—DIETETICS. 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. 125 Textiles	3
Home Ec. 148 The Home, Its Equip. & Mgmt.	3
Art 109 Design	3
Chem. 100 or high school chemistry	5
Chem. 101 General	5
Chem. 150 General	3
Engl. 101, 102, 103 Composition	9
Health Educ. 110 Health	2
Math. 101 Intermediate Algebra	5
Psych. 100 General	5
Phys. Educ. activity	3

Third Year	CREDITS
Home Ec. 307 Nutrition, 407 Adv. Nutrition	8
Home Ec. 315 Adv. Food Select. and Prep.	5
Home Ec. 347 Home Furnishing	5
Home Ec. 348 Home-Management House	2
Home Ec. 354 Family Economics and Finances	5
Home Ec. 356 Family Relationships	3
Micro. 301 General	5
Psychol. 320 Dir. Obs. of Child Behavior in Nurs. School	3

Approved elective credits will complete the minimum of 180 credits, plus 3 Phys. Educ. activity credits, required for graduation.

CURRICULUM IN INSTITUTION ADMINISTRATION, B—EXECUTIVE HOUSEKEEPING. This prescribed curriculum is designed for students who plan careers as executive housekeepers in hospitals, hotels, or other institutions. A year's internship must follow this program, which then qualifies the student for membership in the National Executive Housekeepers Association.

First Year	CREDITS
Home Ec. 125 Textiles	3
Home Ec. 148 The Home, Its Equip. & Mgmt.	3
Home Ec. 216 Food Prep. & Meal. Mgmt.	1-3
Chemistry 100 or high school chemistry	5
Chemistry 101 General	5
Chemistry 102 General & Organic	5
Health Educ. 110 Health	2
Phys. Educ. activity	3

Third Year	CREDITS
Home Ec. 307 Nutrition	3 or 5
Home Ec. 347 Home Furnishing	5
Home Ec. 354 Family Economics & Finances	5
Home Ec. 356 Family Relationships	3
Micro. 301 General	5
Pers. 310 Personnel Management	5
Psych. 320 Dir. Obs. of Child Behavior in Nurs. School	3
Soc. 310 General	5
Speech 332 Principles of Group Discussion	5

Recommended electives: Journ. 200 (3), Personnel 345 and 346 (3,3), Policy and Adm. 463 (4)
 Approved elective credits will complete the minimum of 180 credits, plus 3 Phys. Educ. activity credits, required for graduation.

CURRICULUM IN BUSINESS, JOURNALISM, AND PUBLIC HEALTH. Those anticipating sales promotion work in food, equipment, or utility companies or the combining of home economics with journalism, social work, or public health, follow the institution administration A curriculum for the first three years and during their fourth year take one of these sequences:

Second Year	CREDITS
Home Ec. 134 Clothing	3-5
or 231 Clothing Selection	2
Home Ec. 216 Food Prep. & Meal Mgmt.	1-3
Econ. 200 Introduction	5
Chem. 231, 232 Organic	6
Chem. 241, 242 Organic Lab.	4
Physics 170 Intro. to Hlth. Sci. Physics	5
Zool. 208 Physiology	5

Fourth Year	CREDITS
Home Ec. 372 Institution Food Prep., 472 Institution Food Purch., 473, 474 Institution Mgmt., 475 Institution Equip.	21
Home Ec. 408 Diet Therapy	3
Home Ec. 415 Experimental Foods	3
Home Ec. 457 Child Nutrition & Care	3
Biochem. 361 Biochemistry	3
Biochem. 363 Lab.	2
Educ. 333 Methods of Teaching for Inst. Admin. Students	3

Second Year	CREDITS
Home Ec. 134 Clothing	3 or 5
Art 109 Design	3
Econ. 200 Introduction	5
Physics 170 Intro. to Hlth. Sci. Physics	5
Psych. 100 General	5
Speech 100 Basic Improvement or Speech 230 Essentials of Argument	5
Zool. 208 or 118 Physiology	5

Fourth Year	CREDITS
Home Ec. 348 Home-Management House	2
Home Ec. 457 Child Nutrition & Care	3
Home Ec. 473 Institution Mgmt.	5
Home Ec. 474 Institution Mgmt. (Accounting)	5
Home Ec. 475 Institution Equip.	3
Educ. 333 Methods of Teaching for Inst. Admin. Students	3
Mech. Engr. 418 Work Simplification	2
Sociol. 466 Indust. Sociol.	5

HOME ECONOMICS AND BUSINESS

	CREDITS
Home Ec. 316 Demonstration Techniques	3
Home Ec. 408 Diet Therapy, and 415 Expert. Foods, or Biochem. 361 and 363 Biochemistry and Lab.	6 or 5
Home Ec. 457 Child Nutrition & Care ...	3
Commun. 201 Communications Today ...	2
Journ. 200 News Writing	3
Speech 220 Public Speaking	5

HOME ECONOMICS AND JOURNALISM

	CREDITS
Home Ec. 415 Experimental Foods	3
Home Ec. 457 Child Nutrition & Care ...	3
Adver. 226 Intro. to Advertising	3
Commun. 201 Communications Today ...	2
Commun. 303 Public Relations Today ...	3
Journ. 200 News Writing	3
Journ. 301 Copy Editing	3
Journ. 404 Mag. Article Writing	3
Radio-TV 352 Radio and Television Advertising	5

HOME ECONOMICS AND SOCIAL OR PUBLIC HEALTH WORK

	CREDITS
Home Ec. 408 Diet Therapy	3
Home Ec. 457 Child Nutrition & Care ...	3
Prev. Med. 323 Intro. to Public Health Principles & Practices	3
Prev. Med. 420 Intro. to Epidemiology and Biostatistics	3
Prev. Med. 422 Intro. to Environ. Hlth. ...	3
Prev. Med. 463 Commun. Organization for Hlth. Educ.	3
Prev. Med. 464 Commun. Hlth. Educ. ...	3
7 credits from Soc. Work 400, 401, Biochem. 361, 363 advised	7

Approved elective credits will complete the minimum of 180 credits, plus 3 Phys. Educ. activity credits, required for graduation.

BACHELOR OF ARTS IN HOME ECONOMICS

CURRICULUM IN TEXTILES, CLOTHING, AND ART. This prescribed curriculum is designed for students whose primary professional interest is in costume design and construction.

First Year	CREDITS	Second Year	CREDITS
Home Ec. 125 Textiles	3	Home Ec. 110 Food and Nutrition or 300 Nutrition	5 or 2
Home Ec. 134 Clothing	3 or 5	Home Ec. 234 Costume Design	3
Art 105 Drawing	3	Art 106 Drawing	3
Art 109, 110 Design	6	Art 111 Design	3
Chem. 100 or high school chemistry	5	Art 151 Figure Sketching	1
Chem. 101 General	5	Econ. 200 Introduction	5
Chem. 102 General & Organic	5	Soc. Sci. 101, 102 Hist. of Civilization ...	10
Engl. 101, 102, 103 Composition	9	Psychol. 100 General	5
Health Educ. 110 Health	2		
Phys. Educ. activity	3		
Third Year	CREDITS	Fourth Year	CREDITS
Home Ec. 334, 434 Costume Design	6	Home Ec. 425 Advanced Textiles	3
Home Ec. 347 Home Furnishing	5	Home Ec. 432, 433 Hist. of Costume and Textiles	8
Home Ec. 354 Family Economics and Finances	5	Home Ec. 435, 436 Adv. Costume Design	10
Home Ec. 356 Family Relationships	3	Art electives	8
Art 369, 370, 371 Costume Design	6		

Approved elective credits will complete the minimum of 180 credits, plus 3 Phys. Educ. activity credits, required for graduation.

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 in designing for apparel manufacturing. Practical experience in factories is required and is provided by registration in 380. For such experience, the student is paid an amount relatively equivalent to tuition costs. 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**CREDITS**

Home Ec. 334, 434 Costume Design	6
Home Ec. 347 Home Furnishing	5
Home Ec. 354 Family Economics & Finances	5
Home Ec. 356 Family Relationships	3
Acct. 210 Fundamentals	3
Art 369, 370, 371 Costume Design	6
Gen. Bus. 101 Introduction	5
Mktg. 301 Principles	5

Approved elective credits will complete the minimum of 180 credits, plus 3 Phys. Educ. activity credits, required for graduation.

Fourth Year**CREDITS**

Home Ec. 425 Advanced Textiles	3
Home Ec. 432, 433 Hist. of Costume & Textiles	8
Home Ec. 435, 436 Adv. Costume Design	10
Home Ec. 380 Field Work	6
Business Admin. electives	
Chosen from: Personnel 310 (5), Hum. Rel. 460 (4), Mktg. 381 (5)	4-14

NONPROFESSIONAL CURRICULUM IN TEXTILES, CLOTHING, AND ART. This elective curriculum is for students interested in a career which combines retailing or communications (journalism, radio, or television) with textiles and clothing. The flexibility resulting from the large number of electives in the junior and senior years, makes possible a wide variety of choice among the courses of the supporting field.

Other suggested electives are: Home Economics 148, 300 or 307, 457 or Psychology 320, and Architecture 105.

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**CREDITS**

Home Ec. 334, 434 Costume Des.	6
Home Ec. 347 Home Furnishing	5
Home Ec. 354 Family Economics & Finances	5
Home Ec. 356 Family Relationships	3
Art 369, 370 Costume Design	4

Approved elective credits will complete the minimum of 180 credits, plus 3 Phys. Educ. activity credits, required for graduation.

Fourth Year**CREDITS**

Home Ec. 425 Adv. Textiles	3
Home Ec. 432, 433 Hist. of Costume & Textiles	8
4 credits from: Home Ec. 321 Applied Design (2), 322 Applied Design (2), 329 Hand Weaving (2)	4

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, Microbiology 301, Physics 170, Sociology 453, and courses in education, journalism, and nursery school.

First Year**CREDITS**

Home Ec. 125 Textiles	3
Home Ec. 134 Clothing	3 or 5
Home Ec. 148 The Home, Its Equip., & Mgmt.	3
Art 109 Design	3
Chemistry 100 or high school chemistry	5
Chemistry 101 General	5
Chemistry 102 General & Organic	5
Engl. 101, 102, 103 Composition	9
Health Educ. 110 Health	2
Phys. Educ. activity	3

Second Year**CREDITS**

Home Ec. 216 Food Prep. & Meal Mgmt.	1-3
Home Ec. 234 Costume Design	3
Econ. 200 Introduction	5
Psych. 100 General	5
Zool. 208 or 118 Physiology	5

Third Year**CREDITS**

Home Ec. 307 Nutrition	3 or 5
Home Ec. 315 Adv. Food Select. & Prep.	5
Home Ec. 316 Demonstration Techniques	3
Home Ec. 347 Home Furnishing	5
Home Ec. 354 Family Economics & Finances	5
Home Ec. 356 Family Relationships	3

Approved elective credits will complete the minimum of 180 credits, plus 3 Phys. Educ. activity credits, required for graduation.

Fourth Year**CREDITS**

Home Ec. 348 Home-Management House	2
Home Ec. 457 Child Nutrition & Care	3
Psych. 320 Dir. Obs. of Child Behavior in Nurs. School	3

COURSES AND PROGRAMS FOR STUDENTS IN OTHER FIELDS

GENERAL COLLEGE STUDENTS. The following courses are recommended: 110, 125, 134, 148, 231, 240 (or 347), 300 (or 307), 321, 322, 329, 350 (or 354), 356, and 457.

COLLEGE OF BUSINESS ADMINISTRATION STUDENTS. For those interested in institution management the following sequence is recommended: 125, 148, 216, 240, 307, 316, 372, 472, 473, and 474; Chemistry 101, 102, Microbiology 301.

JOURNALISM STUDENTS. For those wishing a general background in home economics the following are recommended: 125, 148, 231, 240, 216, 300, 315, 350, 356, and 457, or approved substitutes.

COLLEGE OF EDUCATION STUDENTS. Students who do not expect to teach vocational home economics in senior high schools but who wish a portion of their training in home economics may select their major or minor academic field in home economics.

For a major academic field (primarily for elementary teachers), the requirements are: 45 credits, including 125, 134, 148, 216, 234, 307, 315, 347, 354, 356, 457, and elective credits in home economics, plus prerequisite courses of Art 109, Chemistry 101 and 102, and Economics 200 to complete the field.

For a minor academic field students may select one of three sequences—Textiles, Clothing, and Art: 125, 134, 234, 347; Food, Nutrition, and Health: 110, or 216 and 300, 148, 350, 457; or Family Relationships and Child Welfare: 110, or 216 and 300, 350, 356, 457, Psychology 320.

ADVANCED DEGREES AND GRADUATE WORK

Students who intend to work toward a master's degree must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*.

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 15 credits in related fields, such as art, economics, education, public health, or the biological, physical, or social sciences. Candidates must present acceptable undergraduate preparation in home economics and basic fields.

DIETETIC INTERNSHIPS. 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.

COURSES FOR UNDERGRADUATES

- | | | |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| 110 | Food and Nutrition (5)
Meal management and food preparation with emphasis on nutritive and economic values. For nonmajors. Not open to students who have had 300. | Crum, Granberg |
| 119 | Family Nutrition (4)
Normal nutritional requirements of the family and simple dietary modifications. Food selection. Cultural effects on diet pattern. Orientation to community nutrition facilities. For student nurses. | Buder |
| 125 | Textiles (3)
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. | Brockway, Smith |
| 134 | Clothing (3 or 5)
Sociological, psychological, economic, and aesthetic aspects of clothing selection. Custom techniques in construction of cotton and linen garments. Students having had 231 will receive only 3 credits. | Hawthorne, Murdoch, Shigaya |
| 148 | The Home, Its Equipment, and Management (3)
Management of resources to achieve family goals. Principles of management, work simplification, heating, lighting, wiring, and selection and care of household equipment. | Hall |

- 216 Food Preparation and Meal Management (1-3)** **Henderson**
Principles of food selection and preparation, with emphasis on meal management. Prerequisite, 148, Chemistry 101.
- 231 Clothing Selection (2)** **Hawthorne**
Sociological, psychological, economic, and aesthetic aspects of clothing for the individual. Not open to students who have had 134.
- 234 Costume Design (3)** **Hawthorne, Shigaya, Smith**
As expressed in flat pattern techniques and applied to wool fabrics. Prerequisites, 125, 134, and Art 109.
- 240 Home Furnishing (3)** **Hosmer**
A study of the house and its furnishings for present-day living. Not open to freshmen or to students who have taken 347.
- 300 Nutrition (2)** **Crum**
Importance of food to the maintenance of health; nutritive values and human needs; ways of meeting requirements at different cost levels. For upper-division nonmajors. Not open to students who have had 110.
- 307 Nutrition (3 or 5)** **Johnson**
Chemistry of digestion and metabolism. Food values; human requirements and ways of meeting them at different cost levels. Qualified transfer students receive 3 credits. Prerequisites, general chemistry and human physiology.
- 315 Advanced Food Selection and Preparation (5)** **Nielsen**
Scientific principles and experimental method applied to food preparation and preservation. Management related to food purchasing, meal preparation, and service. Prerequisites, 110 and permission, or 216, and Chemistry 102.
- 316 Demonstration Techniques (3)** **Nielsen**
Principles and techniques of food and equipment demonstrations; food photography; recipe development. Prerequisites, 315 and permission.
- 321 Applied Design (2)** **Payne**
Functional and decorative phases in the development of lace and their application to contemporary design and textile art. Illustrated by a unique collection of historic lace. (Offered alternate years; offered 1962-63.) Prerequisites, 134, and Art 109, or permission.
- 322 Applied Design (2)** **Payne**
History of European national costume and embroidery as source material for modern design. Illustrated by rich collection of authentic folk costumes. (Offered alternate years; offered 1961-62.) Prerequisites, 134 and Art 109, or permission.
- 329 Hand Weaving (2)** **Brockway**
Weaving as an art form; fundamentals of loom design and operation; experimental problems in basic fabric structures. Prerequisites, permission and junior standing.
- 334 Costume Design (3)** **Payne**
Designing as interpreted by techniques of draping, appropriate for silk and synthetic fabrics. Study of economic factors involved in clothing production at various price levels. Prerequisite, 234.
- 338 Clothing for the Family (3)** **Hawthorne, Payne**
Social and psychological aspects of family clothing, mass production, and the retail market. Individual problems of family clothing as affected by income, age, sex, and geographic locations. Prerequisite, 234.
- 347 Home Furnishing (5)** **Hosmer**
Analysis of problems with relation to today's family living. Selection and arrangement of furnishings based on good design and appropriateness. Field trips and individual laboratory problems. Not open to students who have taken 240. Prerequisites, 125 and Art 109.
- 348 Home-Management House (2-3)** **Henderson**
Residence in the Home-Management House for 3 or 5 weeks. Application of principles of time, energy, and money management to group living. *Advance reservation required.* Prerequisites, 148, 307, 315, 347, 354, and permission.
- 350 Managing Family Finances (3)** **Hall**
Use of resources to further family goals. Changes in income and in prices of consumer goods in relationship to family budgeting. Consumer credit, savings, insurance, social security, investments, taxes, trusts, and wills.
- 354 Family Economics and Finances (5)** **Hall**
Economic and social conditions affecting the consumer. Use of resources to further family goals. Family budgeting. Consumer credit, savings, insurance, social security, investments, taxes, trusts, and wills. Not open to those who have had 350. Prerequisites, Economics 200 and junior standing.
- 356 Family Relationships (3)** **Gould**
Principles underlying good family relationships; wholesome adjustment of the home to a changing society.
- 372 Institution Food Preparation (5)** **Smith**
Laboratory and institution practice in large-quantity food preparation and cost control. Prerequisite, 216.
- 380 Field Work in Apparel Manufacturing (2, maximum 6)** **Payne**
Open only to apparel manufacturing majors. A program of part-time employment planned in advance with the instructor to provide on-the-job training correlated with periodic reports and evaluation of experience. Prerequisites, senior standing and permission.

- 407 Advanced Nutrition (3)** **Johnson**
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)** **Buder**
Nutrition as a curative and preventive factor in disease. Journal readings. Prerequisite, 407.
- 415 Experimental Foods (3)** **Nielsen**
Illustrating scientific principles by subjective and objective testing of foods. Individual research problems. Prerequisites, 315 and permission.
- 425 Advanced Textiles (3)** **Brockway**
Textile testing in research and in measuring fabric performance; textile legislation, standards, and methods of quality control; economic factors in world production and distribution of raw materials. Prerequisites, 125, Chemistry 102, and Economics 200.
- 429 Advanced Weaving (3)** **Brockway**
Experimental problems, creative techniques, in designing decorative textiles; cloth analysis and design; library investigations of historic and contemporary contributions to textile arts. Prerequisite, 329 or equivalent.
- 432 History of Costume and Textiles (4)** **Payne**
Fabrics and costumes of ancient civilizations and medieval European countries with consideration of their respective cultural origins. Prerequisites, junior standing and permission.
- 434 Costume Design (3)** **Shigaya**
Principles of tailoring. Analysis of methods and comparative costs of custom made and ready-to-wear garments. Appreciation of fine quality in clothing; discrimination in selection. Prerequisites, 338 or 334, and permission.
- 435 Advanced Costume Design (5)** **Payne**
Application of the principles of flat pattern designing to problems in custom and mass production. Prerequisites, 434 and Art 369.
- 436 Advanced Costume Design (5)** **Payne**
Application of the art of draping to custom and mass production. Prerequisite, 435.
- 447 Advanced Home Furnishing (3)** **Hosmer**
Individual projects relating to quality and price in specific fields of furnishings. Evaluation of standards in professionally constructed furniture and furnishings in local workrooms. Laboratory problems. Prerequisites, 240 and permission, or 347.
- 454 Advanced Family Economics and Finance (2)** **Hall**
Family adjustment to differing social and economic conditions. Legislation affecting consumers. Prerequisite, 350 or 354.
- 457 Child Nutrition and Care (3)** **Johnson**
Physical, mental, and emotional health of children. Experience with parents and children in nutrition clinic under supervision of a pediatrician. Prerequisite 300, or 307, or permission.
- 472 Institution Food Purchasing (3)** **Terrell**
Market organization, buying procedures, payment and credit; food selection and care; inspection of merchandise. Prerequisites, 315 and 372.
- 473 Institution Management (5)** **Terrell**
Principles and methods of organization and administration in food service institutions. A study of food production and service problems, types of institutions, work planning, personnel direction, quality and cost controls, sanitation, budget analysis, professional ethics, executive qualifications. Problem solving and field trips. For institution management students and others by permission.
- 474 Institution Management (5)** **Sandstrom**
Food and food service accounting problems. Recording financial transactions; cost controls; profit and loss statements. Prerequisites, 215 and 372.
- 475 Institution Equipment (3)** **Terrell**
Institution kitchens and serving units; routing of work; equipment selection, operation, and care; repair and depreciation records. Prerequisites, 372 and permission.
- 495 Special Problems in Home Economics (*, maximum 10)**
Individual study and research in fields of special interest. In registration, field of interest should be indicated by area letter. Prerequisite, permission.
- | | |
|-------------------------------|-----------------------------|
| A. Costume design | F. Foods |
| B. Institution administration | G. Home economics education |
| C. Nutrition | H. Family relations |
| D. Textiles | I. Home management |
| E. Family economics | K. Home furnishing |

COURSES FOR GRADUATES ONLY

- 507 Readings in Nutrition (*)** **Johnson**
Library research. Prerequisite, 407 or equivalent.
- 515 Readings in Food Selection and Preparation (*)** **Nielsen**
Professional literature on recent developments. Prerequisite, 315 or equivalent, or permission.

- 525 Seminar in Textiles (3)** **Brockway**
Readings and discussion of factors affecting economic utilization and technical development of textile products. Trends in current research and methods of investigation. For graduate students in textiles and clothing. Prerequisites, 125, 425, or equivalent.
- 554 Social and Economic Problems of the Consumer (3-5)** **Hall**
Selected topics in the family economics field. Prerequisites, 454 or equivalent and permission.
- 562 Home Economics Education (*)** **McAdams**
Study of achievements, trends, functions, methods, and teaching materials.
- 576, 577, 578 Supervised Field Work (4,4,4)** **Terrell**
Three quarters of practice and organized classwork for graduates in institution management and dietetics. An administrative dietetics internship approved by the American Dietetic Association. Fee, \$25.00 (payable first quarter).
- 600 Research (*)**
In registration, field of interest should be indicated by area letter. Prerequisite, permission.
- | | |
|-------------------------------|-----------------------------|
| A. Costume design | F. Foods |
| B. Institution administration | G. Home economics education |
| C. Nutrition | H. Family relations |
| D. Textiles | I. Home management |
| E. Family economics | K. Home furnishing |
- 700 Thesis (*)**

JOURNALISM

(See Communications, page 57.)

LAW, PREPROFESSIONAL PROGRAM

Adviser, 121 Miller 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) completing three-fourths of the work (135 credits) required for a bachelor's degree with a 2.50 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 School of Law.

Students who take the three-year course leading to a bachelor's degree after one year in the School of Law may choose the arts-law or science-law curriculum as offered in the College of Arts and Sciences. In these curricula, the three-year program must include 135 credits with a 2.50 grade-point average and the required quarters in physical education activity and military training if a degree is to be conferred by the College at the end of a year in the School of Law. The grade point of 2.50 does not include the physical education activity and lower-division military training grades. Students should check the *School of Law Bulletin*, pages 16-20.

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 School of Law. 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.

Students who enter the School of Law after three years of undergraduate work and who have completed at least the third year (45 credits) of prelaw in residence at the University of Washington may qualify for a bachelor's degree after one year in the School of Law by: (a) offering University of Washington School of Law credits as general upper-division electives to apply at the discretion of the major department concerned, provided they meet all requirements of the college and major department; or (b) complying with the prelaw curriculum which qualifies them for an undergraduate major in law.

ARTS-LAW CURRICULUM. The requirements are: English 101, 102, 103; Health Education 110 or 175; three quarters of physical education activity; required courses and credits in ROTC; 25 credits in a special field; 20 credits in a related field; and 79 credits in electives arranged to fulfill group requirements and to pro-

vide 30 credits in upper-division courses. No correspondence courses may be included in any of the three-year programs.

The following courses are especially recommended by the College of Arts and Sciences: Economics 200; English 251; History 271-272; Philosophy 100, 120; Political Science 202, 362; Speech 230; and at least one course in accounting. (Accounting 210 is required.)

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, 229 Denny Hall

There is no curriculum leading to a degree in Liberal Arts. The following courses are given as general interest courses for students in all fields.

COURSES FOR UNDERGRUATES

- 101 Introduction to Modern Thought (5)** **Lutey**
 Man's place in the universe; cosmic origins; origin and nature of life; mind and behavior; values.
- 111 Introduction to the Study of the Fine Arts (5)** **Lutey**
 Appreciation of masterpieces of architecture, painting, sculpture, and music; problems common to them; philosophy of art; relations of beauty, truth, and morality.

SCHOOL OF LIBRARIANSHIP, PREPROFESSIONAL PROGRAM

Director, 111 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 92) provides a flexible program for students planning to enter the School.

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. This course is open to all students, particularly new and lower-division students. While it helps to orient those interested in librarianship as a career, the primary purpose of the course is to describe and explain library resources and to facilitate their use in the preparation of papers and other class assignments. 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 the *Graduate School Bulletin* for a complete statement of admission requirements).

COURSES FOR UNDERGRUATES

- 100 The Use of Books and Libraries (2)** **Bauer**
 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)** **Peterson, Wheeler**
 An introduction to the field, with emphasis on selection and application to the school curriculum and to the child's recreational reading interests.

- 452 Storytelling (3)** **Wheeler**
The art and materials of storytelling 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 all students; not required for teacher-librarians.
- 460 School Library Administration (3)** **Turner**
Methods of developing a strongly functioning library as an integral part of the school. Planning the library; public relations; personnel; routines involved in care and circulation of materials.
- 461 School Library Materials (3)** **Turner**
Study of reference materials and basic books in subject fields, with attention to their use in correlation with the school curriculum.
- 462 Reading of Young People (3)** **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)** **Peterson, Turner**
Simple techniques suitable for the school or small library.
- 464 Elements of Technical Processes (3)** **Peterson, Turner**
Techniques of acquisition, processing, and circulation of library materials; practice in cataloging. Prerequisite, 463.
- 470 History of the Book (3)** **Bevis**
The written and printed book from earliest times to the present, including a survey of modern presses and publishing.

LINGUISTICS

Committee: K. CHANG, Far Eastern; D. FOWLER, English; M. JACOBS, Anthropology; F.-K. LI, Far Eastern; N. POPPE, Far Eastern; C. REED, Germanics; E. REIFLER, Far Eastern; T. ROSENMEYER, Classics; S. SAPORTA, Romance (Chairman); L. THOMPSON, Far Eastern.

The University offers upper-division courses in Linguistics providing an introduction to method and theory and a program of studies for graduate students leading to Master's and Doctoral degrees in Linguistics. The program is administered by the Interdepartmental Committee on Linguistics in cooperation with various departments. Queries regarding the program in Linguistics may be addressed to the Chairman, Committee on Linguistics, 229C Denny Hall, University of Washington, Seattle 5.

UNDERGRADUATE WORK. Introductory courses in linguistic method and theory at the 400 level are open to qualified undergraduates who wish to acquire a basic knowledge of the field. This training serves as a valuable adjunct to students majoring in anthropology, speech, English, or another language and literature, and provides the essential basis for graduate work in general linguistics and related specialties. The same courses are available to graduate students who have been unable to acquire equivalent training before beginning graduate work. Undergraduates planning to work for an advanced degree in general linguistics are especially encouraged to complete this training prior to graduation. For students wishing to take a full complement of work, the following schedule is recommended: junior year: 400, 451J, 452J, 453J, 462J, 463J; senior year: 404, 405, 406.

ADMISSION TO GRADUATE STUDIES IN LINGUISTICS. Normal requirements of the Graduate School for admission to study for an advanced degree in linguistics include the equivalent of 45 quarter credits (30 semester credits) of undergraduate college credits in language study. This requirement implies the attainment of proficiency in one language other than English or, in the instance of a non-native speaker of English, a course of study and proficiency in a language other than his native speech. The Graduate School may be consulted when there is need for special determination regarding meeting the requirements for admission. To register for courses, candidates should consult with the Chairman of the Linguistics Committee.

MASTER OF ARTS. Requirements for the M.A. degree are as follows (subject to readjustment by the candidate's committee): a reading knowledge of German and

French, to be demonstrated before the end of one year of graduate study; the following courses or equivalents: 404, 405, 406, 501, 502, 503 (plus 400, 451J, 452J, 453J, 462J, 463J, if the candidate has not previously taken courses equivalent to these in phonetics, phonemics, morphology, and syntax); 9 additional credits in linguistics or supporting areas, as approved by the Committee; successful performance in a comprehensive examination; and a thesis for 9 credits approved by the Committee on Linguistics.

DOCTOR OF PHILOSOPHY. A student may plan to proceed directly for the doctoral degree without an M.A., but the Committee reserves the right to require any individual student to present himself as a candidate for the M.A. before accepting him as a candidate for the Ph.D. Requirements for the Ph.D. include 36 credits in linguistics or supporting areas, in lieu of the M.A., plus the following (subject to readjustment by the candidate's committee): a structural knowledge of Latin and Greek to be demonstrated as early as possible, which requirement may be fulfilled either by examination or by enrolling for Latin 300 and Greek 300, offered by the Classics Department; Linguistics 504, 505, 506, 514, 515, 516, 530, and 599; 9 additional credits in Linguistics or supporting areas, as approved by the Committee; an examination, usually conducted at the conclusion of course work, in, first, descriptive linguistics, second, historical-comparative linguistics, and third, a specialty of the candidate's choice, e.g., Germanic, Romance, Slavic, Chinese, Altaic, American Indian linguistics, Southeast Asian linguistics, etc.; independent research in the analysis of a language utilizing a native speaker or speakers and/or manuscripts in the language; and finally a thesis suitable for publication and constituting a contribution to knowledge.

COURSES

- 400 Survey of Linguistic Method and Theory (3)** **Saporta**
The background and scope of modern linguistics; languages of the world; language analysis; relation to other disciplines.
- 404, 405, 406 Indic and Indo-European (3,3,3)** **Chang**
Reading of simple Sanskrit texts with emphasis on structure of Sanskrit and its comparison with other Indo-European languages. Introduction to principles of comparative linguistics.
- 451J, 452J, 453J Phonetics and Phonemics (3,3,3)** **Thompson**
Detailed study of speech sounds, mechanisms of their production, and structuring of sounds in languages. Experience with a variety of languages. Field techniques. Offered jointly with the Department of Anthropology.
- 462J, 463J Morphology and Syntax (3,3)** **Saporta**
Study of the structuring of meaningful elements in language. Experience with a wide variety of languages. Field techniques. Offered jointly with the Department of Anthropology. Prerequisite, 400 or permission.
- 499 Undergraduate Research (1-5)**
- 501, 502, 503 Linguistic Analysis Laboratory (3,3,3)**
Guided analysis of a language unfamiliar to all students of the class; construction of a grammar based on material elicited from native informant. Prerequisites, 453J, 463J, or permission.
- 504 Indo-European Comparative Phonology (2)** **Reed**
Sound systems of the principal families of Indo-European and the relation of these to a hypothetical parent tongue. (Not offered 1961-62; offered 1962-63.) Prerequisite, 406.
- 505, 506 Indo-European Comparative Grammar (2,2)** **Reed**
Systematic treatment, with extensive surveys of individual language groups. (Not offered 1961-62; offered 1962-63.) Prerequisite, 504.
- 514, 515, 516 Seminar in Comparative Linguistics (2,2,2)** **Li**
Advanced problems emphasizing work with languages having few or no written records. Prerequisite, 506 or permission.
- 530 Dialectology (3)** **Reed**
The principles of dialect deviation as related to linguistic structure and usage. Prerequisite, 452J or permission.
- 555J Methods in Comparative Linguistics (3)**
Method and theory with special reference to anthropological research. Offered jointly with the Department of Anthropology. Prerequisite, permission.
- 580 Problems in Linguistics (2, maximum 6)** **Reed**
For advanced students of linguistics, dealing with significant movements, techniques, skills, and theories in the field. Prerequisite, permission.

599 Linguistics Colloquium (1)

Biweekly seminar attended by faculty and graduate students to discuss research in progress and topics of general interest. Attendance is required for a minimum of three quarters during the student's residence. Prerequisite, permission.

600 Research (1-5)**700 Thesis**

Specialized course work is available in various cooperating departments. Each student is expected to elect an area of specialization and to work out with his adviser an appropriate program of courses supporting his required work. The fields of specialization regularly available at this institution are the following (cooperating departments are in parentheses):

Altaic (Far Eastern and Slavic Languages and Literature); American Indian linguistics (Anthropology); anthropological linguistics (Anthropology); Chinese (Far Eastern and Slavic Languages and Literature); Classical linguistics (Classics); English (English, Germanic Languages and Literature); Germanic (Germanic Languages and Literature); Japanese and Korean (Far Eastern and Slavic Languages and Literature); oral literature (Anthropology, Comparative Literature); Romance (Romance Languages and Literature); Scandinavian (Germanic Languages and Literature, Scandinavian Languages and Literature); Slavic (Far Eastern and Slavic Languages and Literature); Southeast Asian Linguistics (Far Eastern and Slavic Languages and Literature); speech and phonetics (Speech); Tibetan (Far Eastern and Slavic Languages and Literature).

For a listing of course work in these fields, consult the section of this bulletin pertaining to the department indicated.

In certain cases, arrangements may be made for students to specialize in fields not listed above. Students interested in such a possibility should consult with the Chairman of the Committee on Linguistics.

MATHEMATICS

Executive Officer: C. B. ALLENDOERFER, 245 Physics Hall

The Department of Mathematics serves the University by offering a wide selection of undergraduate and graduate courses which are designed to meet a great variety of mathematical needs. Traditionally, mathematics has been the basic language of physical science and engineering, but recently it has also become of major importance for students in social science, business administration, and biological science. Mathematics is also an essential element of a liberal education, and students from humanities and the arts are encouraged to broaden their education by enrolling in appropriate courses in the Department.

Mathematics is also a discipline in its own right, and interesting and profitable careers are open to students who specialize in the subject. In order to prepare students for these careers, the Department offers a wide range of degree programs including: a general bachelor's degree, a specialized bachelor's degree, several master's degrees, and a doctor's degree. In addition to Pure Mathematics, programs are available in Mathematical Statistics, Numerical Analysis, and Teacher Education. The Department cooperates closely with the Department of Physics and the College of Engineering in providing instruction in the area of Applied Mathematics.

HIGH SCHOOL PREPARATION

Students planning to take courses in mathematics, either as a mathematics major or as part of some other curriculum, are strongly advised to elect four years of mathematics in high school. Mastery of these four years of work will prepare them to enter Mathematics 124, Calculus with Analytic Geometry, which is the first course of university level offered by the Department. Admission to this course is based upon high school records and a placement test given by the Department.

Students who have completed a full year of calculus in high school, preceded by accelerated study, are encouraged to take the Advanced Placement Test in Mathematics given by the College Entrance Examination Board. Those whose scores on this examination are satisfactory will be placed in 125 or 126 and given university credit for the courses in calculus which they have been allowed to skip. Alternatively, these students may be qualified to enter the freshman honors course described below.

As a service to entering students who have had less than four years of high school mathematics, the Department offers the following courses which duplicate high school material:

101 Intermediate Algebra

103 Intermediate Algebra and Plane Trigonometry

104 Plane Trigonometry

105 or 155, 156 College Algebra

These courses carry elective credit in the College of Arts and Sciences, but may not be used to satisfy the degree requirements of certain departments and colleges. Specific information on this matter may be obtained by consulting the appropriate department or college material in this or other issues of the University bulletins.

In order to enter 103, 104, 105, or 155, students must have the high school prerequisites listed under the detailed course descriptions below and also must obtain satisfactory scores on the mathematics section of the Differential Grade Prediction Test.

HONORS PROGRAM. By means of its Honors Program, the Department provides special opportunities for outstanding students at all levels. Entering freshmen with exceptional records in high school are invited to enroll in the freshman honors sequence (134, 135, 136). These courses provide a broader and deeper introduction to university-level mathematics than the regular sequence (124, 125, 126), and also give the students opportunities for individual programs of investigation.

The sophomore honors sequence (234, 235, 236) is open to any high-standing sophomore with proper mathematical background. The honors seminar (498) is offered for outstanding seniors and a few juniors. Students preparing for graduate work are strongly urged to elect this seminar for at least two quarters.

Students who have enrolled in the honors program will not be held to the precise requirements stated below for bachelor's degrees. The Department is prepared to develop special degree programs to meet the individual objectives of such students.

SPECIAL FACILITIES. The Laboratory of Statistical Research, directed by Z. W. Birnbaum, provides a focus for statistical activity within the University. Through the facilities of the Laboratory, instruction is given for students intending to be professional statisticians, and also for students who plan to use mathematical statistics in other fields such as biology, economics, education, psychology, or sociology. The Laboratory also provides consulting services to other divisions of the University.

The Research Computer Laboratory, directed by D. B. Dekker, is equipped with IBM 650 and 709 high-speed computers. It provides computing services to all portions of the University and is also available to students who are studying programming or numerical analysis.

BACHELOR'S DEGREES

BACHELOR OF ARTS. This degree is designed for liberal arts majors who have only modest professional aims in mathematics. It also provides a suitable program for prospective high school teachers of mathematics. Grades in all mathematics courses to be counted toward this degree must be C or better, and a grade-point average of at least 2.00 in all mathematics courses must be maintained. Under

normal circumstances, 281, 382, and 383 will not apply toward this degree. There are two curricular options:

Liberal Arts Option. A minimum of 45 credits in mathematics beyond College Algebra is required. Courses must include 124, 125, 126, 224, 225, and 24 credits in approved electives.

Teacher Preparation Option. A minimum of 45 credits in mathematics beyond College Algebra is required. Courses must include 124, 125, 126, 391, 392, 411, 412, 413, 444, 445, and 9 credits in approved electives.

BACHELOR OF SCIENCE. This degree is designed for students who wish professional training in mathematics as preparation for graduate study or industrial employment. Grades in all mathematics courses to be counted toward this degree must be C or better, and a grade-point average of at least 2.50 in all mathematics courses must be maintained. Under normal circumstances, 281, 382, and 383 will not apply toward this degree. Candidates for the degree must elect one year of general physics and are strongly urged to obtain a reading knowledge of French, German, or Russian. There are three curricular options:

Mathematics Option. A minimum of 54 credits in mathematics beyond College Algebra is required. Courses must include 124, 125, 126, 224, 225, and 33 credits in approved electives. The electives must include 9 upper-division credits in each of two of the four categories: algebra, analysis, geometry, and statistics. This sequence of courses is recommended but not prescribed:

Freshman year: 114, 124, 125, 126, and General Physics

Sophomore year: 224, 225, 301

Junior year: 322, 324, 325, 401, 402, 403, 404

Senior year: 424, 425, 426, 441, 442, 443

Mathematical Statistics Option. A minimum of 53 credits in mathematics beyond College Algebra is required. Courses must include 124, 125, 126, 224, 225, 324, 391, 392, 401, 404, 481, 482, 483, 484, and 485. An additional requirement is 9 approved credits in mathematics or in applied statistics.

Numerical Analysis Option. A minimum of 56 credits in mathematics beyond College Algebra is required. Courses must include 114, 124, 125, 126, 224, 225, 322, 374, 401, 404, 464, 465, and 466, and 6 credits in approved electives.

ADVANCED DEGREES

The Department offers programs leading to the degrees of Master of Arts, Master of Arts in Teaching Mathematics, Master of Science, Master of Science in Mathematical Statistics, and Doctor of Philosophy.

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. Candidates presenting only the minimum amount of undergraduate mathematics cannot expect to earn a master's degree in less than two years.

Since one foreign language is required for all the above master's degrees except the Master of Arts in Teaching Mathematics, and two languages are required for the doctor's degree, candidates for admission are advised to elect languages as undergraduates. French, German, and Russian are the only languages acceptable toward these degrees.

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.

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.

MASTER OF ARTS. A minimum of 27 approved credits in courses numbered 400 or above, with at least 9 credits in courses numbered 500 or above, is prescribed. These courses must include at least 6 credits in each of algebra, analysis, and one other field. The thesis for this degree, while demonstrating ability and aptitude, may be largely expository.

MASTER OF ARTS IN TEACHING MATHEMATICS. This degree is intended to provide present or prospective high school teachers of mathematics with the background in this subject which is essential for effective teaching of their students in high school. It is assumed that candidates for the degree are eligible to teach in the secondary school of their choice and, consequently, the program for the degree is devoted primarily to courses in Mathematics.

A minimum of 30 approved credits in courses numbered 400 or above, with at least 5 credits in courses numbered 500 or above, is prescribed. These credits must all be in mathematics, except that Education 475, Improvement of Teaching: Secondary Mathematics, may be included. The thesis for this degree should be an exposition of a mathematical subject closely related to the content of secondary school mathematics. There is no language requirement for this degree.

MASTER OF SCIENCE. A minimum of 27 approved credits in courses numbered 400 or above, with at least 18 credits in courses numbered 500 or above, is prescribed. These courses must include at least 6 credits in each of algebra, analysis, and one other field. The thesis should demonstrate the student's ability to engage in independent research.

Under certain circumstances, this degree may also be awarded to a student who has passed the general examinations for the Ph.D. degree. In such a case, no thesis is required.

MASTER OF SCIENCE IN MATHEMATICAL STATISTICS. The undergraduate preparation should consist of courses in probability and statistical inference equivalent to 481 and 482. The candidate must present a minimum of 27 approved credits in mathematics courses numbered 400 or above. This work may include, on approval, some courses in mathematical statistics needed to make up deficiencies in undergraduate preparation and must include 15 credits in mathematics courses numbered 500 or above. The thesis should demonstrate the student's ability to engage in independent research.

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, and two other fields chosen by the candidate and approved by his supervisory committee; and (2) additional material related to the candidate's field of special interest, such as that included in second-year graduate courses.

COURSES FOR UNDERGRADUATES

101 Intermediate Algebra (5)

Similar to third term of high school algebra. Not open for credit to students who have taken one and one-half years of algebra in high school. Prerequisite, one year of high school algebra.

103 Intermediate Algebra and Trigonometry (3)

Meets five hours per week. First four weeks, review of intermediate algebra. Last six weeks, plane trigonometry, equivalent to 104. Not open for credit to students who have taken trigonometry in high school. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101, and one year of plane geometry.

104 Plane Trigonometry (3)

Trigonometric functions, identities, equations, inverse functions, graphs, logarithms, and solution of triangles. Not open for credit to students who have taken trigonometry in high school. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101, and one year of plane geometry.

105 College Algebra (5)

Real and complex number systems; sets and equations; simultaneous equations and matrices; inequalities; functions and relations; algebraic, exponential and logarithmic functions. Not open to students who have taken 155, 156. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101, or 103.

- 114 Elementary Computer Programming (2)**
Programming and coding of problems for automatic digital computers. Flow charts, loops, subroutines. Codes written will be executed by machine. Prerequisite, 101 or equivalent.
- 124, 125, 126 Calculus with Analytic Geometry (5,5,5)**
Plane analytic geometry, differentiation of algebraic and transcendental functions, anti-derivatives, definite integrals, technique of integration, vector algebra, solid analytic geometry, multiple integrals, partial derivatives, simple differential equations. Applications. Prerequisites, four years of high school mathematics and qualifying test, or 104 (or 103 or exemption by qualifying test) and 105 (or 156) for 124; 124 or 134 for 125; 125 or 135 for 126.
- 130 Differential Calculus (5)**
Derivatives, logarithmic differentiation, differentials, Lagrange multipliers. Applications to economics. Prerequisites, 105 or 156.
- 134, 135, 136 Calculus with Analytic Geometry (5,5,5)**
Honors sections of 124, 125, 126. Prerequisites, four years of high school mathematics and permission.
- 155, 156 College Algebra (3,3)**
Real and complex number systems; sets and equations; simultaneous equations and matrices; inequalities; functions and relations; algebraic, exponential, and logarithmic functions; applications to problems in business administration. Not open to students who have taken 105. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101, or 103 for 155; 155 for 156.
- 221 Elements of Differential Equations (3)**
Elementary methods of solution, linear differential equations of second and higher order. Students planning to take 224 and 225 are advised to skip this course and to take 322 after the completion of 225. Prerequisite, 126 or 136.
- 224, 225 Intermediate Analysis (3,3)**
Real numbers, induction, functions, sequences, limits, continuity, infinite series, power series, Taylor series, series of functions, Rolle's theorem, mean value theorem, inverse functions, l'Hospital's rule, fundamental theorem of calculus, improper integrals. Prerequisites, 126 or 136 for 224; 224 for 225.
- 234, 235, 236 Advanced Calculus (3,3,3)**
Honors courses covering the material of 221, 324, 325, and selected other topics. Prerequisites, 136 or permission for 234; 234 for 235; 235 for 236.
- 281 Elements of Statistical Method (5)**
Elementary concepts of probability. Binomial and normal distributions. Basic concepts of testing hypotheses and estimation. Application to binomial and normal distribution. Chi-square tests. Linear regression theory. Primarily for nonmajors. Not open to students who have taken 391 or Psychology 301. Prerequisite, 105 or 156.
- 301 Elementary Number Theory (3)**
A brief introduction to some of the fundamental ideas of elementary number theory. Prerequisite, 126 or 136.
- 322 Principles of Differential Equations (3)**
Linear systems, existence of solutions, solution by series, special functions. Prerequisite, 225 or 136.
- 324 Advanced Calculus I (3)**
Functions of several variables, transformations and mappings, implicit function theorem. Prerequisite, 225 or 136.
- 325 Advanced Calculus II (3)**
Vector analysis, theorems of Stokes, Gauss, and Green. Prerequisite, 225 or 136; (324 desirable).
- 374 Principles of Digital Computers and Coding (5)**
High-speed digital computation, number systems, machine components, programming, operation. Three hours lecture, four hours laboratory, per week with problems run on a high-speed machine. Prerequisites, 114 and 124 (or 134), and permission of instructor.
- 382, 383 Statistical Inference in Applied Research (5,5)**
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, 124 (or 134) and 281, or permission, for 382; 382 for 383.
- 391 Elementary Probability (3)**
Sample space, random variables, laws of probability. Combinational probabilities. Distributions: binomial, normal; expectation, variance. Prerequisite, 126 or 136.
- 392 Elements of Statistics (3)**
Basic concepts of testing hypotheses and of estimation (interval and point). Binomial, normal tests, and estimates. Prerequisite, 391.
- 401 Matrices (3)**
Determinants; the algebra of matrices; groups of transformations. Prerequisite, 126, or 136, or 130.
- 402, 403 Introduction to Modern Algebra (3,3)**
The number systems of algebra; groups, rings, and fields; polynomials. Prerequisites, 401 for 402; 402 for 403.

- 404 Linear Algebra (3)**
Vector spaces; linear transformations; reduction of bilinear, quadratic, and Hermitian forms. Prerequisite, 401.
- 407 Game Theory and Linear Programming (3)**
Mathematical approach to game theory and linear programming with applications to economics and operations research. Prerequisite, 401.
- 411, 412, 413 Linear and Modern Algebra (3,3,3)**
Determinants; the algebra of matrices; groups of transformations; vector spaces; the number system; groups, rings, and fields; polynomials. Restricted to teaching majors. Prerequisites, 126 or 136 for 411; 411 for 412; 412 for 413.
- 424, 425, 426 Fundamental Concepts of Analysis (3,3,3)**
Elementary logic, sets, functions, real numbers, sequences, continuity, derivatives, integrals, elementary functions, functions on Euclidean n -space, and series. Prerequisites 225, or 136, or permission for 424; 424 for 425; 425 for 426.
- 427, 428, 429 Topics in Applied Analysis (3,3,3)**
427: Elementary complex variable. Prerequisite, 225 or 136.
428, 429: Orthogonal functions and boundary value problems, calculus of variations. Prerequisites, 322 or 236 for 428; 428 for 429.
- 441, 442, 443 Advanced Geometry (3,3,3)**
Selected topics from among: projective geometry, differential geometry, advanced analytic geometry, algebraic geometry, algebraic topology, and the geometry of convex bodies. Prerequisites, 126 (or 136) and 401, or permission, for 441; 441 for 442, 442 for 443.
- 444, 445 Foundations of Geometry (3,3)**
Axiomatic treatment of the foundations of Euclidean geometry. Introduction to non-Euclidean geometry. Prerequisite, 126 or 136 for 444; 444 for 445.
- 464 Numerical Analysis I (3)**
Basic principles of numerical analysis, classical interpolation and approximation formulas, finite differences and difference equations. Laboratory work on desk calculators. Prerequisite or corequisite, 221 or 322.
- 465 Numerical Analysis II (5)**
Numerical methods in algebra. Systems of linear equations, matrix inversion, successive approximations, iterative and relaxation methods. Three hours lecture and four hours laboratory per week on a high-speed machine. Prerequisites, 374, 401, 404, and 464.
- 466 Numerical Analysis III (5)**
Numerical differentiation and integration. Solution of differential equations and systems of such equations. Three hours lecture and four hours laboratory per week on a high-speed machine. Prerequisites, 374 and 464.
- 481 Calculus of Probabilities (5)**
Fundamental concepts; discrete and continuous random variables; mathematical expectations; law of large numbers; important types of distributions; characteristic functions; central limit theorem. Prerequisites, 225 and 391, or permission.
- 482 Statistical Inference (3)**
Universe, sample, parameters, and statistics; point estimates and confidence regions; distributions of classical statistics and their use in estimation and tests of hypotheses. Prerequisites, 392, 401, 481.
- 483 Theory of Correlation (3)**
Multivariate distributions; variances, covariances, regression, and correlation; specialization of multivariate normal distributions; sampling of bivariate normal variables. Prerequisite, 481.
- 484 Distribution-Free Inference (3)**
Some distribution-free methods of testing hypotheses and estimations. Distribution of Chi-square, and Chi-square tests. Prerequisite, 482.
- 485 Analysis of Variance (3)**
General linear hypothesis—tests and estimates. Distribution theory of tests. Tests of all contrasts. Fixed, mixed, and random models. Prerequisite, 482 and 483.
- 497J Special Topics in Mathematics for Teachers (2-5, maximum 15)**
Offered jointly with the College of Education, when demand is sufficient.
- 498 Special Topics in Mathematics (2-5, maximum 15)**
Problem seminar for senior honors students and for first year graduate students.

COURSES FOR GRADUATES ONLY

- 501, 502 Foundations of Mathematics (3,3)**
Fundamental concepts and methods of mathematics; the axiomatic method; the logical foundations of mathematics.
- 504, 505, 506 Modern Algebra (3,3,3)**
Theory of groups, rings, integral domains, and fields; polynomials; vector spaces, Galois Theory, and theory of ideals. Prerequisite, 403 or equivalent for 504; 504 for 505; 505 for 506.
- 510 Seminar in Algebra (*, maximum 5)**
Prerequisite, permission.

511, 512, 513 Special Topics in Algebra (2-3, 2-3, 2-3)

Each may be repeated twice for credit. In recent years the following subjects have been covered: Abelian Groups, Algebraic Function Fields, Algebraic Number Theory, Classical Groups, Game Theory, Group Extensions, Lattice Theory, Lie Algebras, Number Theory, and Structure of Rings.

524, 525, 526 Real Variable (3,3,3)

Metric spaces; general measures and integration; differentiation of set functions; real valued functions on the line; Banach spaces. Prerequisites, 426 or equivalent for 524; 524 for 525; 525 for 526.

527 Elements of Real Variables for Scientists (3)

Compactness theorems, Lebesgue integration and limit theorems, Fubini theorem, L_p spaces L_2 Fourier transform theory. Prerequisites, 427, 428, 429, or permission.

528, 529 Hilbert Space Operators and Applications (3,3)

Spectral theorem for bounded Hermitian operators, statement for unbounded operators, application to ordinary and partial differential operators with Fourier transforms, construction of Green functions, Schrödinger equation, eigenvalue distributions, perturbation theory; contour integral representation, special functions. Prerequisites, 527 for 528; 528 for 529.

530 Seminar in Analysis (*, maximum 5)

Prerequisite, permission.

531, 532, 533 Special Topics in Analysis (2-3, 2-3, 2-3)

Each may be repeated twice for credit. In recent years the following subjects have been covered: Functional Analysis, Abstract Harmonic Analysis, Linear Operations in Hilbert Space, Group Representations, Fourier Series and Integrals, Topological Linear Spaces, Potential Theory, and Numerical Analysis.

534, 535, 536 Complex Variable (3,3,3)

Complex numbers; analytic functions; contour integration; power series; analytic continuation; sequences of analytic functions; conformal mapping of simply connected regions. Prerequisites, 426 for 534; 534 for 535; 535 for 536.

538, 539 Non-Linear Ordinary Differential Equations (3,3)

Phase plane; analysis of critical points (nodes, saddle points, foci); theory of oscillations, limit cycles, Poincaré-Bendixon theory; topological methods, fixed-point theorems. Prerequisites, 322 and 324 (or 236) for 538; 538 for 539.

544, 545, 546 Differential Geometry (3,3,3)

Differential geometry of curves and surfaces in ordinary space and in n -space. Differential forms and the Cartan calculus. Differential geometry in the large. Prerequisites, 401 and 426 for 544; 544 for 545; 545 for 546.

550 Seminar in Geometry (*, maximum 5)

Prerequisite, permission.

551, 552, 553 Special Topics in Geometry (2-3,2-3,2-3)

Each may be repeated twice for credit. In recent years the following subjects have been covered: Riemannian Geometry, Differentiable Manifolds, Complex Manifolds, Geometry of Convex Bodies.

561, 562, 563 General Topology (3,3,3)

Theory of sets; metric spaces; topological spaces; compactness and other covering properties; function spaces; polyhedra; dimension theory. Prerequisites, 426 for 561; 561 for 562; 562 for 563.

564, 565, 566 Algebraic Topology (3,3,3)

Classical and modern approaches; complexes and their homology theory; applications. Fixed points, primary obstruction; products and Poincaré duality; axiomatic approach, covering spaces. Prerequisites, 506 for 564; 564 for 565; 565 for 566.

569J Partial Differential Equations (3)

Classification of second order partial differential equations; solution by separation of variables and reduction to a boundary value problem; theory of characteristics and solutions by means of Green's functions. Examples from classical mechanics of continua. Offered jointly with the Department of Aeronautical Engineering. Prerequisite, 428 or Aeronautical Engineering 568.

570 Seminar in Topology (*, maximum 5)

Prerequisite, permission.

571, 572, 573 Special Topics in Topology (2-3,2-3,2-3)

Each may be repeated twice for credit; special topics from general and algebraic topology.

581, 582, 583 Advanced Theory of Statistical Inference (3,3,3)

Elements of decision theory; Neyman-Pearson theory; randomized tests; maximum likelihood statistics; confidence regions; distribution-free statistics; linear hypotheses; analysis of variance; block design. Prerequisites, 484 and 485 or permission for 581; 581 for 582; 582 for 583.

590 Seminar in Probability and Statistics (*, maximum 5)

Prerequisite, permission.

591, 592, 593 Special Topics in Statistics (3,3,3)

Each may be repeated twice for credit. In recent years the following subjects have been covered: Advanced Probability Theory, Stochastic Processes, Distribution-Free Inference, Game and Decision Theory, Advanced Theory of Estimation (including Sequential Estimation).

600 Research (*)

Prerequisite, permission.

700 Thesis (*)**702 Degree Final (0)**

Limited to students completing a nonthesis degree program.

MEDICAL TECHNOLOGY**Supervisor: EDWARD A. SMUCKLER, D505 Health Sciences**

The medical technology program is designed to train young men and women for professional work in hospital, clinic, public health, and medical research laboratories. The prescribed preparatory program consists of three years of regular university training with emphasis upon certain courses in chemistry and biology. This is followed by an 18-month period of full-time instruction and training in medical technology itself.

The program of instruction in medical technology is supervised by the Department of Pathology in the School of Medicine. During this 18-month period the students become familiar with the common clinical laboratory procedures and with the interpretation of the results obtained. They learn the tests used in the laboratories of clinical chemistry, hematology, serology, urinalysis, microbiology, and pathology. This program is approved by the Council on Medical Education and Hospitals of the American Medical Association. Graduates are eligible to be examined by the Board of Registry of the American Society of Clinical Pathologists. They are urged to take this examination and become registered Medical Technologists. (Courses in biochemistry, microbiology, and pathology are listed with those of other departments in the *School of Medicine Bulletin*.)

BACHELOR OF SCIENCE IN MEDICAL TECHNOLOGY

Students should choose most of their electives in the humanities and the social sciences in order to satisfy the college group requirements.

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 100 Chem. Science	5	Chem. 150 General	3	Anatomy 301 General	4
Engl. 101 Composition	3	Engl. 102 Composition	3	Chem. 160 General	3
Health Educ. 110 or 175	2	Zoology 111 General	5	Chem. 170 Qual. Anal.	3
Math. 101 or 103 or 105 Algebra	5-3	Approved electives	3	Zoology 112 General	5
Phys. Educ. activity	†	Phys. Educ. activity	†	Phys. Educ. activity	†
ROTC	‡	ROTC	‡	ROTC	‡

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 221 Quant. Anal.	5	Chem. 231 Organic	3	Chem. 232 Organic	3
Engl. 103 Composition	3	Chem. 241 Lab.	2	Chem. 242 Lab.	2
Zool. 381 Microtechnique ..	4	Zool. 208 Physiology	5	Approved electives	10
Approved electives	3	Approved electives	5	ROTC	‡
ROTC	‡	ROTC	‡		

It is recommended that students who cannot fit the suggested courses in anatomy and physiology into their schedules try to take Conjoint 317-318 (Elementary Anatomy and Physiology), especially during the summer-autumn sequence. Permission of the instructor is required.

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Micro. 441- Med. Bacteriol.	5-	Micro. -442 Med. Bacteriol.	-5	Biochem. 361 Biochem.	3
Psych. 100 General	5	Approved electives	10	Biochem. 363 Lab.	2
Speech 220 Public Speaking	5			Micro. 443 Mycology	2
				Micro. 444 Parasit.	4
				Approved electives	4

† See page 23 for Physical Education activity requirement.

‡ See page 23 for ROTC requirement.

Permission is required for courses in biochemistry and microbiology. Recommended electives for third-year students who have satisfied the college group requirements include Pathology 310 and Microbiology 320.

Near the conclusion of the third year, students apply for admission to the 18-month period of full-time instruction in medical technology. During this period they register for the courses Pathology 321, 322-, -323-, -424-, -425, 426. The first twelve months of this period consist of full-time classroom and laboratory instruction offered in the School of Medicine. This is followed by approximately six months of full-time instruction and supervised experience in affiliated hospital and public health laboratories.

In order to make the fees more comparable to those of many schools of medical technology, the University grants only 5 credits for Pathology 321, and 6 credits each for 322-, -323-, -424- and -425. In order to meet graduation requirements 16 credits are granted for 426.

MEDICINE, PREPROFESSIONAL PROGRAM

Adviser, 121 Miller 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 2.50. As recommended by the Association of American Medical Colleges, the course should include at least 9 credits in English composition, 12 credits in inorganic chemistry, 6 credits in organic chemistry, 12 credits in physics, 12 credits in biology, and the required quarters of physical education activity and military training. Many 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 choose electives to meet the requirements of that school. In general, medical school admissions committees favor a broad program of studies with the inclusion of as much work as possible in the humanities and social sciences. 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 a medical school, all students in this program are urged to 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 the School of Medicine at the University of Washington (see Basic Medical Science, page 44), at the end of the fourth year.

During the second year, the premedical adviser should be consulted about taking a medical admissions test and applying for admission to medical school. Students must arrange for the medical admissions test well in advance of their application to a medical school.

METEOROLOGY AND CLIMATOLOGY

Executive Officer: PHIL E. CHURCH, 201F Meteorology Building

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

An elective curriculum which includes the branches of physical, synoptic, and dynamic meteorology and climatology is offered for undergraduate students working toward the bachelor's degree. This curriculum prepares students to re-

ceive the rating of professional meteorologist given by the United States Civil Service Commission.

BACHELOR OF SCIENCE

The Department requires a minimum of 38 credits in meteorology and climatology numbered above 300, of which 20 credits must be earned in courses above 400. Mandatory courses are 301, 340, 350, 431, 441 and their prerequisites. Courses required from other departments are: Mathematics 324 and its prerequisites and Physics 121, 122, 123, 131, 132, or equivalent.

A grade of C or better must be earned in each of the required courses in mathematics and physics and in each of the mandatory courses in meteorology and their prerequisites. An over-all grade-point average of at least 2.20 must be obtained in all courses taken in meteorology and climatology.

Programs and requirements for honors students will be arranged on an individual basis, under staff supervision.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. The complete program for an advanced degree must be approved by the staff.

MASTER OF SCIENCE. The program of study and research is intended to enable the student throughout his scientific career to grow with his field, to recognize and understand new concepts, and to master new procedures as they emerge in the literature.

The minimum course requirements are: 27 graduate credits exclusive of research or thesis, of which three must be in applied mathematics or mathematical physics and 15 must be in meteorology courses numbered above 500.

A thesis is required. It must demonstrate the student's ability to use research methods in a limited area and to discuss critically his own and other investigators' work.

DOCTOR OF PHILOSOPHY. The degree of Doctor of Philosophy signifies understanding of the nature of knowledge normally attained only through the original solution of a problem of substantial scientific importance.

A student who passes the qualifying examination with distinction may embark on the Ph.D. program under the supervision of a faculty committee. The general examination, which is taken at the end of the second year of residence, is composed of a written examination which tests mastery of general and theoretical meteorology and of relevant mathematical methods, and an oral examination which tests depth of understanding of a topic within the student's area of special interest which is selected in advance.

At least half of the credits earned prior to the general examination should be in courses numbered above 500, and at least 21 credits should be earned in approved mathematics and physics courses numbered above 400. The thesis is an important part of the candidate's program; it must represent an original contribution of substantial scientific importance.

COURSES FOR UNDERGRADUATES

101 Survey of the Atmosphere (5)

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.

301 Introduction to Atmospheric Science (5)

Primarily for meteorology majors but open to other qualified students. Composition and structure of the atmosphere, radiative processes in the atmosphere including direct and indirect effects of solar radiation, movement of air, adiabatic and diabatic changes of air and water substance, evaporation and condensation processes. Intended as a unifying introduction to advanced meteorology courses. Prerequisites, Physics 123 or equivalent, Mathematics 124 which may be taken concurrently.

- 321 Physical Climatology (5)** **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)** **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.
- 329 Microclimatology (3)** **Buettner, Businger**
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 Introduction to Atmospheric Physics (5)** **Businger**
Earth's field of gravity; properties and distribution of atmospheric gases. Prerequisite, Mathematics 125 or permission.
- 350 Introduction to Atmospheric Analysis (5)** **Reed**
Analysis of surface and upper-level charts and vertical cross sections. Elementary applications of hydrostatic and geostrophic equations. Prerequisites, one year of calculus and general physics.
- 360 Meteorological Instruments and Observations (5)** **Badgley, Businger**
Accuracy and sensitivity of meteorological instruments and representativeness of meteorological observations; principles 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.
- 431 Atmospheric Physics (5)** **Businger**
Properties of cloud particles, solar and terrestrial radiation, transfer processes and applications. Prerequisites, 340 or Physics 371, and Mathematics 324.
- 432 Atmospheric Physics (3)** **Businger**
Electromagnetic principles and application to the atmosphere, properties of waves, atmospheric probing, natural signal phenomena, effects of nuclear explosions. Prerequisites, 340 or Physics 371, and Mathematics 324.
- 441, 442 Atmospheric Motions (5,5)** **Fleagle, Reed**
441: preliminary mathematics, vector operators, fundamental equations, simple manipulations of equations. Prerequisites, 340 or permission, and Mathematics 324. 442: circulation and vorticity, barotropic and baroclinic wave theory, numerical weather predictions. Prerequisite, 441.
- 445 Atmospheric Thermodynamics (3)** **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. Prerequisites, calculus and general physics. (Offered for last time Autumn Quarter, 1961.)
- 451 Atmospheric Analysis (5)** **Danielson**
Horizontal motion: streamlines, trajectories, divergence, vorticity, deformation. Vertical motion. Variation of wind with height. Frontal characteristics. Jet stream. Graphical integration of prediction equations. Lectures and laboratory. Prerequisites, 350 and 442, which may be taken concurrently.
- 452 Forecasting Laboratory (5)** **Danielson, Reed**
Daily practice in map analysis and forecasting, using current weather data. Use of thermodynamic diagrams. Severe storm forecasting. Statistical methods. Prerequisite, 451.
- 462 Sea-Air Transfer Processes (6)** **Fleagle**
Classroom work and field observations relating to the physical processes occurring at ocean-atmosphere boundary. Transfer of energy, momentum, and moisture and their effects on small-scale and large-scale phenomena, including fog formation, convection, modification of air masses. (Offered at Friday Harbor, Washington, Summer Quarter only.) Prerequisite, 442 or permission.
- 492 Readings in Meteorology or Climatology (*)**
Prerequisite, permission.
- 493 Special Problems in Meteorology or Climatology (*)**
Prerequisite, permission.
- 494 Meteorological Statistics (*)**
Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 520 Seminar (2-5)**
- 522 Advanced Regional Climatology (3)** **Church**
Intensive study of the characteristics of climatic elements for a selected region or climatic type and a statistical analysis of the elements studied. Prerequisite, 322 or permission.
- 528 Applied Meteorology and Bioclimatology (3)** **Buettner**
Interrelationship of meteorology and climatology to human health and heat balance, aviation and space medicine, air pollution, agriculture, forestry, transportation, etc. Prerequisites, 322 and 341, or permission.

- 531 The Upper Atmosphere (3)** **Buettner**
Structure, composition, and dominant physical and photochemical processes. Sound propagation, aurora, air glow, ionosphere, and Van Allen belts. Role of the sun. Exosphere and planetary atmosphere. Prerequisites, Mathematics 322 and Physics 320, or permission.
- 532 Atmospheric Electricity (3)** **Buettner**
Formation and disappearance of atmospheric ions. Normal air electrical field. Lightning and its causes. Earth magnetic field. Prerequisite, 531 or permission.
- 533 Atmospheric Radiation (3)** **Buettner**
Solar spectrum. Atmospheric scattering, spectra of water vapor and other gases. Albedo of earth and atmosphere. Radiative heat balance. Prerequisites, Physics 320 and Mathematics 322.
- 541, 542 Dynamic Meteorology (3,3)** **Fleagle**
541: basic equations of dynamic meteorology, circulation and potential vorticity theorems, barotropic and baroclinic atmospheres, large and small scale approximations. Prerequisites, Mathematics 418 or Aeronautical Engineering 567 or equivalent. 542: particle dynamics applied to large scale motions and to stability criteria, linearized barotropic wave, numerical forecasting equations, baroclinic, diabatic, and topographic effects. Prerequisites, 541 and Mathematics 221.
- 543, 544 Atmospheric Wave Theory (3,3)** **Fleagle**
543: perturbation equations in Eulerian and Lagrangian form, wave motions in incompressible and compressible fluids, wave theory of cyclones, flow over mountains. Prerequisites, 442, Mathematics 322, or permission. 544: structure of baroclinic wave, baroclinic instability, general circulation, dispersion of waves, associated Legendre equation, wave motion on spheres, atmospheric tides. Prerequisite, 543.
- 546, 547, 548 Atmospheric Turbulence (3,3,3)** **Badgley, Businger**
546: laminar and turbulent flow; analogy between kinetic theory of gases and turbulence theory; Reynolds averaging; dissipation of energy; statistical descriptions of turbulent flow. Prerequisite, 442 or permission. 547: diffusion of matter in the atmosphere; application of Fickian and statistical theories of diffusion; use of Lagrangian and Eulerian correlation functions. Prerequisite, 546. 548: turbulent flux of heat, momentum, and moisture in the layer of the atmosphere next to the earth; Richardson's stability criterion; free convection. Prerequisite, 546.
- 551 Advanced Atmospheric Analysis** **Danielsen, Reed**
Selected advanced nonroutine types of analysis. Exercises in objective map analysis and numerical weather prediction. Prerequisite, 442 or permission.
- 560 Theory of Meteorological Instruments (3)** **Badgley**
Physical theory of operation of meteorological instruments. New and specialized research instruments and more difficult problems involving standard instruments. Prerequisites, one year of calculus and permission.
- 570 Seminar on Cloud Physics (2)** **Businger**
Physical processes in formation and modification of clouds and formation of precipitation in the atmosphere are examined. Prerequisite, permission.
- 572 Seminar on Polar Meteorology (3)**
Critical examination of source materials and original papers on selected topics applicable to polar meteorology. Prerequisite, permission.
- 580 Field Investigations (10)** **Church**
Summer field work at various locations in the Pacific Northwest on horizontal and vertical gradients in the atmosphere; meteorological conditions as applied to various human activities such as agriculture (irrigated and nonirrigated), forestry, frost protection, public health, atmospheric pollution, etc. (Offered Summer Quarter only.) Prerequisite, permission.
- 593 Laboratory in Experimental Meteorology (3, maximum 6)**
The role of controlled-model experiments in meteorology. Laboratory study of cloud formation and modification; convection cells, turbulent air motion; thermally-induced air drainage; flow over obstacles; wave motion; surface of discontinuity; atmospheric circulation. Prerequisite, 542.
- 600 Research (*)**
- 700 Thesis (*)**

MICROBIOLOGY

Executive Officer: CHARLES A. EVANS, G305 Health Sciences Building

For students in the College of Arts and Sciences, the Department of Microbiology in the Division of Health Sciences offers a four-year elective curriculum leading to a bachelor's degree. The degrees of Master of Science and Doctor of Philosophy are also offered in the field of microbiology.

BACHELOR OF SCIENCE

The requirements are: 36 credits in microbiology courses, including 400; 10 credits in botany or zoology or Biology 101J-102J; Physics 101, 102, 103, 107, 108, 109; Chemistry 100 (for students with less than one year of high school chemistry), 140, 150, 151, 160, 170, 221, 231, 232, 241, 242 (or, instead of the last four courses named, 335, 336, 345, and 346); and Mathematics 103 or 104, 105, and 124. Biology 451, Botany 461, and Zoology 423 may be counted toward the 36 credits in microbiology courses.

A combined grade-point average of 2.50 in biology and chemistry courses is required for admission to 400 and 441-; a grade-point average of 2.00 in microbiology courses is required for graduation.

During their third and fourth years, most students take specialized courses in microbiology and related fields of interest. The following courses are recommended for all students: 320, 400, 430, and 441-442; Biology 451; Botany 461; and Biochemistry 481, 482, 483.

In addition to the above courses, the following are suggested for students with an interest in either general or medical microbiology:

GENERAL: 499; Zoology 400 and 423.

MEDICAL: 322, 443, 444; Anatomy 301, 330; Pathology 231; Zoology 458. For description of medical courses, see the *School of Medicine Bulletin*.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate School Bulletin*.

Candidates for advanced degrees are selected primarily upon the basis of scholarship and motivation. An undergraduate record of at least a B average is highly desirable as an indication that the student is capable of more advanced work. While the academic background of students entering graduate work in microbiology is quite variable, it is generally agreed that a strong background in chemistry and biology is essential. One year of physics is required, and mathematics through analytic geometry and calculus is recommended.

COURSES FOR UNDERGRADUATES

- 235 Microbiology for Students of Dentistry (7)** **Holland**
Lectures and laboratory introducing principles of microbiology. Infectious microorganisms and flora of the mouth are emphasized. Required for second-year dental students. Students who have had previous training in microbiology may be permitted to substitute a research problem for laboratory work. Prerequisite, for nondental students, permission.
- 301 General Microbiology (5)**
Microorganisms and their activities. For students of pharmacy, nursing, dental hygiene, home economics, education, and others with minimal training in chemistry who are interested in a one-quarter survey course. Prerequisites, two quarters of general chemistry.
- 320 Media Preparation (*, maximum 5)** **Duchow**
Preparation of culture media and solutions. Nutritional requirements of microorganisms are considered. For students expecting to enter vocations involving laboratory work with bacteria. Prerequisites, 301 and permission.
- 322 Applied Bacteriology (5)**
Practical experience in a public health laboratory, fifteen hours per week. For students majoring in medical microbiology. Prerequisites, 441-442 or equivalent, and permission.
- 400 Fundamentals of Bacteriology (*, maximum 6)** **Douglas, Ordal**
Basic bacteriology; comparative morphology, taxonomy, physiology of bacteria. For students majoring in microbiology and others interested chiefly in biological and chemical aspects of microbes. Required for students majoring in microbiology. Recommended for graduate students majoring in chemistry or biology. Prerequisites, 10 credits in organic chemistry, 10 credits in botany or zoology, and permission.
- 430 Industrial Microbiology (3 or 5)** **Douglas**
Microbiology and biochemical aspects of industrially important fermentative and oxidative processes. For students majoring in microbiology or food technology. Prerequisites 301 or 400, Chemistry 221 and 232.

441-442 Medical Bacteriology, Virology, and Immunology (*-, maximum 5-, -*, maximum -5)**Evans, Groman, Henry, Sherris, Weiser**

441- microorganisms and the morphology and physiology of bacteria; 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 permission be allowed to take 441- or 442 for less than 5 credits. Required for second-year medical students. Open to upper-division undergraduates and graduate students. Prerequisites, 10 credits in organic chemistry, 10 credits in botany or zoology, and permission.

443 Medical Mycology (*, maximum 2)**Henry**

Morphology, physiology, immunology, and epidemiology of the medically important fungi. (Offered three weeks of quarter.) Required for second-year medical students. Open to upper-division undergraduates and graduate students. Prerequisites, 441-442 or equivalent, and permission.

444 Medical Parasitology (*, maximum 4)**Groman**

Medically important parasites with emphasis on their biology in relation to production and prevention of disease. (Offered eight weeks of quarter.) Required for second-year medical students. Open to upper-division undergraduates and graduate students. Prerequisites, 441-442 or equivalent, and permission.

499 Undergraduate Research (*)

Specific problems in industrial, medical, and general microbiology. Prerequisites, senior standing and permission.

COURSES FOR GRADUATES ONLY**510 Physiology of Bacteria (3)****Douglas, Ordal, Whiteley**

Fundamental physiological and metabolic processes of bacteria. (Offered alternate years; offered 1961-62.) Prerequisite, permission.

520 Seminar (1)**530 Comparative Morphology and Physiology of the Higher Bacteria (4)****Ordal**

Enrichment, isolation, and comparative morphology and physiology of selected representatives of the following groups of bacteria: Nitrobacteriaceae, Rhodobacteriaceae, Caulobacteriaceae, Actinomycetales, Myxobacteriales, Chlamydoxanthales, Caryophanales, and Borrelomycetaceae. (Offered alternate years; offered 1961-62.) Prerequisite, permission.

540 Virology (*, maximum 4)**Evans, Groman, Holland**

(Offered alternate years; offered 1961-62.) Prerequisites, at least one quarter of general microbiology and permission.

550 Advanced Immunology (*, maximum 4)**Weiser**

(Offered alternate years; offered 1962-63.) Prerequisites, 441- and permission.

600 Research (*)**700 Thesis (*)****MUSIC****Director: STANLEY CHAPPLE, 104 Music Building**

The School of Music offers courses leading to a degree of Bachelor of Arts, Bachelor of Arts in Music, Master of Arts in Music, Doctor of Philosophy, and Doctor of Musical Arts.

For undergraduate students, the School provides a curriculum which leads to the degree of Bachelor of Arts, and three prescribed curricula which lead to the degree of Bachelor of Arts in Music, with a major in music composition, performance, or teaching. The School also offers a major academic field, a major academic field for elementary education majors, and a minor academic field for students in the College of Education; and courses for students majoring in other fields.

Every prospective music student is interviewed to determine his musical skill through performance as a vocalist or instrumentalist; his basic knowledge of music fundamentals; and his ability to play on the piano all major and harmonic minor scales, a simple piece by Bach, an easy sonatina, an easy composition by a romantic or contemporary composer, and to read at sight music of moderate difficulty.

If a student meets the first two requirements, but is unable to meet the third, he may begin his studies in music on condition that he enroll in 110A until he satisfies this requirement. Required of all music majors during the first three quarters of residence are 114, 115, and 116. Exemption is by examination only.

Since participation in music organizations is an indispensable part of his musical experience, every music student must be a member of one or more music ensembles throughout his four years. No credit for this experience may be earned by freshmen and sophomores; from 6 to 12 credits must be earned by upper-division students. An instrumentalist must participate in vocal ensembles for at least one year.

Every music student must choose a primary performance field, either voice or instrument; during his senior year he will publicly demonstrate his ability in his performance field, either as a soloist or as a member of a small ensemble.

Candidates for the bachelor's degrees must complete the requirements of the College of Arts and Sciences and one of the major curricula described below. A grade-point average of 2.50 in music courses is required for graduation.

BACHELOR OF ARTS

The minimum music requirements for the degree of Bachelor of Arts are: 27 credits in theory (including 12 upper division); 17 credits in music history and literature (including 13 upper division); 1 credit in 106; 6 credits in ensemble; and 9 credits in upper-division vocal or instrumental instruction.

BACHELOR OF ARTS IN MUSIC

For the degree of Bachelor of Arts in Music, students may choose a curriculum in composition, vocal or instrumental music (piano, violin, violoncello, voice, organ, or another approved instrument), or music teaching.

Basic requirements for *all* curricula are: 15 credits in theory (101, 102, 103, 114, 115, 116, 202, 203); 8 credits in music history and literature (207, 208, 307, 308); 106; and 6 credits in ensemble.

Specific additional requirements for each curriculum are as follows:

COMPOSITION. 301, 303, 321, 322, 353, 401, 421, 422, 481, 491 (theory and composition); 408, 409 (music history and literature); 304, 384, 385 (choral literature, conducting); and 12 credits in vocal or instrumental instruction.

PIANO. 150A and 350A (to total 36 credits); 131, 132, 133 (piano sight reading); 322, and 352 or 481 (theory); 3 credits in upper-division music history; 334, 335 (accompanying); 337, 338, 339 (piano repertoire); 434, 435 (piano teaching); 331, 332 (keyboard transposition and improvisation); and a senior recital. The work in ensemble should include three quarters of registration in 380.

To be accepted as a piano major, the student must take an examination which includes three two-part inventions by Bach (one memorized), or three compositions of equal difficulty from the pre-Haydn period; one complete sonata by Haydn, Mozart, or Beethoven; two short compositions from romantic and contemporary periods, respectively; reading at sight of an easy composition; all major, and all harmonic and melodic minor scales, four octaves, hands together (M. 80, four notes to the beat); major and minor arpeggios, root positions and inversions.

VIOLIN OR VIOLONCELLO. 150B and 350B, or 150D and 350D (to total 36 credits); 303 (keyboard harmony), 321 or 322 (counterpoint), and 352 or 481 (form and analysis); 3 credits in upper-division music history; 384 (conducting); 6 credits in *130A or *210A (piano); and a senior recital. The 6 ensemble credits mentioned above under basic requirements must be taken in 360, and an *additional* 6 credits of ensemble in 380 are required.

ORGAN. 150E and 350E (to total 36 credits); 303, 322, 422, 481 (theory); 357 (church music); 304, 385 (choral literature, conducting); 337, 338, 339 (organ repertoire); 3 credits in voice; and a senior recital.

*Students may be excused from Music 130A or 210A by passing an examination. In this case, 6 credits in music theory or history may be substituted.

VOICE. 150C and 350C (to total 36 credits); 6 credits in upper-division theory; 6 credits in upper-division music history; 1 credit from 111, 112, 113, 211; 304, 385 (choral literature, conducting); 337, 338, 339 (song repertoire); 6 credits in *130A or *210A (piano); and a senior recital.

To be accepted as a voice major, the student must take an examination which includes three songs selected from Schirmer Volume 1722 (*Twenty-Four Early Songs and Arias*), preferably in the original language, and pass a test in sight-singing of the difficulty of a simple folksong or hymn tune. A voice major must complete 15 college credits in French, German, or Italian by the end of the sophomore year, and 5 credits from English 257, 320, or Speech 310.

MUSIC TEACHING. Upper-division theory (including 303) 6 credits; 347; 12 credits in a major instrument or voice; 6 credits in a minor instrument or voice; not less than 3 credits in voice, nor 3 credits in piano (130A or 210A); 2 credits in conducting; 10 credits in music teaching; and 21 credits in approved electives. Students majoring in music teaching must pass an examination in piano and in voice. These examinations are prerequisites for registration in 344. (For the Provisional General Certificate, see the *College of Education Bulletin*.)

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. Summaries of the undergraduate preparation required for each of the various majors are listed in the information leaflets, "Graduate Studies," prepared by the School of Music.

MASTER OF ARTS IN MUSIC. All candidates must demonstrate proficiency in general musicianship, including piano, and show a satisfactory knowledge of music theory and music literature. The minimum requirements are: for a major in composition, music education, musicology, or opera, 36 credits and a 9-credit thesis; for a major in music performance (piano, violin, voice, organ, conducting), 39 credits and a 6-credit thesis. The candidate's committee may require additional work beyond the basic minimum, depending upon the student's previous preparation, level of accomplishment in graduate studies, and educational objectives. Musicology is the only major which requires a reading knowledge of either French or German.

DOCTOR OF MUSICAL ARTS. This degree is intended as a recognition of high professional attainment in some major branch of performance, or in original composition, or in the field of music teaching. Since only experienced and technically competent musicians will be admitted to the program, it is expected that the doctoral studies will be devoted largely to the broadening and deepening of professional preparation for teaching at the college level.

Three years of graduate studies are required, of which two must be spent in residence at the University of Washington. A minimum of 80 credits of course work must be completed, of which one-half must represent music courses numbered 500 or above. Individual programs may be flexible, but should include broadening experience in various musical disciplines, and in departments other than music, along with intensive study of a specialty. In lieu of a single longer dissertation, candidates will submit three theses. One of the theses must be a research paper; the other two may be additional research papers, or musical compositions, or essays of a critical or methodological nature.

A reading knowledge of two foreign languages is required.

DOCTOR OF PHILOSOPHY. This degree is offered with a major in Music, and with opportunity for specialization in musicology or music theory. Candidates must have a reading knowledge of French and German. Three years of graduate study

* Students may be excused from Music 130A or 210A by passing an examination. In this case, 6 credits in music theory or history may be substituted.

are required, two of which must be spent in residence at the University of Washington. A minimum of 80 credits is required, of which 36 credits must be in music courses numbered 500 or above, and 20 to 30 credits will normally represent supporting courses in other departments. In addition, the candidate must present an acceptable thesis representing original and independent investigation.

COURSES FOR UNDERGRADUATES

COURSES PRIMARILY FOR NONMAJORS

- | | | |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| 107 | Survey of Music (5)
Illustrated lectures with supplementary readings to provide the general student with understanding of common musical forms, idioms, and styles. | Clarke |
| 108 | The Orchestra (2)
Development of the orchestra and its literature. | Hokanson, Sokol |
| 109 | Choral Music (2)
Prerequisite, 107 or 108. | Sokol |
| 117 | Symphonic Music, Nineteenth Century (2)
Prerequisite, 107 or 108. | Hokanson, Sokol |
| 118 | Symphonic Music, Seventeenth and Eighteenth Centuries (2)
Prerequisite, 107 or 108. | Hokanson, Sokol |
| 119 | Symphonic Music, Contemporary (2)
Prerequisite, 107 or 108. | Hokanson, Sokol |
| 121, 122, 123 | Elementary Music Theory (2,2,2)
Prerequisites, 121 for 122; 122 for 123. | |
| 217, 218, 219 | Opera (2,2,2) | Werner |
| 227 | The Concerto (2)
Prerequisite, 107 or 108. | |
| 317 | Chamber Music (2)
Survey of literature for ensembles. Prerequisite 107 or 108 | Ferrin |
| 347 | Music in the United States (2)
Contribution of music to development of American culture. Prerequisite, 107 or 108, or permission. | Clarke |

INTRODUCTORY COURSES PRIMARILY FOR MUSIC MAJORS

- | | | |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 101, 202, 103 | First-Year Theory (2,2,2)
Prerequisite, permission. | |
| 106 | The Basis of Musical Expression (1) | Chapple |
| 114, 115, 116 | Sight Singing (1,1,1)
Prerequisite, permission. | |
| 131, 132, 133 | Piano Sight Reading Laboratory (1,1,1)
For majors in piano and organ. Exemption by examination. Others by permission. | Geissmar |
| 202, 203 | Second-Year Theory (3,3)
Prerequisite, 103. | |
| 207, 208 | Music After 1750 (2,2)
Prerequisite, 103. | |

THEORY AND COMPOSITION. Primarily for majors who have completed 203 and 208. Open to others with permission of the instructor.

- | | | |
|------------|---------------------------------------------------------------------------------------------|-----------------------|
| 301 | Contemporary Idioms (3)
Analytical studies of present-day composition techniques. | McKay |
| 303 | Keyboard Harmony (3)
Prerequisite, 120A or equivalent. | |
| 321 | Modal Counterpoint (3)
Sixteenth-century style. | Babb |
| 322 | Tonal Counterpoint (3)
Polyphonic composition: canon, invention, and fugue. | Verrall |
| 352 | Musical Form (3)
Analysis of principal forms of music composition. | Woodcock |
| 353 | Orchestration (3) | McKay, Verrall |
| 401 | Contemporary Idioms (3)
Prerequisite, 301. | McKay |
| 421 | Modal Counterpoint (3)
Prerequisite, 321. | Babb |
| 422 | Tonal Counterpoint (3)
Prerequisite, 322. | Verrall |

- 452 **Musical Form (3)** **Woodcock**
Prerequisite, 352.
- 453 **Orchestration (3)** **Beale, Verrall**
Prerequisite, 353.
- 481 **Harmonic Analysis (3)** **Beale, Verrall**
- 491 **Composers' Laboratory (3, maximum 18)** **McKay**

MUSIC HISTORY AND LITERATURE. Primarily for music majors who have completed 203 and 208. Open to others with adequate musical experience.

- 307, 308 **Music Before 1750 (2,2)** **Babb, Torry, Woodcock**
Prerequisite, 307 for 308.
- 348 **Twentieth-Century Music in the Americas (2)** **Clarke**
Stylistic tendencies since 1900; analysis of representative works. Prerequisites, 203, 208, or permission.
- 357 **Church Music (3)** **Woodcock**
Survey of liturgy, chant, hymn, anthem, and solo. Prerequisite, 308 or permission.
- 367 **History of Chamber Music (3)** **Irvine**
Prerequisite, 308 or permission.
- 407 **Renaissance Music (2)** **Irvine**
- 408 **Baroque Music (3)** **Terry**
Prerequisite, 308 or permission.
- 409 **Contemporary Music (3)** **McKay**
- 417 **Medieval Music (2)** **Irvine**
- 427 **Haydn and Mozart (3)** **Terry**
Prerequisite, 308 or permission.
- 428 **Beethoven (3)** **Woodcock**
- 437 **Rococo and Preclassic Music (3)** **Terry**
Prerequisite, 308 or permission.
- 447 **Schumann and Brahms (3)** **Woodcock**
- 449 **Late Nineteenth-Century Music (3)** **Irvine**
- 467 **History of Keyboard Music (3)** **Woodcock**
Development of organ, clavichord, harp, harpsichord, and piano; idioms of corresponding types of keyboard music and styles of performance. Prerequisite, 308 or permission.
- 487, 488 **History of Opera (3,3)** **Clarke, Munro**
Periods and styles, with special study of representative works in the light of cooperative contributions of voice, orchestra, and libretto. 487: pre-opera through Mozart; 488: opera since Mozart.
- 497, 498 **History of Choral Music (3,3)** **Munro, Terry**
497: Josquin through Bach; 498: Haydn to the present.

SCORE ANALYSIS AND CONDUCTING

- 304 **Choral Literature (1)** **Terry**
Style and interpretation of choral music through performance. Prerequisites, 116, 203, and 208.
- 384 **Instrumental Conducting (1)** **Welke**
Prerequisite, 203.
- 385 **Choral Conducting (2)** **Munro**
Style and interpretation. Prerequisites, 116, 203, and 208.
- 484 **Instrumental Conducting (1)** **Cole**
- 485 **Choral Conducting (2)** **Munro**
- 486 **Instrumental Conducting (1)** **Chapple**
- 495 **Advanced Choral Conducting (3)** **Munro**
Prerequisite, permission.

MUSIC TEACHING

- 124-125 **Instrumental Laboratory (1-1)**
Group instruction on orchestral instruments for noninstrumental majors in music teaching.
- 214 **215, 216 Instrumental Techniques (1,1,1)**
Violin and viola.
- 224, 225, 226 **Instrumental Techniques (1,1,1)**
Cello, clarinet, trumpet.
- 246 **Instrumental Techniques (1)**
Flute.

254, 255, 256 Instrumental Techniques (1,1,1)

Lower brass, double reed, percussion.

344 Elementary School Music (3)

Normann

Prerequisites, 385, Education 370S, and examination.

346J Teachers' Course in Secondary School Music (3)

Normann

Offered jointly with the College of Education. Prerequisite, 344.

354 Band Arranging (2)

Welke

Prerequisite, 203.

414 415 School Choral Materials (1,1)

Jones

Study of choral music for the junior and senior high school. Prerequisite, 344.

424, 425 School Instrumental Materials (1,1)

Cole, Normann

Prerequisite, 344.

VOICE AND INSTRUMENTS**Class Instruction****Piano 110A (1-1-1, maximum 3)**

Prerequisite, permission.

Piano 110Y (1)

For majors in elementary education. (Prerequisite for Education 377X-377Y.)

Piano 120A (1-1-1, maximum 3)

Prerequisite, 110A or equivalent.

Piano 210A (2, maximum 12)

Prerequisite, examination.

Voice 110C (1-1-1, maximum 3)

Prerequisite, examination.

Voice 110Z (1)

For majors in elementary education. (Prerequisite for Education 377X-377Y.)

Voice 120C (1-1-1, maximum 3)

Prerequisite, 110C or equivalent.

Voice 210C (2, maximum 12)

Primarily for majors not specializing in performance. Prerequisite, examination.

Private Instruction**130 Vocal or Instrumental Instruction (2-3, maximum 18)**

Primarily for majors not specializing in performance. For description and teacher designation see 150. Prerequisite, examination.

150 Vocal or Instrumental Instruction (2-3, maximum 18)

One or two individual half-hour lessons per week; weekly studio class in interpretation.

A. PIANO. Jacobson (AA), Ringgold (AB), Bostwick (AC), Geissmar (AE), Moore (AF), Hokanson (AG)

B. VIOLIN OR VIOLA. Zetlin (BA), Sokol (BB), Ferrin (BC)

C. VOICE. Werner (CA), Jones (CC), Harris (CD)

D. VIOLONCELLO. Heinitz (DA), Harnett (double bass, DB)

E. ORGAN. Eichinger (E)

F. WOODWIND. Rutherford (flute, FA), Allport (oboe, FB), Phillips (clarinet, FC), Jussila (bassoon, FD), Zeitlin (flute, FE), Marsh (oboe, FF), Welke (clarinet, FG)

G. BRASS. Welke (horn, GA), Welke (trumpet, GB), Cloud (trombone, GC), Cole (trumpet, GD), Cole (horn, GE)

H. HARP. Palmer (H)

J. TIMPANI AND PERCUSSION. Baunton (J)

K. HARPSICHORD. Bostwick (K)

330 Vocal or Instrumental Instruction (2-3, maximum 18)

For majors not specializing in performance. For description and teacher designation see 150. Prerequisite, examination.

350 Vocal or Instrumental Instruction (2-3, maximum 18)

To be taken concurrently with 337, 338, and 339 in the junior year. For description and teacher designation see 150. Prerequisite, examination.

430 Vocal or Instrumental Instruction (2-3, maximum 18)

For majors not specializing in performance. For description and teacher designation see 150. Prerequisite, examination.

450 Vocal or Instrumental Instruction (2-3, maximum 18)

For description and teacher designation see 150. Prerequisite, examination.

PERFORMANCE TECHNIQUES**111, 112, 113 Rhythmic Movement (1,1,1)**

Rosinbum

Muscular coordination with musical rhythms.

211 Music Theater Technique (1)

Rosinbum

Stage deportment and dramatic movement for singers. Prerequisite, 113.

- 331, 332, 333 Keyboard Transposition and Improvisation (2,2,2)** **Beale**
Prerequisite, 203.
- 334, 335, 336 Accompanying (1,1,1)** **Hokanson**
Study and performance of music of different types and periods for voice or instrument in combination with the piano.
- 337, 338, 339 Repertoire (1,1,1)**
For applied music majors. To be taken concurrently with 350 during the junior year.
Section A. PIANO Section B. SONG Section C. ORGAN
- 377, 378, 379 Score Reading (1,1,1)** **Irvine**
Reading from score at the piano as a technique for the investigation of ensemble literature.
- 434, 435, 436 Piano Teaching (2,2,2)** **Moore**
Survey and study of teaching material; supervised practice teaching.
- 464, 465 Opera Direction and Production (4,4)** **Rosinbum**
Practical experience with problems of the theater.

ENSEMBLES Open to nonmajors. All except 100 require auditions or permission.

- 100 University Singers (1-1-1, maximum 6)** **Waddell**
- 140 University Concert Band (1, maximum 6)** **Welke**
- 160 University Symphony Orchestra (1, maximum 6)** **Chapple**
- 180 Chamber Music (1, maximum 6)**
Small instrumental and choral groups.
Section A. PIANO Section F. WOODWIND
Section B. STRING Section G. BRASS
Section C. MADRIGAL Section H. SMALL VOCAL ENSEMBLE
Section D. OPERA Section I. CONDUCTORS' CHORAL GROUP
Section E. ORGAN Section J. HARPSICORD
- 240 Marching Band (1, maximum 3)** **Cole**
No credit for music majors.
- 340 University Concert Band (1, maximum 6)** **Welke**
- 360 University Symphony Orchestra (1, maximum 6)** **Chapple**
- 380 Advanced Chamber Music (1, maximum 6)**
Selected instrumental and choral groups.
- 440 Wind Sinfonietta (2, maximum 6)** **Welke**
(Offered Summer Quarter only)
- 460 Sinfonietta (1, maximum 9)** **Chapple**
- 480 Opera Theater (2, maximum 6)** **Chapple, Ferrin, Rosinbum**
Preparation for participation in public performance of roles in chamber opera.
- 490 Collegium Musicum (1-2, maximum 6)** **Bestwick, Heinitz, Terry**

UNDERGRADUATE RESEARCH

- 499 Undergraduate Research (*, maximum 6)**

COURSES FOR GRADUATES ONLY

- 500 Methods of Musical Research (3)** **Irvine**
Bibliography and research techniques. Designed to prepare students for their work in seminars, individual research, and the writing of theses.
- 507 Seminar in Renaissance and Baroque Music (3, maximum 6)** **Munro**
Prerequisite, one or more undergraduate courses in the same field.
- 508 Seminar in Classic and Romantic Music (3, maximum 6)** **Woodcock**
Prerequisite, one or more undergraduate courses in the same field.
- 509 Seminar in Modern Music (3, maximum 6)** **Irvine, Verrall**
Prerequisite, one or more undergraduate courses in the same field.
- 514 Psychological Foundations of Music (3)** **Normann**
The nature of musical effects; growth and development of musical powers; factors influencing musical taste; applications of music to therapy and industry.
- 524 Seminar in Music Education (3)** **Normann**
Special problems in the teaching and supervision of music in the elementary grades. Prerequisite, one year of teaching experience and permission.
- 525 Seminar in Music Education (3)** **Normann**
Special problems in the teaching and administration of music in the secondary school and junior college. Prerequisite, one year of teaching experience and permission.
- 526 Seminar in Music Education (3)** **Normann**
Philosophical foundations in music education. Prerequisite, one year of teaching experience and permission.

- 547 Seminar in American Music (3, maximum 6)** Clarke
History and literature of music in the United States from 1600 to the present.
- 550 Vocal or Instrumental Instruction (3, maximum 12)**
Prerequisite, 36 credits in the same branch of performance.
- 561 Problems in Choral and Orchestral Scoring (2-5)** Verrall
Special techniques of choral, orchestral, and dramatic composition. Original composition and research, with emphasis on the evolution of ensemble types and forms.
- 566 Opera Direction and Production (4 or 6, maximum 12)** Rosinbum
Practical experience with problems of the opera theater.
- 568, 569 Historiography and Criticism (3,3)** Irvine
An approach to critical scholarship through the review and evaluation of the writings of music historiographers and music critics, with main emphasis on the period since 1770.
- 577, 578 Early Notation (2,2)** Irvine
577: Gregorian notation; ars antiqua; ars nova. 578: white mensural notation; lute and organ tablatures. Prerequisites, 417 for 577, 407 for 578, or permission.
- 579 Seminar in Musicology (3, maximum 6)** Irvine
Selected topics in music history, literature, and theory. Prerequisite, permission.
- 584, 585, 586 Advanced Conducting (1-3,1-3,1-3)** Chapple
Analysis of scores leading to rehearsal and preparation of musical groups.
- 590 Recital (2, maximum 6)**
Public performance in one solo recital and in chamber music, cantata, concerto, opera, or oratorio.
- 591 Graduate Composition (*)** McKay, Verrall
- 600 Research (*)**
Prerequisite, permission.
- 700 Thesis (*)**

OCCUPATIONAL THERAPY, PREPROFESSIONAL PROGRAM

Adviser, 121 Miller Hall

The two-year preprofessional program in occupational therapy is designed specifically to prepare students for admission to the curriculum in Occupational Therapy in the School of Medicine of the University of Washington, although it also follows the general requirements of other occupational therapy schools.

The following courses are required, with a cumulative grade-point average of 2.50 for admission to the professional program: Art 109, 201, 290; Anatomy 301; Chemistry 101, 102; Nursing 298, 299; Education 182, 280; Home Economics 329; Physical Medicine and Rehabilitation N107, 290; Physics 170, 170L; Psychology 100, 101, Sociology 100; Zoology 208.

Electives should be selected from the humanities and social studies.

A complete description of the occupational therapy curriculum is found in the *School of Medicine Bulletin*.

OCEANOGRAPHY

Executive Officer: RICHARD H. FLEMING, 202 Oceanography Building

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

In many courses, work at sea is performed on board the M.V. "Brown Bear" and other vessels which are attached to the Department. Summer Quarter instruction is offered both on the main campus and at the Friday Harbor Laboratories in the San Juan Islands.

The Department offers two programs leading to bachelor degrees.

BACHELOR OF ARTS

The elective curriculum for the degree of Bachelor of Arts must include at least 36 credits in upper-division courses in oceanography. A general background in the basic sciences, including an approved program in one of the basic fields, is also

required. Students who contemplate graduate work in oceanography should follow the course leading to the Bachelor of Science degree.

BACHELOR OF SCIENCE

In order to complete the program for the degree of Bachelor of Science within four years, entering high school graduates must have met the general College of Arts and Sciences entrance requirements and have a total of $1\frac{1}{2}$ units of algebra, $\frac{1}{2}$ unit of trigonometry, and 1 unit each of plane geometry, chemistry, and physics. Four years of high school mathematics are strongly recommended.

Four options are offered under this program: biological oceanography, chemical oceanography, geological oceanography, and physical oceanography. During the first two years, the program is essentially the same for all options. Students entering their third year will select one of the options and during their third and fourth years will follow the appropriate course program

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Ocean. 110- Lectures . . .	1-	Ocean. -111- Lectures . . .	1-	Ocean. -112 Lectures . . .	1
Chem. 140 General . . .	3	Chem. 150 General . . .	3	Chem. 160 General . . .	3
Math. 124 Calc. with		Chem. 151 General Lab. .	2	Math. 126 Calc. with	
Anal. Geom.	5	Math. 125 Calc. with		Anal. Geom.	5
Physics 121 Phys. for		Anal. Geom.	5	Physics 123 Phys. for	
Sci. Majors	4	Physics 122 Phys. for		Sci. Majors	4
Health Educ. 175 or		Sci. Majors	4	Physics 132 Sci. Majors	
110 Health	2	Physics 131 Sci. Majors		Phys. Lab.	1
Phys. Educ. activity . . .	†	Phys. Lab.	1	Phys. Educ. activity . . .	†
ROTC	‡	Phys. Educ. activity . . .	†	ROTC	‡
		ROTC	‡		

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 170 Qual. Anal. . .	3	Chem. 221 Quant. Anal. . .	5	Ocean. 203 Intro.	5
Engl. 101 Composition . .	3	Engl. 102 Composition . .	3	Engl. 103 Composition . .	3
Zool. 111 General	5	Science electives	8	Science electives	8
Science electives	5	ROTC	‡	ROTC	‡
ROTC	‡				

During the third and fourth years, all students will be expected to complete the following: 360, 390, 403, 405, 421-422, 423, 440, 441, 442, and 460; 15 credits in one foreign language (Russian, German, and French are highly recommended for undergraduates); remaining group requirements. Students will select one of the following options:

BIOLOGICAL OCEANOGRAPHY OPTION. 410, 412; Zoology 112, 433, 434, 456; Botany 112, 465; Biology 451; Mathematics 382, 383; Geology 101.

CHEMICAL OCEANOGRAPHY OPTION. 401, 424, 452, 453; or 410, 411, 412, 424; Chemistry 335, 336, 337, 345, 346, 355, 356 357, 358, 426; Mathematics 391, 392; Geology 101. Chemistry 347 is recommended.

GEOLOGICAL OCEANOGRAPHY OPTION. 410, 412, 452, 453; Geology 205, 206, 207, 221, 222, 308, 330, 361, and either 320 or 436; Mathematics 391, 392. Geology 423 is highly recommended.

PHYSICAL OCEANOGRAPHY OPTION. 410, 411, 412; Meteorology 340, 431, 441, 442; Mathematics 221, 224, 225, 324, 325, 391; Physics 221, 222; Geology 101.

All college requirements for graduation must be satisfied.

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 as outlined in the *Graduate School Bulletin*. To be accepted a student must have completed an undergraduate major in oceanography or in one of the supporting sciences.

† See page 23 for Physical Education activity requirement.

‡ See page 23 for ROTC requirement.

It is desirable that students without a major in oceanography acquire a broad training in the basic sciences during their undergraduate studies.

In addition to becoming proficient in general oceanography and the basic sciences, students will be expected to specialize in biological, chemical, geological, or physical oceanography. Russian, German, French, and Japanese are the most valuable foreign languages in the study of oceanography.

COURSES FOR UNDERGRADUATES

- 101 Survey of Oceanography (5)** **Creager, English**
Origin and extent of the oceans; nature of the sea bottom; causes and effects of currents and tides; animal and plant life in the sea. Recommended for nonmajors.
- 110-111-112 Lectures in Oceanography (1-1-1)** **Fleming**
Weekly lectures, demonstrations, and tours to familiarize students with the subject matter and opportunities in oceanography. To be taken in the first or second year by students majoring in oceanography. May be entered any quarter.
- 203 Introduction to Oceanography (5)** **Fleming**
A description of the oceans and their relation to man; physical, chemical, biological, and geological aspects of the sea; areal distribution and seasonal cycles of properties; currents; factors affecting populations. Demonstrations and some classes aboard ship and in laboratories.
- 360 Methods and Instruments in Oceanography (3)**
Theory and practice of instrumental measurement and sampling in oceanography; shipboard equipment, position finding, selected information on equipment design and properties of materials, calibration and observation of the behavior of typical instruments. Prerequisites, 203, Mathematics 125, one year of physics.
- 390 General Oceanography (5)** **Barnes, Richards**
Physical, chemical, biological, and geological aspects of the oceans. Introductory to all courses in 400 series. Prerequisites, three of the following: one year of chemistry, one year of physics, Mathematics 126, Geology 101, Zoology 111.
- 401 General Physical Oceanography (5)** **Barnes**
Physical properties and processes, interaction with atmosphere, theories and methods involved in ocean currents, waves, and tides. Not open to students who have taken 410. Prerequisite, 390.
- 403 Biological Oceanography (5)** **Banase, English**
Marine organisms; biological aspects of life in the sea; influence of the environment; principal habitats. Prerequisites, 390, Zoology 111, or permission.
- 405 Geological Oceanography (5)** **Creager**
Methods of marine geological exploration; physiography and structure of the ocean basins; processes of sedimentation; sediments in the marine environment. Prerequisites, 390, Geology 101 or 205, or permission.
- 410 Physical Oceanography (3)** **Barnes**
Physical properties, processes, and the theory of the distribution of variables in the sea; mass and energy budgets. Prerequisite, 390 or graduate standing.
- 411 Ocean Tides and Waves (3)** **Rattray**
Cause, nature, measurement, analysis, and prediction of tides and tidal currents and surface waves. Prerequisites, 390, Mathematics 126, Physics 123, or graduate standing.
- 412 Ocean Currents (3)** **Barnes**
Characteristics of currents and of forces that establish and modify them; methods of direct measurement and computation, use of indirect techniques; associated distributions of mass and properties. Prerequisites, 410, Mathematics 126, Physics 123.
- 415 Fundamentals of Underwater Acoustics (3)** **Murphy**
Wave equation in liquids and solids; propagation in inhomogeneous media; exact and approximate solutions related to actual properties of the ocean medium. Prerequisites, 410, Mathematics 221, 324, 325, Physics 222.
- 416 Applications of Underwater Acoustics (2)** **Murphy**
Characteristics of practical systems utilized in acoustic studies in the ocean, including sound sources and sound detectors. Physical limitations of actual systems. Prerequisite, 415.
- 421-422 Chemical Oceanography (2,2)** **Richards**
Physical and chemical properties of sea water and marine products; methods of quantitative analysis. Prerequisites, Chemistry 221 or permission.
- 423, 424 Chemical Oceanography Laboratory (2-2)** **Richards**
Laboratory problems in the analytical and physical chemistry of sea water and marine materials. Prerequisites for 423, 421 (which may be taken concurrently); for 424, 422 (which may be taken concurrently), and 423.
- 440, 441, 442 Undergraduate Seminar (2,2,2)** **Fleming**
Reviews of history and literature; description of local waters and applications of oceanography. Required of all majors. Prerequisite, senior standing.
- 452 Sedimentary Processes (3)** **Creager**
Origin, transportation, and deposition of sediments; environments of sedimentation; interpretation of past climatic and physiographic conditions. Prerequisites, Geology 205, 206, 207.

- 453 Sedimentary Techniques (2)** **Creager**
Laboratory study and statistical analysis of physical properties of sediments; size analysis, texture, composition, porosity, permeability, and mass properties; description and interpretation of sediments. Prerequisites, 452 (which may be taken concurrently), Geology 222.
- 460 Field Experience in Oceanography (6)**
Practical work on shipboard and ashore by participation in regular oceanographic operations on the "Brown Bear" and other vessels; chemical, physical, biological, and geological analyses; preparation of reports. (Offered Summer Quarter only.) Prerequisites, 360, 390, and permission.
- 461 Applications of Oceanography (3)** **Fleming**
Analysis of special cases involving application of oceanography to practical problems. Prerequisite, a physical or biological science major or permission.
- 499 Undergraduate Research (1-3, maximum 6)**
Research on assigned topics which may involve laboratory work, field work, or literature surveys. Open to qualified seniors. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 511, 512, 513 Marine Hydrodynamics (3,3,3)** **Rattray**
Methods for solving problems in physical oceanography. Prerequisite, a major in a physical science.
- 514 Field Work in Marine Hydrodynamics (6)** **Rattray**
Application of marine hydrodynamics principles to field measurements. (Offered Summer Quarter when demand is sufficient.) Prerequisite, a major in a physical science.
- 515 Waves (2)** **Rattray**
Application of marine hydrodynamics principles to wave motion in oceans. Prerequisite, 513.
- 516 Ocean Circulation (2)** **Rattray**
Hydrodynamic theories concerning origin and characteristics of major ocean currents. Prerequisite, 513.
- 517 Oceanography of Inshore Waters (5)** **Barnes, Rattray**
Theories and techniques of investigation and interpretation of conditions existing in inshore waters with particular reference to mixing and flushing and to areas adjacent to the state of Washington; use of dynamic models. Prerequisite, 512.
- 518 Seminar in Physical Oceanography (*, maximum 9)**
Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisite, permission.
- 519 Interaction of the Sea and Atmosphere (5)**
Interchange of heat, water, and energy; study of budgets and of mechanisms of exchange. Prerequisites, 410, Meteorology 462.
- 520 Seminar (*, maximum 6)**
- 521 Seminar in Chemical Oceanography (*, maximum 9)** **Richards**
Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisite, permission.
- 523 Advanced Problems in Chemical Oceanography (1-4, maximum 18)** **Richards**
Field and laboratory work on selected problems of current interest. Prerequisites, 424 and permission.
- 531 Seminar in Biological Oceanography (*, maximum 9)** **Banse**
Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisite, permission.
- 532 Marine Microbiology (1-4)** **Ordal**
Ecology and biochemistry of marine bacteria. Prerequisites, Microbiology 400 and permission.
- 533 Zooplankton Ecology (6)**
Adaptations, modifications, and life histories of animals in the plankton. Evaluation of methods and techniques used in field and laboratory studies. (Offered Summer Quarter only in alternate years, beginning 1962, at Friday Harbor, Washington.) Prerequisite, permission.
- 534 Phytoplankton Ecology (6)**
Contemporary problems in marine phytoplankton investigations. Evaluation of methods used in field and laboratory studies. (Offered Summer Quarter only in alternate years, beginning 1962, at Friday Harbor, Washington.) Prerequisite, permission.
- 535 Advanced Plankton Ecology (3)** **Banse**
Factors controlling the distribution, abundance, and production of plankton organisms, with a consideration of recent methods of sampling and analysis. Prerequisite, permission.
- 536 Benthos Ecology (3)** **Banse**
Quantitative consideration of the population of the sea-bed. Discussion of modern methods of sampling and analysis. Factors affecting production. Prerequisite, permission.
- 551 Seminar in Geological Oceanography (*, maximum 9)** **Creager**
Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisite, permission.

- 553 Research Techniques in Marine Geology (3)** **Creager**
Planning field programs; selection of equipment and survey procedures; collection, analysis, compilation, and presentation of bathymetric and sediment data; evaluation of techniques and results. Prerequisites, 405, 453.
- 555, 556 Advanced Marine Geology (3,3)** **Creager**
Contemporary problems in marine geology; concepts supporting or at variance with accepted hypotheses; discussion of recent advances. Prerequisite, 553.
- 600 Research (*)**
- 700 Thesis (*)**

PHILOSOPHY

Executive Officer: ARTHUR F. SMULLYAN, 264 Savery Hall

The Department of Philosophy offers courses leading to the degree of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. Students majoring in other fields will find 100, 110, 120, 200, 215, 267, 320, and 322 of particular interest.

BACHELOR OF ARTS

In the elective curriculum, the requirements are: 40 credits in philosophy, including 110 or 215, 120, 320, 322, and at least one from 321, 325, or 326. Humanities 103 in the General Education program, which is identical with Philosophy 100, may be counted toward a major.

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 as outlined in the *Graduate School Bulletin*.

COURSES FOR UNDERGRADUATES

- 100 Introduction to Philosophy (5)**
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. (Identical with Humanities 103.)
- 110 Introduction to Social Ethics (5)** **Rader**
The nature of a good social order and right social action. The rival ideals of aristocracy, fascism, liberalism, and socialism, with emphasis upon the nature and ideals of democracy.
- 120 Introduction to Logic (5)**
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.
- 200 Types of Philosophy (5)** **Greenberg**
An introduction to metaphysics and epistemology. A study of the contrasting positions of such contemporary philosophers as Ayer, Russell, Bergson, and Santayana.
- 215 Introduction to Ethics (5)** **Richman**
Systematic study of typical analyses of the distinction between good and evil, right and wrong. The appeals to custom, theology, reason, human nature, and happiness as standards for solution of moral problems. Readings in Plato, Hume, Kant, Bentham, and Mill.
- 230 Philosophic Issues in World Affairs (2)** **Rader**
Philosophic issues in the conflict between soviet and liberal interpretations of democracy, and the bearing of these differences on world order. Ideals of the more neutralist nations. Philosophical basis of a world order. (Alternates with 231.)
- 231 Philosophy of Human Rights (2)** **Rader**
Historical development of the concept of human rights with particular attention to original sources. (Alternates with 230.)
- 267 Introduction to Philosophy of Religion (5)** **Dietrichson**
Main features of Western religious thought. Philosophical examination of mysticism, supernaturalism and naturalism, the relationship between religion and morality. (Offered alternate years; offered 1961-62.)
- 320 History of Ancient Philosophy (5)** **Stern**
The pre-Socratics; Plato and Aristotle; the Stoics, Epicureans, and Skeptics; Plotinus.
- 321 History of Medieval Philosophy (5)** **Boler**
Development of main lines of philosophical thought in the Latin West from 400-1400, with emphasis on Augustine, Anselm, Abelard, Aquinas, and Occam.

- 322 History of Modern Philosophy (5)**
Development of philosophical ideas from beginning of the Renaissance through the Continental Rationalists, the British Empiricists, and Kant.
- 325 History of Nineteenth Century Philosophy (5)**
Post-Kantian idealism: Fichte, Schelling, Hegel, and Schopenhauer. Development of absolute idealism in England. Resurgence of empiricism in England and America.
- 326 History of Recent Philosophy (5)**
From Kant to Bergson.
- 347 Philosophy in Literature (5)** **Rader**
Study of philosophical ideas expressed in great works of literature.
- 410 Social Philosophy (5)**
Philosophical theories of the nature of society. The epistemological, metaphysical, and ethical issues in the conflict between individualism and collectivism.
- 424 Recent American Philosophy (3)** **Boler**
The philosophies of Pierce, Royce, Dewey, G. H. Mead, and Santayana. Recent developments in analytic and speculative philosophy. Current issues and problems.
- 428 Chinese Philosophy (5)** **Shih**
Development of Chinese philosophy from the sixth century to modern times. Emphasis on Confucianism, Mohism, Taoism, Legalism, the Dialecticians, Buddhism, and Neo-Confucianism; re-evaluation of them in the light of new trends of thought after contact with the West.
- 429 Neo-Confucianism (5)** **Shih**
Systematic study of Neo-Confucianism, its background and development, with emphasis on the Rationalistic school of Ch'eng-Chu and the Idealistic school of Lu-Wang. Prerequisite, 428 or permission.
- 431 Philosophy of Plato (3)** **Keyt**
A reading of selected middle and late dialogues. (Offered alternate years; offered 1962-63.)
- 433 Philosophy of Aristotle (3)** **Keyt**
A study of the Aristotelian system with emphasis on two major works. (Offered alternate years; offered 1961-62.) Prerequisite, 320 or permission.
- 436 British Empiricism (3)** **Melden**
Development of empiricism in writings of Locke, Berkeley, and Hume. Detailed attention to application of empiricist views of origin and nature of ideas to the problems of substance, self, nature, causation, mathematics, and induction. (Not offered 1961-62.) Prerequisite, 322 or permission.
- 437 Philosophy of Hume (3)** **Melden**
Study of principles and methods employed by Hume in elaboration of his system of philosophy, comprising his analyses of knowledge, the passions, and morals. (Not offered 1961-62.) Prerequisite, 322 or permission.
- 438 Philosophy of Kant (3)** **Smullyan**
A systematic study of *The Critique of Pure Reason*. (Not offered 1961-62.) Prerequisite, 322 or permission.
- 440 Advanced Ethics (3)** **Richman**
A critical examination of the concepts and judgments of value, including an analytical treatment of the notions of right and wrong, obligation, good and evil, and the relationship between ethical and aesthetic value. Prerequisite, 215 or permission.
- 445 Philosophy of Art (5)** **Rader**
Principal systems of aesthetics; interpretations of the creative activity of the artist, the work of art, contemplation and criticism of art objects, and relationship of art to the social order.
- 448 Philosophy in Nineteenth-Century Literature (5)** **Rader**
From Wordsworth to Hardy, including Shelley, Emerson, Whitman, Tennyson, Browning, and Melville. Emphasis upon the philosophical interpretation of nature and the place of man in the cosmos.
- 450 Epistemology (3)** **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 or Humanities 103.
- 453 Semantics (5)** **Moulton**
Main theories of origin and functions of language, including its logical, descriptive, emotive, and expressive uses; semantical problems of social sciences and humanities. Prerequisite, 120.
- 456 Metaphysics (5)** **Dietrichson**
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 322, or Humanities 103, or permission.
- 460 Introduction to the Philosophy of Science (5)**
Concepts and methods fundamental in mathematics and in physical and social sciences. Relations of the sciences to each other as well as to ethics, religion, and philosophy. Speculations on the nature of the world suggested by past and present scientific theories. Operationist tendencies in recent interpretations of science. (Offered alternate years; offered 1962-63.) Prerequisite, 100 or 120, or Humanities 103.

- 463 Philosophy of Mind (3)** **Melden**
Theories of the nature of mind, the relation between mind and body, the self, memory, the unconscious, introspection, and our knowledge of other minds. (Not offered 1961-62.)
Prerequisite, 100 or Humanities 103.
- 465 Philosophy of History (5)** **Rader**
Analyses of basic concepts employed in historical interpretation, and some of the principal philosophers of history: Plato, St. Augustine, Hegel, Marx, Spengler, Toynbee, etc.
- 467 Philosophy of Religion (5)** **Dietrichson**
Examination of three approaches to religion: reason, intuition, faith. (Offered alternate years; offered 1962-63.) Prerequisite, one course in philosophy or Humanities 103.
- 469 Existentialist Philosophy (3)** **Dietrichson**
A study of main ideas in the existentialist philosophies of Kierkegaard, Heidegger, Sartre, and Marcel. The nonrational elements of existence, human freedom, philosophy as edifying wisdom. Prerequisite, one course in philosophy or Humanities 103.
- 470 Advanced Logic (5)** **Keyt, Smullyan**
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.
- 480 Philosophical Studies (2, maximum 4)**
Discussion and the writing of philosophical essays on advanced topics. The reading materials vary from year to year. For selected junior and senior honors students only.
- 484 Reading in Philosophy (1-4, maximum 12)**
Reading of approved philosophical works. Prerequisite, permission.
- 490 Philosophy of Leibniz (3)** **Melden**
An examination of the basic principles employed by Leibniz in the development of his systematic philosophy. Attention is given to the importance of Leibniz for the historical development of logic, the theory of knowledge, the philosophy of science, and metaphysics. (Not offered 1961-62.) Prerequisite, 322 or permission.
- 491 Philosophy of Spinoza (3)**
A detailed analysis of the *Ethics* of Spinoza.

COURSES FOR GRADUATES ONLY

- 520 Seminar in Ancient Philosophy (2, maximum 8)** **Keyt**
(Not offered 1961-62.)
- 522 Seminar in Modern Philosophy (2, maximum 8)**
(Not offered 1961-62.)
- 526 Seminar in Recent Philosophy (2, maximum 8)** **Smullyan**
(Offered 1961-62.)
- 540 Seminar in Ethics (2, maximum 8)** **Richman**
(Offered 1961-62.)
- 545 Seminar in Philosophy of Art (2, maximum 8)** **Rader**
(Offered 1961-62.)
- 550 Seminar in Epistemology (2, maximum 8)** **Smullyan**
(Offered 1961-62.)
- 556 Seminar in Metaphysics (2, maximum 8)** **Dietrichson**
(Offered 1961-62.)
- 565 Seminar in Philosophy of History (2, maximum 8)** **Rader**
(Not offered 1961-62.)
- 567 Seminar in Philosophy of Religion (2, maximum 8)** **Dietrichson**
(Not offered 1961-62.)
- 570 Seminar in Logic** **Keyt, Smullyan**
(Offered alternate years; offered 1961-62.)
- 584 Reading in Philosophy (1-4, maximum 12)**
Intensive reading in philosophical literature. Prerequisite, permission of Executive Officer.
- 587 Contemporary Analytic Philosophy (3, maximum 12)** **Melden**
(Offered 1961-62.)
- 600 Research (1-6)**
Prerequisite, permission.
- 700 Thesis (*)**

PHYSICAL AND HEALTH EDUCATION

Executive Officer for Women: RUTH M. WILSON, 105 Hutchinson Hall
Executive Officer for Men: R. K. CUTLER, 210 Edmundson Pavilion

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 undergraduate University students (see page 23); the program

in intramural sports and recreation, which provides organized competition, sports clubs, and recreational facilities which all students may use on a voluntary basis; and the prescribed professional education programs, which provide four-year curricula in physical education, recreational leadership, prephysical therapy, and teacher training in both physical education and health education. These professional curricula lead to the degree of Bachelor of Arts. The prescribed curricula satisfy the College group requirements. The degrees of Master of Science and Master of Science in Physical Education are available through graduate study. Candidates for the degree of Doctor of Philosophy in other departments may obtain a minor in physical education.

The teacher-training curricula are offered for students in both the College of Education and the College of Arts and Sciences. In addition, the School offers major academic fields for elementary education majors in physical education and health education, as well as minor academic fields for students in the College of Education; see the *College of Education Bulletin*.

BACHELOR OF ARTS

GENERAL CURRICULUM IN PHYSICAL EDUCATION. The general curriculum satisfies requirements for a Bachelor of Arts degree with a major in physical education, but not for a teaching certificate.

The lower-division preprofessional requirements are:

MEN		WOMEN	
	CREDITS		CREDITS
Phys. Educ. 161, 162, 163, 264, 265, 266		Health Educ. 110 Health	2
Skills and Materials	11	Phys. Educ. 115, 121, 157 Archery,	
Anat. 301 General	4	Bowling, Canoeing	3
Engl. 101, 102, 103 Composition	9	Phys. Educ. 181, 182, 183, 281, 282,	
Psychol. 100 General	5	283, 284 Backgrounds	13
Sociol. 110 Survey	5	Anat. 301 General	4
Speech 100 Basic Speech Improvement	5	Chem. 100 Chem. Sci. (or one year of	
Zool. 111 or Biol. 101J- General	5	high school chemistry)	5
Zool. 112 or Biol. -102J- General	5	Engl. 101, 102, 103 Composition	9
Zool. 118 and 118L, or 208 Physiology	6-5	Physics (approved introductory course)	5
(or approved substitute)		Psychol. 100 General	5
Approved electives	32-33	Sociol. 110 Survey	5
Phys. Educ. activities	†	Speech 100 Basic Speech Improvement	5
ROTC	‡	Zool. 118 and 118L or 208 Physiology	6-5
		(or approved substitute)	
		Approved electives	35-36

The professional requirements are:

MEN		WOMEN	
	CREDITS		CREDITS
Health Educ. 291 Hygiene	3	Health Educ. 291 Personal and	
Health Educ. 429 Methods in Teaching		General Hygiene	3
First Aid and Safety	3	Health Educ. 292 First Aid and Safety	3
Health Educ. 465 School Environ.		Phys. Educ. 190 Introduction	2
Health Programs	3	Phys. Educ. 293 Physiol. of Muscular	
Phys. Educ. 190 Introduction	2	Exercise	3
Phys. Educ. 293 Physiol. of Muscular		Phys. Educ. 375 Methods in	
Exercise	3	Phys. Educ. I	7
Phys. Educ. 309 School Dance Program	2	Phys. Educ. 376 Methods in	
Phys. Educ. 340 Admin. of Intramural		Phys. Educ. II	7
Sports	3	Phys. Educ. 377 Methods in	
Phys. Educ. 345 Principles	3	Phys. Educ. III	6
Phys. Educ. 363 Teaching Sports	2	Rec. Educ. 344 Camp Programs	3
Phys. Educ. 370 Coaching of Football	2	Home Ec. 300 Nutrition	2
Phys. Educ. 371 Coaching of Basketball	2	Phys. Educ. electives	2
Phys. Educ. 450 School Phys. Educ.			
Program	3		
Phys. Educ. 493 Problems in Athletics	3		
Rec. Educ. 294 Intro. to Recreation	2		
Rec. Educ. 324 Recreation Programs	3		

CURRICULUM IN RECREATIONAL LEADERSHIP. The minimum number of required credits to be earned in the various subjects which make up the curriculum are as follows: communications, 3; English, 9; history and government, 5; psychology, 10; speech, 8; science, 10; plus additional requirements for men or women as indicated below.

† See page 23 for Physical Education activity requirement.

‡ See page 23 for ROTC requirement.

MEN

Additional credit requirements for men are as follows: education, 5; sociology, 15; business administration, 5; physical education and sports activities, health education, and professional physical education, 36; recreation theory, 18; and cultural skills such as literature, music, art, drama, librarianship, photography, and certain outdoor education courses, 25. When provision has been made for the choice of electives in particular subjects, these electives must be within the range of certain courses recommended by the School and must be chosen in consultation with an adviser.

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Phys. Educ. 161 Aquatics.	2	Phys. Educ. 265 Low-		Phys. Educ. 163 Team	
Engl. 101 Composition.	3	Organized Games	2	Sports	2
Science electives	5	Engl. 102 Composition.	3	Music 107 Survey	5
Sociol. 110 Survey	5	Science electives	5	Psychol. 100 General	5
Phys. Educ. activity	†	Speech 100 Basic Speech		Approved electives	3
ROTC	‡	Improvement	5	Phys. Educ. activity	†
		Phys. Educ. activity	†	ROTC	‡
		ROTC	‡		

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Rec. Educ. 254 Resources.	1	Phys. Educ. 162 Gym-		Phys. Educ. 266 Individual	
Rec. Educ. 294 Intro.		nastics	2	Sports	2
to Recreation	2	Phys. Educ. 290 Officiating		Rec. Educ. 334 Recreation	
Art 100 Introduction	5	Rec. Educ. 324 Recreation		Management	2
Sociol. 240 Group Behavior	5	Programs	3	Art 290 or 291 or 292	
Approved electives	3	Drama 437 Creative	3	Art Education	2
ROTC	‡	Hist. or pol. sci. electives	5	Drama electives	3
		ROTC	‡	Sociol. electives	5
				ROTC	‡

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Phys. Educ. 309 School		Health Educ. 291 Hygiene	3	Phys. Educ. 340 Admin.	
Dance Program	2	Phys. Educ. 358 Teaching		of Intramural Sports.	3
Rec. Educ. 354 Recreation		Gymnastics	2	Phys. Educ. 363 Teaching	
Practicum	2	Phys. Educ. electives.	2-3	Sports	2
Rec. Educ. 374 Social		Cultural skills electives.	5	Phys. Educ. electives	3-7
Recreation	2	Psychol. 101 Adjustment		Rec. Educ. 344 Camp	
Librarianship. 452 Storytelling	3	or 306 Child Psychol.	5	Programs	3
Cmu. 303 Public Relations				Acctg. 210 Fundamentals.	5
or approv. substitute	3-5				
Cultural skills electives.	5				

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Rec. Educ. 454 Field		Educ. 455 Auditory and		Health Educ. 429 Methods	
Work	3	Visual Aids	3	in Teaching First Aid	
Speech 332 Group		Approved electives	12	and Safety	3
Discussion	5			Phys. Educ. 295 or 364	
Educ. electives	5			Teaching Aquatics	2
Approved electives	3-5			Approved electives	12

Recreation Education 504 and 524 are highly recommended electives for the second and third quarters of the fourth year.

WOMEN

Additional credit requirements for women are as follows: art, 7; business administration, 4; drama, 6; education, 3; health education, 5; librarianship, 3; music, 6; outdoor education, 6; physical education activity, 3; professional physical education, 15-16; recreational theory, 13; social work and sociology, 17; and two areas of specialization to be selected from art, dance, drama, music, outdoor education, sports, 20-27. The choice of particular courses within the various areas of study is to be determined in consultation with an adviser.

† See page 23 for Physical Education activity requirement.

‡ See page 23 for ROTC requirement.

First Year		Second Year	
	CREDITS		CREDITS
Health Educ. 110 Health	2	Health Educ. 292 First Aid and Safety	3
Phys. Educ. *181, 182, *183, *281, 282, 283, 284 Backgrounds	7-13	Rec. Educ. 294 Intro. to Recreation	2
Phys. Educ. 190 Introduction	2	Rec. Educ. 324 Recreation Programs	3
Engl. 101, 102, 103 Composition	9	Rec. Educ. 344 Camp Programs	3
Psychol. 100 General	5	Acct. 150 Fundamentals	4
Science or elective	5-10	Anat. 301 General or elective	4
Sociol. 110 Survey	5	Art 100 Introduction	5
Speech 100 Basic Speech Improvement	5	Art 290 or 291 or 292 Art Educ.	2
Phys. Educ. activity	†	Psychol. 101 Adjustment or 306	5
* Dependent upon area of specialization		Child Psych.	5
		Sociol. 240 Group Behavior	5
		Approved electives and/or area specialization	10-11
Third Year		Fourth Year	
	CREDITS		CREDITS
Phys. Educ. 375 Methods in Phys. Educ. I or Educ. 378C, D Phys. Educ. for the Elem. School	7-6	Rec. Educ. 426 Field Work	5
Drama 437 Creative	3	Cmu. 303 Public Relations	3
Educ. 377X-377Y Music for Elem. Teachers	3-3	Drama 426 H.S. Play Production	3
Forestry 301 Survey or 350 Wildlife Management	3	Educ. 455 Auditory and Visual Aids	3
Sociol. electives	5	Forestry 356 Forest Recreation	3
Approved electives and/or area specialization	21-22	History	5
		Librshp. 452 Storytelling	3
		Sociol. electives	2
		Speech 332 Group Discussion	5
		Approved electives and/or area specialization	12

AREAS OF SPECIALIZATION

Art, 10 credits—109 and select 7 credits from 105, 151, 201, 261, 300, 302, 357 or Home Economics 329.

Dance, 14 credits—Physical Education 351, 355, 459-460, 377 or 309 and 4 credits of physical education electives.

Drama, 10 credits—select 10 credits from 307, 403, 405, 406, 409.

Music, 13 credits—108; 110A, three quarters; 110C, three quarters; 100, two quarters, or 180 or 140, three quarters; one music elective, 2 credits.

Outdoor Education, 10 credits—to be determined in consultation with adviser.

Sports, 17 credits—Physical Education 157, 267, 181, 183, 281 or equivalent; 304 or 305-306; 376 or 295 and 5 credits of physical education electives.

CURRICULUM IN PREPHYSICAL THERAPY FOR WOMEN. The requirements are:

First Year		Second Year	
	CREDITS		CREDITS
Health Educ. 110 Health	2	Health Educ. 292 First Aid and Safety	3
Phys. Educ. 121, 124, 157 Bowling, Fencing, Canoeing, or 162 Elem. Swimming	3	Phys. Educ. 281, 283, 284 Backgrounds	5
Phys. Educ. 190 Introduction	2	Phys. Educ. 293 Physiol. of Muscular Exercise	3
Phys. Educ. 182, 183, 282 Backgrounds	6	*Anat. 301 General	4
Chem. 100 Chem. Sci. or 101 General and 120 Organic and General	10	Micro. 301 General (or approved substitute)	5
Engl. 101, 102, 103 Composition	9	Psychol. 100 General	5
Math. 120 Introduction	2	Psychol. 101 Adjustment	5
Physics 170 and 170L Introduction to Health Sciences Physics and Lab	6	Psychiatry 267 Introduction to Mental Hygiene	2
Speech 100 Basic Speech Improvement	5	*Zool. 118 and 118L or 208 Physiology	6-5
Sociol. 110 Survey	5	Approved electives	9-10
		*Or Conjoint 317-318 Elem. Anat. and Physiol.	12
Third Year		Fourth Year	
	CREDITS		CREDITS
Phys. Educ. 322 Kinesiology	3	Health Educ. 465 School Environ. Health Programs	3
Phys. Educ. 375 Methods in Physical Education I	7	Phys. Educ. 345 Principles	3
Phys. Educ. 376 Methods in Physical Education II	7	Phys. Educ. 435 Adapted Activities	3
Phys. Educ. 377 Methods in Physical Education III	6	Phys. Educ. N466 (3 quarters) Coaching	0
Psychol. 305 Abnormal or 309 Exceptional Children	5-3	Phys. Educ. 480 Principles of Movement	3
Approved electives	17-19	Prev. Med. 461 School and Commun. Health	5
		Approved electives	28

† See page 23 for Physical Education activity requirement.

TEACHER-TRAINING CURRICULA. The two teacher-training curricula offered by the School of Physical and Health Education may be taken through either the College of Arts and Sciences or the College of Education. Interested students should check the requirements listed in this bulletin and in the *College of Education Bulletin*.

The major course requirements in these curricula are exactly the same regardless of the college in which the student is registered.

Curricula for Teacher Training in Physical Education. Students who wish to emphasize high school physical education teaching should follow these curricula, which meet preprofessional and professional course requirements for the Bachelor of Arts degree. The curriculum for men includes courses necessary for teacher certification in the state of Washington, minor academic fields in social studies and health education, and all group requirements. Students may choose electives to complete an additional area of concentration.

The prescribed curriculum for women does not include the courses necessary for teacher certification. These courses, as well as those for a minor academic field, must be included in the electives.

All certification requirements are listed in the *College of Education Bulletin*.

All electives must be chosen in consultation with an adviser.

MEN

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Phys. Educ. 161 Aquatics	2	Phys. Educ. 162 Gymnastics	2	Phys. Educ. 163 Team	
Phys. Educ. 190 Intro.	2	Engl. 102 Composition	3	Sports	2
Engl. 101 Composition	3	Music	2-5	Engl. 103 Composition	3
Zool. 111 or Biol. 101J-		Zool. 112 or Biol. -102J		Sociol. 110 Survey	5
General	5-	General	-5	Speech 100 Basic Speech	
Phys. Educ. activity	†	Phys. Educ. activity	†	Improvement	5
ROTC	‡	ROTC	‡	Phys. Educ. activity	†
				ROTC	‡

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Rec. Educ. 294 Introduction	2	Health Educ. 291 General		Phys. Educ. 266 Individual	
Educ. 188 Prin. of Educ.	3	Hygiene	3	Sports	2
Psych. 100 General	5	Phys. Educ. 265 Low-Orig.		Phys. Educ. 293 Physiol.	
Zool. 118 and 118L Physiol.		Games	2	of Exercise	3
and Lab.	5	Educ. 209 Educ. Psych.	3	Phys. Educ. 372 Coaching	
ROTC	‡	Speech 220 (or equivalent)	5	Track and Field or 373	
		Approved electives		Coaching Baseball	2
		*Phys. Educ. 290		Anat. 301 General	4
		Officiating	2	Approved electives (Art)	2
		ROTC	‡	*Phys. Educ. 295 Water	
				Safety	2
				*Phys. Educ. 336 Training	
				and Conditioning	1
				ROTC	‡

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Phys. Educ. 264 Track and		Phys. Educ. 358 Teaching		Phys. Educ. 309 School	
Field and Wt. Training	2	Gymnastics	2	Dance Program	2
Phys. Educ. 322 Kinesiology	3	Phys. Educ. 370 Coaching		Phys. Educ. 340 Intramural	
Phys. Educ. 345 Principles		Football	2	Sports	3
of Phys. Educ.	3	Phys. Educ. 372 Coaching		Phys. Educ. 363 Teaching	
Phys. Educ. 371 Coaching		Track and Field or 373		Sports	2
Basketball	2	Coaching Baseball	2	Phys. Educ. 364 Teaching	
Educ. 370S Secondary		Rec. Ed. 324 Rec. Programs	3	Aquatics	2
Metho-'s	3	Educ. 390 Evaluation or 410		Phys. Educ. 373 Coaching	
Approved Electives	4	Educ. Sociol. or 447		Baseball or 372 Coaching	
*Rec Ed 254 Rec Resources		Principles of Guidance	3	Track and Field	2
*Rec Ed 354 Rec Practicum		Approved electives	5	Educ. 339 Teachers' Course	
*Rec. Ed. 374 Social Rec.				in Phys. Educ.	2
Approved electives	4			Approved electives	5
*Rec. Ed. 254 Rec.				*Rec. Educ. 334 Mgmt.	
Resources				and Operation of Rec.	
*Rec. Ed. 354 Rec.				*Rec. Educ. 344 Camp	
Practicum				Programs	
*Rec. Ed. 374 Social Rec.					

* Recommended electives.

† See page 23 for Physical Education activity requirement.

‡ See page 23 for ROTC requirement.

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Health Educ. 429 First Aid and Safety	3	Health Educ. 465 School Health Programs	3	Phys. Educ. 493 Problems in Athletics	3
Phys. Educ. 361 Teaching Wrestling	2	Phys. Educ. 447 Tests and Measurements	3	Educ. 405 Problems of Adolescence	3
Educ. 371S Directed Teaching (Sr. High School)	8	Phys. Educ. 450 School Phys. Educ. Program	3	Hist. 464 History of Washington	5
Approved electives	2	Educ. 360 Curriculum Development or 410 Educ. Sociol., or 447 Principles of Guidance	3	*Approved electives	6
		Prev. Med. 461 School Health Program	5	*Phys. Educ. 435 Adapted Phys. Educ.	
				*Rec. Educ. 344 Camp Programs	
				*Rec. Educ. 454 Field Work	

This four-year program satisfies group requirements and requirements for minors in Health Education, Social Studies, and Science. Students must coordinate with College of Education relative to Education courses. Physical Education majors may elect varsity or freshman intercollegiate sports for activity credit. Deficiencies must be removed during the first two years.

WOMEN

First Year	CREDITS	Second Year	CREDITS
Health Educ. 110 Health Education	2	Health Educ. 291 General Hygiene (if not accompanied by health educ. second area)	3
Phys. Educ. 121, 124, 157 Bowling, Fencing, Canoeing	3	Health Educ. 292 First Aid and Safety	3
Phys. Educ. 182, 181 or 283, 183, 282 Backgrounds	8	Phys. Educ. 181 or 283, 281 and 284 Backgrounds	5
Phys. Educ. 190 Introduction	2	Phys. Educ. 293 Physiol. of Exercise	3
Chem. 100 Chem. Science (or one year high school chemistry)	5	Phys. Educ. 304 or 305-306 Officiating	2
Engl. 101, 102, 103 Composition	9	Rec. Educ. 344 Camp Programs	3
Physics 170 and 170L Intro. to Health Sciences Physics and Lab.	6	Anat. 301 General	4
Sociol. 110 Survey	5	Psychol. 100 General	5
Speech 100 Basic Speech Improvement	5	Zool. 118 and 118L Physiol. and Lab.	6
Approved electives and teacher training requirements	4	Approved electives and teacher education requirements	11
Third Year	CREDITS	Fourth Year	CREDITS
Phys. Educ. 375 Methods in Phys. Educ. I	7	Health Educ. 453 (if not accompanied by health educ. area) Health Teaching	3
Phys. Educ. 376 Methods in Phys. Educ. II	7	Phys. Educ. 322 Kinesiology	3
Phys. Educ. 377 Methods in Phys. Educ. III	6	Phys. Educ. 345 Principles	3
Phys. Educ. N466 Coaching (2 quarters)	0	Phys. Educ. 435 Adapted Activities	3
Home Ec. 300 Nutrition	2	Phys. Educ. 450 School Phys. Educ. Program	2
Approved electives and professional education requirements	23	Phys. Educ. N466 Coaching (1 quarter)	0
		Phys. Educ. 480 Principles of Movement	3
		Approved electives and professional education requirements	28

Curriculum for Teacher Training in Health Education. Students who wish to emphasize school health education may follow this curriculum, which meets professional and preprofessional course requirements for the Bachelor of Arts degree. Electives taken in the curriculum must include the courses necessary for teacher certification in the state of Washington as well as those required for a minor academic field. All electives must be chosen in consultation with an adviser.

A health education curriculum which emphasizes public health is offered through the Department of Preventive Medicine.

MEN AND WOMEN

First Year	CREDITS	Second Year	CREDITS
Health Educ. 110 or 175 Health Chem. 100 Chem. Science or 101 General and 120 Organic and General	10	Health Educ. 291 Hygiene	3
Engl. 101, 102, 103 Composition	9	Health Educ. 429 First Aid and Safety	3
Sociol. 110 Survey	5	*Anat. 301 General	4
Speech 100 Basic Speech Improvement	5	Biol. 101J-102J General	10
Approved electives	13-15	Educ. 188 Principles of Educ.	3
Phys. Educ. activities	†	Educ. 209 Educ. Psychology	3
ROTC	‡	Psych. 100 General	5
		Psych. 306 Developmental Psych.	5
		*Zool. 118 and 118L or 208 Physiol.	6-5
		Approved electives	7-8
		ROTC	‡
		*Conjoint 317-318 or Anat. 301 and Zool. 118 and 118L or Zool. 208	

*Recommended electives

† See page 23 for Physical Education activity requirement.

‡ See page 23 for ROTC requirement.

Third Year

	CREDITS
Educ. 339 Teachers' Course in Phys. Educ. for Men	2
Educ. 370E or S Elementary or Secondary Methods	3
Educ. 390 Evaluation or 410 Educ. Sociol., or 447 Principles of Guidance	3
Home Ec. 300 Nutrition	2
Micro. 301 (or approved substitute)	5
Psychiatry 267 Introduction to Mental Hygiene or 450 Personality Devel. or Educ. 408 Mental Hygiene for Teachers	2-3
Prev. Med. 420 Epidemiol. and Biostatistics	3
Sociol. 453 Social Factors in Marriage or Home Ec. 356 Family Relationships	3
Approved electives	11-12

Fourth Year

	CREDITS
Health Educ. 405 Problems of Adolescence	3
Health Educ. 453 Health Teaching	3
Health Educ. 465 School Health Programs	3
Conjoint 496 Concept of the Child or Educ. 402 Child Study	3
Educ. 340 Teachers' Course in Health and Phys. Educ. for Women	2
Educ. 360 Curriculum Development or 410 Educ. Sociol. or 447 Principles of Guidance	3
Educ. 371E, X, or S Directed Teaching	12
Hist. 464 Wash. and Pac. Northwest	5
Prev. Med. 323 Public Health: Principles and Practice	3
Prev. Med. 422 Environmental Health	3
Prev. Med. 424 Public Health Problems	3
Prev. Med. 461 School and Commun. Health Programs	5
Prev. Med. 464 Community Health Educ.	3

Recommended electives are:

MEN AND WOMEN

	CREDITS
Phys. Educ. 293 Physiol. of Exercise	3
Phys. Educ. 322 Kinesiology	3
Phys. Educ. 435 Adapted Activities	3
Anthro. 202 Cultural Anthro. or 100 Introduction	5
Art 100 Introduction, or 205 Lettering or 290 Art Education	2-5
Commun. 480 Propaganda	3
Journ. 200 Newswriting or 404 Magazine Article Writing	3
Music 107 Survey	5
Pharmacy 115 Home Remedies	2

	CREDITS
Physics 100 Survey or 170 and 170L Intro. to Health Sciences Physics and Lab.	5-6
Pol. Sci. 201 Modern Govt. or 328 United Nations and Specialized Agencies	5
Psychol. 245 Individual Differences, 306 Developmental, 307 Adolescence	2-5
Prev. Med. 426 Biostatistics, 450 Measure. and Control Air Pollution, 463 Commun. Organ. for Health Educ.	2-3
Radio-TV 373 Television Writing or 450 Television Programming	3
Sociol. 240 Group Behavior, 352 Family, 371 Criminology, 472 Juvenile Delinquency	5
Speech 220 Public Speaking or 332 Group Discussion	5

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 as outlined in the *Graduate School Bulletin*. 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.

Candidates for the degree of Doctor of Philosophy in other departments may obtain a minor in physical education.

COURSES FOR UNDERGRADUATES**HEALTH EDUCATION****110 Health Education (Women) (2)**

Current health information, with emphasis on women's responsibilities in application of health knowledge to attitudes and practices in modern and future life. Required of all freshman women; exemption without credit by examination.

175 Personal Health (Men) (2)

Health information that affords a basis for intelligent guidance in the formation of health habits and attitudes. Required of all freshman men; exemption without credit by examination.

Gaines, Horne

PHYSICAL EDUCATION ACTIVITIES**101 through 255 Physical Education Activities (Men) (1 each)**

101, adapted activities; 106, handball; 107, basketball; 108, tennis; 109, softball; 110, golf (\$1.50 per quarter); 111, track; 112, crew (class), prerequisite, swimming; 114, boxing; 115, gymnastics; 117, wrestling; 118, volleyball; 119, swimming; 121, touch football; 122, badminton; 123, archery; 125, skiing; 126, aerial ball; 127, bowling (\$5.00 per quarter); 128, weight-training; 129, sailing; 131, beginning, 134, intermediate, folk and square dancing; 151, modern dance; 154, social dance; 157, canoeing (\$3.00 per quarter); 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; 152, freshman, 252, varsity, gymnastics; 155, freshman, 255, varsity, wrestling.

111 through 162; 211 through 267 Physical Education Activities (Women) (1 each)

111, adapted activities (restricted); 112, basic activities (general); 113-114, basic activities (applied); 115, archery; 118, badminton; 119, body conditioning; 121, bowling (\$5.00 per quarter); 124, fencing; 126, golf (\$1.50 per quarter); 128, riding; 129, sailing; 131, ski conditioning; 132, elementary skiing; 133, tumbling and apparatus; 134, rebound tumbling; 135, tennis; 141, basketball; 142, field sports; 143, hockey; 144, softball; 145, volleyball; 148, folk and square dance; 149, international folk dance; 151, contemporary dance; 154, social dance; 155, tap dance; 157, canoeing (\$3.00 per quarter); 160, adapted swimming; 161, beginning swimming; 162, elementary swimming; 215, intermediate archery; 218, intermediate badminton; 221, intermediate bowling (\$5.00 per quarter); 222, advanced bowling (\$5.00 per quarter); 224, intermediate fencing; 228, intermediate riding; 230, ski racing; 231, intermediate skiing; 232, advanced skiing; 235, intermediate tennis; 248, intermediate folk and square dance; 251, intermediate contemporary dance; 252, advanced contemporary dance; 257, intermediate canoeing (\$3.00 per quarter); 263, intermediate swimming; 264, advanced swimming; 265, aquatic art; 266, diving; 267, lifesaving.

PROFESSIONAL AREAS**HEALTH EDUCATION**

291 Personal and General Hygiene (Men and Women) (3) **Gaines, Mills, Reeves**
Advanced course designed for the professional student in health and physical education areas. Prerequisite, 110, 175, or equivalent, and sophomore standing.

292 First Aid and Safety (Men and Women) (3)
Hendershott, Kidwell, MacLean, Reeves, Stevens
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.

429 Methods in Teaching First Aid and Safety (Men and Women) (3)
MacLean, Reeves, Stevens
American Red Cross, Standard, Advanced, and Instructor's First Aid Certification awarded. Prerequisite, senior standing.

451 Workshop in Health Education for the Classroom Teacher (Men and Women) (2½)
Health instruction in elementary schools, including subject matter, source material, and methods of instruction. (Offered Summer Quarter only.)

453 Methods and Materials in Health Teaching (Men and Women) (3)
Health instruction in elementary and junior and senior high schools, including subject matter, source material, and method. Prerequisites, 345, Preventive Medicine; 461, and Zoology 118 or 208 or 358, or permission.

465 The School Environmental Health Programs (Men and Women) (3) **Mills, 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. Prerequisites, Health Education 291, Preventive Medicine 461, or equivalents.

PHYSICAL EDUCATION

161 Skills and Materials in Aquatics (Men) (2) **Torney**

162 Skills and Materials in Gymnastics (Men) (2) **Hughes**

163 Skills and Materials in Team Sports (Men) (2) **Hendershott**

264 Skills and Materials in Track and Field and Weight Training (Men) (2) **Hughes**

265 Skills and Materials in Low-Organized Games (Men) (2) **Kunde**

266 Skills and Materials in Individual Sports (Men) (2) **Cipriano**

181, 182, 183, 281, 282, 283, 284 Physical Education Backgrounds (Women) (2,2,2,2,2,1)

Broer, Culvor, Fox, Horne, Kidwell, MacLean, Rulifson
Fundamental information for methods and materials in the presentation of field hockey, soccer, speedball, fundamentals of movement, gymnastics, archery, badminton, golf, tennis, apparatus, stunts and tumbling, rhythm fundamentals, folk and square dance, tap dance, modern dance, and aquatics. Basic skills with emphasis for professional training.

- 190 Introduction to Physical and Health Education (Men and Women) (2)** **Horne, Mills**
Survey of and orientation to the professional fields of physical education, health education, recreational leadership, physical therapy (women), and coaching (men). History and philosophies; personnel qualifications, training and preparation; opportunities; organizations; related fields.
- 290 Officiating (Men) (2)** **Mills**
Techniques of officiating football, basketball, baseball, track and field, swimming, tennis, volleyball, softball, and speedball.
- 293 Physiology of Muscular Exercise (Men and Women) (3)** **Mills**
Muscular efficiency, fatigue, recovery, chemical changes and neuromuscular control, with special reference to games, sports, corrective work, and body mechanics. Prerequisite, Zoology 118, or 208, or 358.
- 295 Functional Swimming and Water Safety (Men and Women) (2)** **Buckley, MacLean**
(W.S.I. certification) A course designed primarily to prepare students for employment as teachers or administrators in the aquatic programs of camps, schools, beaches, recreation departments, the Armed Forces, and service organizations. Prerequisites, 119 for men, 267 for women, and American Red Cross lifesaving card or permission for men and women.
- 304, 305-306 Officiating (Women) (2,1-1)** **Fox, Rulifson**
Techniques for officiating in volleyball, basketball; opportunity for national and local ratings. Prerequisites, junior standing or permission; 305- for -306.
- 309 The School Dance Program (Men and Women) (2)** **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 (Women) (2)**
Activities suited to the kindergarten and primary child. Educational value, significance in child growth and development, and methods of presentation. (Offered Summer Quarter only.) Prerequisite, junior standing.
- 312 Elementary School Athletic Program (Women) (3)** **Rulifson**
Program planning, small group play, and team game activities for elementary grades. (Offered Summer Quarter only.)
- 313 Elementary School Self-Testing and Individual Activities (Men and Women) (2½)**
Knowledge and skills in activities involving self-testing elements; activities developing strength, coordination, flexibility; modified classroom program; marching, gymnastics, stunts, tumbling, apparatus, body mechanics, adapted activities. (Offered Summer Quarter only.)
- 322 Kinesiology (Men and Women) (3)** **Cutler**
Analysis of leverage in body movements and problems of readjustment in relationship to body mechanics and to physical education activities. Prerequisites, 293 and Anatomy 301.
- 336 Athletic Training and Conditioning (Men) (1)** **Peterson**
Prerequisite, 292 or permission.
- 340 Administration of Intramural Sports (Men) (3)** **Stevens**
- 345 Principles of Physical Education (Men and Women) (3)** **Torney**
Social, biological, and educational foundations; the place of physical education in the school program. Prerequisites, Zoology 118, or 208, or 358, Sociology 110, and Psychology 100.
- 351 Theater Dance (Men and Women) (2)** **de Vries**
Development of dance skills and movement techniques as they apply to choreography; presentation of dramatic problems of dance. Prerequisites, 151, 251, 252, or 283, or permission.
- 355 Modern Dance Workshop (Men and Women) (2, maximum 6)** **de Vries**
Practice in modern dance; analysis of choreography; creative work. Prerequisites, 151 and 318, or permission.
- 358 Methods of Teaching Gymnastics (Men) (2)** **Hughes**
Prerequisite, 162 or permission.
- 359 Workshop in Gymnastics (Men and Women) (3)** **Hughes**
Lectures, practice, and supervised teaching in gymnastics. Prerequisite, 358 or equivalent.
- 361 Methods of Teaching Wrestling (Men) (2)** **Stevens**
Prerequisite, 264 or permission.
- 363 Methods of Teaching Sports (Men) (2)** **Peek**
Methods of teaching volleyball, basketball, soccer, softball, and flag football. Prerequisites, 161, 162, 163, 264, 265, 266.
- 364 Methods of Teaching Aquatics (Men) (2)** **Torney**
Prerequisites, 161, 162, 163, 264, 265, 266, or permission.
- 370 Coaching of Football (Men) (2)** **Owens**
- 371 Coaching of Basketball (Men) (2)** **Grayson**
- 372 Coaching of Track and Field (Men) (2)** **Hiserman**
- 373 Coaching of Baseball (Men) (2)** **Mauro**

- 375 Methods in Physical Education I (Women) (7)**
General methodology, methods in team and individual sports. Prerequisites, 181, 182, 183, or permission.
- 376 Methods in Physical Education II (Women) (7)** Broer, MacLean
Methods and materials in gymnastics, marching, stunts and tumbling, apparatus, aquatics. Prerequisites, 267, 281, 284, 375, or permission.
- 377 Methods in Physical Education III (Women) (6)** deVries, Horne, Kidwell
Methods and materials in ballroom, folk, square, tap, modern dance. Prerequisites, 282, 283, 375, or permission.
- 435 Adapted Activities (Men) Adapted Physical Education (Women) (3)** Cutler, Kidwell
Programs for atypical cases from the standpoint of individual needs. Prerequisites, 293, 322, and Zoology 118, or 208, or 358.
- 447 Tests and Measurements (Men and Women) (3)** 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 and Women) (men, 3; women, 2)** Peek, Wilson
Problems of organization and administration. Prerequisites for men, 345, senior standing, or permission; for women, 375 and permission.
- 459-460 Dance Production (Women) (2-2)** 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 experiences. Prerequisites, 151 and 251, or 283.
- N466 Coaching (Women) (0)** Kidwell
Prerequisite, permission.
- 478J Workshop in Elementary School Physical Education (Men and Women) (2½)** Horne
Progress and problems in modern programs. Offered jointly with the College of Education. (Offered Summer Quarter only.)
- 480 Principles of Movement (Women) (3)** Broer, Fox
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 170 and 170L, or permission.
- 493 Problems in Athletics (Men) (3)** 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.
- 495 Fitness Workshop (Men and Women) (3)** Fox
(Offered Summer Quarter only.)

RECREATION EDUCATION

- 254 Recreation Resources (Men) (1)** Kunde
Directed observations of resources including general and community, public school, youth serving agencies, hospitals, institutional and industrial organizations.
- 294 Introduction to Recreation (Men and Women) (2)** 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.
- 324 Recreation Programs (Men and Women) (3)** Kunde
Lectures, demonstrations, and reading assignments for orientation in recreation skills and techniques suitable for various age groups; classifying, adapting, and utilizing materials. Prerequisites, 294, and 6 credits in physical education major activities or equivalent.
- 334 Management and Operation of Recreation (Men) (2)** Kunde
Practices and procedures in operation of areas and facilities. Duties and responsibilities, personnel regulations, and staff organization. Motivating and conducting a diversified program. Prerequisite, 294.
- 344 Organization and Administration of Camp Programs (Men and Women) (3)** Kunde, Stallings
The educational and social significance of camping; organization of activities and problems of administration. Prerequisites, junior standing, Psychology 100, and Sociology 110, or permission.
- 354 Recreation Practicum (Men) (2)** Kunde
Directed experience in recreational activities and program services for the enhancement of leadership techniques. Prerequisites, 294 and permission.
- 374 Social Recreation Leadership (Men) (2)** Kunde
Methods in utilizing music, drama, dancing, and suitable activities in organizing programs for social recreation.
- 384 Workshop in Camp Counseling (Men and Women) (3)** Hughes
On-the-job experience in camp counseling. Students will be quartered at Camp Waskowitz, act in the capacity of camp counselors for select groups, and assist in the direction of evening and Sunday educational and social activities. (Offered Summer Quarter only.)

- 426 Field Work in Recreation (Women) (5)** **Kidwell**
Supervised work experiences in recreational fields such as hospital, industrial, public, and semiprivate agencies, etc. Practice in planning programs. Prerequisites, senior standing, major in recreational leadership, a position of leadership for six weeks in camp, playground area, or the equivalent amount of time in an organized recreation program.
- 454 Recreation Field Work (Men) (3)** **Kunde**
The fulfillment of stipulated projects under close supervision, approximating an internship in recreation. Prerequisites. 294, 324, 334, 354, or permission.

COURSES FOR GRADUATES ONLY

HEALTH EDUCATION

- 503 Seminar in Health Education (Men and Women) (3)**
Prerequisites, 453, 465, and Physical Education 345.
- 508 Administration of the School Health Program (Men and Women) (3)** **Reeves**
The interrelated functions of school health services, safe and healthful school environment, health of the school personnel, the school day as related to the pupil's total health, and health and safety instruction in developing a total school health program. Consideration of health needs of school age groups, legal regulations, budgetary needs, personnel requirements, facility and resource needs, and administration policies as they relate to effective organization of school health programs. Prerequisites, Health Education 291, 465, Preventive Medicine 461 or equivalent, or permission.
- 600 Research (Men and Women) (2-5)**
- 700 Thesis (Men and Women) (*)**

PHYSICAL EDUCATION

- 501 Seminar in Physical Education (Men and Women) (3)** **Broer, Torney, Wilson**
Prerequisites, 345 and 450.
- 502 Problems in Physical Education (Men and Women) (2½)**
(Offered Summer Quarter only.) Prerequisites, 345 and 450, or permission.
- 506 The Curriculum (Men and Women) (3)** **Kunde**
Selection and organization of program content in relation to characteristics and needs of pupils and local conditions. Prerequisite, 345 or permission.
- 507 Supervision in Physical Education (Men and Women) (2½)** **Peek**
(Offered Summer Quarter only.) Prerequisites, 345 and 450, or permission.
- 547 Seminar in Research Procedures (Men and Women) (3)** **Broer, Fox**
Prerequisites, 447 and Mathematics 281, or equivalent.
- 580 Seminar in Human Performance (Women) (3)** **Broer**
Analysis of gross human movement considered from the physiological, mechanical, and psychological bases of motor performance. (Offered Summer Quarter only.) Prerequisites, Physical Education 322, 480, or permission.
- 600 Research (Men and Women) (2-5)**
- 700 Thesis (Men and Women) (*)**

RECREATION EDUCATION

- 504 Administration of Recreation (Men and Women) (5)** **Kunde**
Prerequisites, 324, Physical Education 345, or permission.
- 524 Seminar in Community Resources and Organization for Recreation (Men and Women) (3)** **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, permission.
- 600 Research (Men and Women) (2-5)**
- 700 Thesis (Men and Women) (*)**

PHYSICAL THERAPY, PREPROFESSIONAL PROGRAM

Adviser, 121 Miller Hall

The two-year prephysical therapy program in the College of Arts and Sciences is designed to prepare students for admission to the curriculum in Physical Therapy in the School of Medicine.

In this program the applicant must complete the following required courses: Anatomy 301; Chemistry 101, 102; Mathematics 101 or 103 or 104 or 105; Microbiology 301; Physics 170, 170L; Psychology 100, 101; Psychiatry 267; Sociology

110; Speech 100; Zoology 118, 118L or 208. The student should choose electives designed to broaden his background in human relationships and understanding. A cumulative grade-point average of 2.50 is a prerequisite for acceptance into the curriculum.

A complete description of the four-year program in physical therapy is given in the *School of Medicine Bulletin*.

PHYSICS

Executive Officer: RONALD GEBALLE, 215 Physics Hall

The Department of Physics offers courses leading to the degrees of Bachelor of Science, Bachelor of Science in Engineering Physics, Master of Science, and Doctor of Philosophy. Undergraduate majors obtain a basic preparation in principal fields of physics and a wide choice of electives in other subjects, and they may further elect to follow a program of advanced studies which prepares them for professional and graduate careers.

In collaboration with the College of Engineering, a curriculum in engineering physics is offered, which adds basic engineering training to a thorough preparation in physics. In addition, the Department offers major and minor academic fields for students in the College of Education; see the *College of Education Bulletin*.

Entrance requirements for physics majors include high school physics, trigonometry, and $1\frac{1}{2}$ units of algebra. High school chemistry, a fourth term of algebra, and mathematical analysis are strongly recommended. Students who enter without the required preparation may be delayed in their progress toward graduation.

Students majoring in physics or other physical sciences start with 121, 122, 123, and 131, 132, 133. Other students enroll in 101, 102, 103 and, concurrently, 107, 108, 109.

No grade less than C in any required physics course is acceptable toward a physics major.

A student in any of the physics curricula may elect at the start of his senior year to be a candidate for the departmental award of Physics Honors if he has a grade-point average of at least 3.30 in physics courses and is approved by the Department. He will then enroll in the Senior Honors Seminar 485, 486, 487 and undertake an undergraduate research problem, on the completion of which the Department will certify and record this distinction.

BACHELOR OF SCIENCE

A program of study in physics may vary considerably in extent, depending upon the values which the student wishes to derive from his education. The available choices range from an adequate basic education in physics to a full preparation for graduate study.

The required curriculum, for those who wish a basic education in physics and also a broad array of electives, includes a minimum of 51 credits in physics courses in addition to the group requirements of the College of Arts and Sciences (see page 23). The student may begin this physics curriculum during the freshman or sophomore year. The required physics courses are: 121, 122, 123, 131, 132, 133, 221, 222, 225, 226, 320, 323, 325, 326, 327, 371, and 372. As an alternative, 461, 462, and 463 may be substituted for 320 and 323. Chemistry through 160 and Mathematics through 325 also are required.

For those who wish a more extensive program of advanced undergraduate physics in preparation for a professional career or for graduate study, a schedule of courses is given below. Strongly recommended electives include foreign language courses, particularly Russian, French, or German, and additional mathematics courses.

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Physics 121		Physics 122		Physics 123	
For Sci. Majors	4	For Sci. Majors	4	For Sci. Majors	4
Chem. 140 General	3	Physics 131		Physics 132	
Math. 124 Calc. with		Sci. Majors Lab.	1	Sci. Majors Lab.	1
Anal. Geom.	5	Chem. 150 General	3	Chem. 160 General	3
Engl. 101 Composition	3	Chem. 151 General Lab.	2	Math. 126 Calc. with	
Health Educ. 110 or 175	2	Math. 125 Calc. with		Anal. Geom.	5
Phys. Educ. activity	†	Anal. Geom.	5	English 102 Composition	3
ROTC	‡	Phys. Educ. activity	†	Phys. Educ. activity	†
		ROTC	‡	ROTC	‡

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Physics 221		Physics 222		Physics 226	
Mechanics	3	Mechanics	3	Electric Circuits	4
Physics 133		Physics 225		Math. 322	
Sci. Majors Lab.	1	Electric Circuits	4	Differential Equations	3
Math. 224		Math. 225		Math. 324	
Intermed. Anal.	3	Intermed. Anal.	3	Adv. Calc. I	3
English 103 Composition	3	Approved electives	6	Approved electives	6
Approved electives	6	ROTC	‡	ROTC	‡
ROTC	‡				

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Physics 325		Physics 326		Physics 327	
Electricity and		Electricity and		Electricity and	
Magnetism	3	Magnetism	3	Magnetism	4
Math. 427		Physics 371 Properties		Physics 372 Properties	
Applied Anal.	3	of Matter	3	of Matter	3
Math. 325		Math. 428		Math. 429	
Adv. Calc. II	3	Applied Anal.	3	Applied Anal.	3
Approved electives	7	Approved electives	7	Approved electives	6

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Physics 461		Physics 462		Physics 463	
Atomic and Nuclear	3	Atomic and Nuclear	3	Atomic and Nuclear	3
Physics 471		Physics 472		Physics 473	
Atomic and Nuclear		Atomic and Nuclear		Atomic and Nuclear	
Lab.	3	Lab.	3	Lab.	3
Physics 481		Physics 482		Physics 483	
Math. Physics	3	Math. Physics	3	Math. Physics	3
Approved electives	6	Approved electives	6	Approved electives	6

BACHELOR OF SCIENCE IN ENGINEERING PHYSICS

Students who wish to combine an engineering background with full training in physics as a preliminary either to graduate work in nuclear engineering or to employment in industrial and government laboratories may elect a prescribed curriculum in engineering physics. Students may enter this program either by following the recommended program for the Bachelor of Science with a suitable choice of electives in engineering, or by transferring from an engineering major to the College of Arts and Sciences on or before completion of the sophomore year. Physics 481, 482, 483 are optional.

The scholastic qualifications for this degree are the same as for the Bachelor of Science.

The engineering electives prescribed for students entering this curriculum as freshmen are as follows: second-year students take General Engineering 101, 102, 103, and Mechanical Engineering 201, 202, 203. In the third year, Mechanical Engineering 260 and 6 credits of approved engineering electives are required. Likewise, in the fourth year, 6 credits of approved engineering electives are required.

A student who has completed one or two years of engineering (including Physics 217, 218, 219) and who wishes to undertake advanced work as a physics major will have to satisfy the graduation requirements of the College of Arts and Sciences. Depending on the courses he has taken previously, he may have to add Physics 221, 222, and 225 to the prescribed courses for the third year. Engineering electives will be selected as described in the previous paragraph.

† See page 23 for Physical Education activity requirement.

‡ See page 23 for ROTC requirement.

ADVANCED DEGREES

The Department of Physics offers programs leading to the degrees of Master of Science and Doctor of Philosophy. Specific departmental requirements are described briefly below. More complete information can be obtained by writing to the Department.

Undergraduate preparation is expected to include upper-division courses in electricity and magnetism, mechanics, the properties of matter, advanced calculus and mathematical physics, atomic physics, and nuclear physics. Deficiencies may cause a delay of as much as a year. A reading knowledge of Russian, French, or German is desirable.

Candidates for advanced degrees in physics are expected to pass certain examinations as part of the departmental degree requirements. The first, a written preliminary examination, is designed to assess the student's knowledge and understanding of the material normally included in an undergraduate program with a major in physics. Ordinarily, a student is expected to take the preliminary examination during his first year of regular graduate study at this University. It is given annually during the Winter Quarter. No student is permitted to take the preliminary examination more than two times without special departmental approval.

MASTER OF SCIENCE. A minimum of 36 approved credits must be submitted, of which 18 must be in courses numbered 500 or above. These 18 credits must include a minimum of 3 credits in 520 or 600 (for both of which the sponsorship of an instructor is necessary) and a minimum of 12 credits in other physics graduate courses. No thesis is required. Candidates for the degree of Master of Science must pass a final examination, usually oral. No student is permitted to take the final examination who has not been approved for it following the preliminary examination. Reading proficiency in a foreign language must be demonstrated by examination. Russian, French, and German are suitable for this purpose.

Students in other fields desiring a minor in physics for a master's degree must submit 9 credits in courses numbered 300 or above and 9 credits in courses numbered 400 or above.

DOCTOR OF PHILOSOPHY. The Department requires preparation equivalent to the courses 505, 506, 509, 510, 513, 514, 515, 517, 518, 519, 524, 525, and 528, as well as Mathematics 527, 528, and 529. Additional courses of interest will be selected by the student and his supervisory committee. Reading proficiency in two foreign languages must be demonstrated by examination. Russian, French, and German are suitable for this purpose.

In addition to the preliminary examination, candidates for the degree of Doctor of Philosophy must pass, successively, a written qualifying examination, a general examination for admission to candidacy, and a final examination. No student is permitted to take the qualifying examination who has not been approved for it subsequent to the preliminary examination. A student in the program leading to the Ph.D. is expected to take the qualifying examination in his second year of regular graduate study. The qualifying examination is given once during each of the Autumn and Spring quarters of each year. It is designed to assess the depth of the student's knowledge of the principal branches of physics.

In the oral General Examination a student is examined on topics related to the general area of physics in which he plans to do his thesis research. No student is permitted to take the General Examination who has not passed the qualifying examination, and ordinarily he must have been accepted by a member of the staff as a research student. A student is expected to take the General Examination as soon as possible after passing the qualifying examination, usually early in his third year of regular graduate study. Passing of the General Examination constitutes admission to candidacy for the Ph.D.

Each student bears responsibility for being informed of the dates on which the examinations are offered and for planning his own program so that he can take the various examinations at appropriate times.

A candidate for this degree is required to conduct an original and independent investigation in one of the fields of physics. Results of this research are submitted as a thesis. In his Final Examination, the candidate presents these results orally to the Department and is examined in his field of research.

A minor for a doctor's degree requires the equivalent of a bachelor's degree in physics and three graduate courses.

COURSES FOR UNDERGRADUATES

- 100 Survey of Physics (5)**
A nontechnical treatment of the principal fields of physics, including mechanics, electricity, magnetism, and atomic and nuclear phenomena, for those with no previous training in physics. Identical with Physical Science 101.
- 101, 102, 103 General Physics (4,4,4)** **Kenworthy**
Concurrent registration in 107, 108, 109 recommended and may be required by individual departments. 101: mechanics. Prerequisites, plane geometry, trigonometry, and one year of high school physics or its equivalent by permission. 102: sound and electricity. Prerequisite, 101. 103: heat, light, and modern physics. Prerequisite, 102 or concurrent registration in 102.
- 107, 108, 109 General Physics Laboratory (1,1,1)** **Sanderman**
107: mechanics laboratory. Prerequisite, 101 or concurrent registration in 101. 108: sound, electricity, and magnetism laboratory. Prerequisite, 102 or concurrent registration in 102. 109: heat and light laboratory. Prerequisite, 103 or concurrent registration in 103.
- 121, 122, 123 Physics for Science Majors (4,4,4)** **Clark**
For physical science majors. Development of the basic principles of physics with special emphasis on mechanics, electricity and magnetism, and modern physics. Prerequisites for 121, trigonometry, one year of high school physics or its equivalent by permission; for 122, 121 and concurrent registration in 131; for 123, 122 and concurrent registration in 132.
- 131, 132, 133 Science Majors Physics Laboratory (1,1,1)** **Sanderman**
Experimental topics in physics for physical science majors. Prerequisite for 131, 121; for 132, 131 and 122; for 133, 132 and 123.
- 170 Introduction to Health Sciences Physics (5)** **Sanderman**
Selected physical theories and principles and their applications in home and hospital.
- 170L Introduction to Health Sciences Physics Laboratory (1)** **Sanderman**
For physical therapy and home economics students only. Prerequisite, concurrent registration in 170 or permission.
- 217, 218, 219 Physics for Engineers (4,4,4)** **Lord**
217: mechanics. Principles of statics are assumed. Dynamics of both point masses and rigid bodies is developed by calculus methods. Elasticity and simple harmonic motion. Elementary hydrodynamics. Many illustrative problems are used. Prerequisites, high school physics, General Engineering 112, introductory calculus, and a concurrent calculus course. 218: electricity and magnetism. Alternating currents. Prerequisites, 217 and a concurrent calculus course. 219: heat, sound, and light. Geometrical and physical optics. Prerequisites, 218 and calculus.
- 221, 222 Mechanics (3,3)**
Kinematics and dynamics of a mass point; motion of a rigid body; elastic bodies and wave motion. Prerequisites, 123 or 219, Mathematics 125, and 221 for 222.
- 225, 226 Electric Circuits (4,4)**
Basic linear elements in D.C., A.C., and transient circuits; vacuum tube circuits; solid state devices; electrical measurements. Laboratory work is included. Prerequisites, 123 or 218, Mathematics 125, and 225 for 226.
- 320 Introduction to Modern Physics (3)**
Discoveries in modern physics particularly basic to engineering and physics, including the electrical nature of matter, elementary particles, interaction of radiation with matter, nuclear disintegrations. Solid state, semiconductors, and nuclear reactors are especially treated. Prerequisites, 123, 219, or permission.
- 323 Introduction to Nuclear Physics (3)**
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. Prerequisite, 320 or permission.
- 325, 326, 327 Electricity and Magnetism (3,3,4)**
Charges at rest and in motion; dielectric and magnetic media; electromagnetic waves; physical optics. Laboratory work in 327. Prerequisites, 123, Mathematics 253; 325 for 326; 326 for 327.
- 367, 368, 369 Special Problems (*,*,*)**
Prerequisite, permission.
- 371, 372 Properties of Matter (3,3)**
Equilibrium and non-equilibrium properties of gases, solids, and liquids from macroscopic and microscopic viewpoints. Prerequisites, 222 or concurrent registration in 222, and Mathematics 253; 371 for 372.

- 461, 462, 463 Introduction to Atomic and Nuclear Physics (3,3,3)**
Foundations of modern atomic and nuclear physics; elementary quantum theory; elementary particles; high energy physics; solid state. Prerequisites, 327 and Mathematics 322.
- 471, 472, 473 Atomic and Nuclear Physics Laboratory (3,3,3)** Farwell, Higgs
471, 472: measurements in modern atomic physics: speed of light, wave propagation, electronic charge, specific electronic charge, thermionic and photoelectric effects, particle waves, spectroscopy and atomic states, Zeeman and Raman spectra. Prerequisite, 30 credits in physics. 473: techniques in nuclear research: beta- and gamma-ray spectroscopy; charged particle reactions at intermediate energies, using cyclotron; nuclear emulsion techniques in high-energy physics; neutron physics, using nuclear reactor. Prerequisite, 323, or concurrent registration in 463, or permission.
- 481, 482, 483 Introduction to Mathematical Physics (3,3,3)**
Applications of vector analysis, coordinate transformations, types of fields, special solutions of field equations, variational principles and fields, boundary value problems of physics. Prerequisites, 327, 372.
- 485, 486, 487 Senior Honors Seminar (1,1,1)**
Prerequisite, permission.
- 499 Undergraduate Research (2-5, maximum 5)**
Supervised individual research leading to Physics Honors award. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 505, 506 Advanced Mechanics (3,3)**
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, 511 Atomic, Molecular, and Nuclear Structure (2,2,2)**
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 (4,4,4)**
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 (4,4,3)**
Prerequisite, 513 for 518.
- 520 Seminar (1-2)**
Seminars in the following subjects meet regularly: cosmic rays, gaseous electronics and spectroscopy, nuclear physics, low temperature physics, theoretical physics, and solid state physics. Prerequisite, permission.
- 524, 525 Thermodynamics and Statistical Mechanics (3,3)**
Prerequisite, 517 or concurrent registration in 517.
- 528 Current Problems in Physics (2)**
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.
- 552 Conduction through Gases (3)**
Prerequisite, 509.
- 558 High Energy Physics (3)**
Prerequisite, 560.
- 560, 561 Theoretical Nuclear Physics (3,3)**
Prerequisites, 510 and 518.
- 562 Theory of Spectra (3)**
Prerequisites, 509 and 518.
- 564 Relativity (3)**
Prerequisites, 506 and 515.
- 566 Topics in Advanced Quantum Mechanics (3)**
Prerequisite, 518.
- 568 Theory of Solids (3)**
Prerequisite, 518.
- 570 Quantum Field Theory (3)**
Prerequisite, 519.
- 574 Atomic and Molecular Collisions (3)**
- 576 Selected Topics in Experimental Physics (*, maximum 6)**
Prerequisite, permission.
- 578 Selected Topics in Theoretical Physics (*, maximum 6)**
Many-body problems, pi-meson, physics, relativistic field theories, strange particles and the theory of the "inner space," group theory and nuclear structure, and studies of the rotation group are among topics covered in recent years. Prerequisite, permission.

600 Research (*)

Research currently is in progress in the following fields: acoustics, atomic collisions, high energy physics, gaseous electronics, low temperature physics, magnetic resonance phenomena, natural radioactivity, nuclear physics, solid state physics, spectroscopy, and theoretical physics. Prerequisite, permission.

700 Thesis (*)

Prerequisite, permission.

702 Degree Final (0)

Limited to students completing a nonthesis degree program.

POLITICAL SCIENCE

Executive Officer: HUGH A. BONE, 206 Smith Hall

The Department of Political Science offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. It offers major and minor academic fields for students in the College of Education; it also cooperates with the College of Architecture and Urban Planning in a program leading to the degree of Master of Urban Planning. See the bulletins for the College of Education and the College of Architecture and Urban Planning.

The basic requirements for the undergraduate major are set forth in the general curriculum described below. For students who are definitely preparing to enter the government service, more detailed course recommendations are set forth in two specialized curricula: International Relations and Public Administration. General majors are expected to have a substantial background of elective courses in the College of Arts and Sciences. However, transfer students from other colleges may be able to complete a satisfactory program without undue loss of time, and students in the School of Law may use credits for elective purposes under the conditions set forth in the Arts-Law curriculum on page 119. Since political science provides a classic background for prospective Law School students, the departmental adviser is prepared to give special counseling to pre-law students.

The Institute of International Affairs is affiliated with the Department of Political Science as an agency to promote public interest in international affairs. Two aspects of its program may be distinguished: panel discussions and lectures by experts on international relations are sponsored throughout the year; special events such as the Northwest International Law Seminar are presented on a periodic basis.

The Bureau of Governmental Research and Services, an administrative unit of the Graduate School, is a separate research agency under the direction of a member of the Department of Political Science to provide independent research and consultative services for state and local government. It conducts the annual Institute of Government and maintains liaison, on behalf of the University, with the Association of Washington Cities.

The Washington State-Northern Idaho Citizenship Clearing House is an affiliate of the national Citizenship Clearing House operating under the direction of a member of the Department. It promotes participation in political organizations through legislative internships and the sponsorship of conferences and workshops in practical politics. The University of Washington Citizenship Clearing House is an affiliate of this group and operates several campus programs each year. The Department of Political Science faculty directs this project.

BACHELOR OF ARTS

Maintenance of a better than C average in political science courses is expected of every political science major. Accordingly, no student whose cumulative grade-point in political science courses taken at this University is less than 2.25 may take his degree in any political science curriculum.

GENERAL CURRICULUM. All political science majors are *required* to earn a total of 50 credits in political science courses. These courses must include: 202; 201 or 203; 328 or 336 or 427; 411 or 415; any three from 445, 450, 460, and 470; and 15 credits in political science electives.

CURRICULUM IN INTERNATIONAL RELATIONS. *Recommended* courses are: 202 and 203; 411 or 418; 445, 460, and 470; at least four courses from 321, 322, 328, 336, 420, and 427; at least three courses from 323, 324, 429, 430, and 432; 425-426; Economics 200; Geography 100; and Sociology 110.

A reading and translating knowledge of at least one modern foreign language is strongly recommended. 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. *Recommended* courses are: Political Science 201, 202, 362, 412, 427, 450, 460, 470, 471, 472, and if possible 370 or 451, 375 or 376; Accounting 150; Economics 200, 201, 301, 350, and 451; Business Statistics 201 or Mathematics 281; Psychology 100; Sociology 310 and 466; and History 241. The program should be supplemented by at least four other upper-division courses in the social sciences selected in consultation with an adviser.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. Candidates for these degrees must have completed an undergraduate major or the equivalent in political science.

Doctoral candidates must acquire mastery of a field of concentration in which the thesis is prepared and of additional supporting fields. The following fields may be used for both purposes: 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 these fields may be required.

Candidates may be permitted to substitute special regional fields for any of the above general fields under the conditions set forth below. But if this is done, comparative government can not be offered as well. Candidates are also encouraged to minor, or offer supporting courses, in other social sciences such as history, economics, sociology, psychology, or geography.

The field of political theory is required in all programs, and courses 511, 512, and 513 are normally required. Not less than two-thirds of the minimum credits required for the degree must consist of those earned in courses numbered 500 or above.

MASTER OF ARTS. A total of 36 credits in individually approved programs is required. The candidate must also submit an essay of distinction and pass a comprehensive oral examination on the content of a major and two minor fields.

If the candidate is permitted to adopt Far Eastern or Russian political science as a field of concentration, he must have a reading knowledge of the appropriate foreign language, and both of his supporting fields must be in general political science.

MASTER OF PUBLIC ADMINISTRATION. A curriculum leading to this degree is offered by the School of Public Administration; see the *Graduate School Bulletin*.

DOCTOR OF PHILOSOPHY. A minimum of 108 credits is required, including 27 allowed for the thesis. The candidate must present a field of concentration and four supporting fields.

If the candidate is permitted to adopt Far Eastern or Russian political science as a field of concentration, he may also present a related field of regional studies as one of his supporting fields.

COURSES FOR UNDERGRADUATES

INTRODUCTORY COURSES

These courses are primarily for sophomores, but are also open to freshmen. Either 201 or 202 is normally a prerequisite for all upper-division courses.

- 201 Modern Government (5)** **Cassinelli, Hitchner, Reshetar**
The nature and function of political institutions in the major national systems; democracy and dictatorship; introductory comparative politics of the United States, Great Britain, France, and the Soviet Union.
- 202 American Government and Politics (5)** **Bone, Danelski, Gottfried, Kessel**
Popular government in the United States; the theory and practice of national institutions.
- 203 International Relations (5)** **Riley**
An analysis of the world community, its politics and government.

POLITICAL THEORY AND PUBLIC LAW

- 311 Theories of Modern Government (5)** **Harbold**
The principal political ideas of recent times with particular reference to their significance for democracy and liberal values. An introduction intended especially for other than political science majors.
- 362 Introduction to Public Law (5)** **Danelski**
The general significance of the legal order; private rights and public duties; nature of the judicial process; sources of law.
- 411 The Western Tradition of Political Thought (5)** **Harbold**
Origin and evolution of major political concepts from ancient Greece to the eighteenth century which underlie much contemporary thinking. A background in history is desirable.
- 412 American Political Thought (5)** **Harbold**
Major thinkers and movements from the Colonial period to the present.
- 413 Contemporary Political Thought (5)** **Harbold**
Developments from the eighteenth century to the present, as a basis for contemporary philosophies of democracy, communism, and fascism. Prerequisite, 411 or equivalent.
- 414 Oriental Political Thought (5)** **Hsiao**
Theories of the Oriental state as exhibited in the writings of statesmen and philosophers. (Offered alternate years; offered Spring Quarter 1962.)
- 415 Analytical Political Theory (5)** **Cassinelli**
Analysis of principal problems, approaches, concepts, values, and hypotheses of political science.
- 460 Introduction to Constitutional Law (5)** **Cole, Danelski**
Growth and development of the United States Constitution as reflected in decisions of the Supreme Court; political, social, and economic effects.
- 461 The Courts and Civil Liberty (5)** **Cole**
Cases and literature bearing on protection of constitutionally guaranteed private rights, with particular reference to period since 1937.

GOVERNMENT, POLITICS, AND ADMINISTRATION

- 350 Government and Interest Groups (5)** **Gottfried**
Agrarian, labor, professional, business, and ethnic interests in politics; impact on representative institutions and governmental processes.
- 351 The American Democracy (5)** **Gottfried, Kessel**
Selected aspects and problems of contemporary American government: parties and politics; the presidency; Congress; the role of the Supreme Court; civil rights and civil liberties.
- 353 Theory and Practice of Government in the State of Washington (3)** **Warren**
For nonmajors.
- 360 The American Constitutional System (3)** **Webster**
Fundamental principles, function, evolution, and unwritten constitution; recent tendencies.
- 370 Government and the American Economy (5)** **Gottfried**
Government regulation, promotion, and services affecting such principal interest groups as business, labor, agriculture, and consumers. The independent regulatory agencies, public ownership, government corporations, and the cooperative movement.
- 375 Problems of Municipal Government and Administration (5)** **Darren**
The city charter; relationship to the state and other local units; municipal functions and services, with reference to municipalities in the state of Washington.
- 376 State and Local Government and Administration (5)** **Warren**
Structure, functions, procedures, and suggested reorganization, with special reference to the state of Washington and its units of local government.
- 450 Political Parties and Elections (5)** **Bone, Kessel**
Organization and methods; the nature and future of party government.

- 451 The Legislative Process (5)** **Bone**
Organization and procedure of legislative bodies, with special reference to the theory and practice of representative government, lobbying, and bicameralism.
- 452 Political Processes and Public Opinion (5)** **Kessel**
The foundations and environment of opinion; 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.
- 470 Introduction to Public Administration (5)** **Kroll, Warren**
Basic relationship of administration to other agencies of government.
- 471 Administrative Management (5)** **Kroll**
Introduction to problems of public service, emphasizing managerial supervision and control, personnel administration, budgetary and fiscal administration, administrative analysis, and program planning and reporting.
- 472 Introduction to Administrative Law (5)** **Danelski, Shipman**
The legal context of American administration, the public function, public management, administrative powers, the nature of judicial control.
- 473 Comparative Administrative Systems (5)** **Kroll**
The nature and process of governmental administration in foreign governments, emphasizing the relationship of administrative organization, behavior, and bureaucracy to societal values and institutions.
- 480 Metropolitan Area Government (5)** **Warren**
Organization (for decision making) and provision of urban services; formal governmental system; political decision-making structure; intra-area, state, and federal relationships.

INTERNATIONAL LAW, ORGANIZATION, AND RELATIONS

- 321 American Foreign Policy (3)** **Gottfried**
Constitutional framework; major factors in formulation and execution of policy; policies as modified by recent developments; the principal policy makers—President, Congress, political parties, pressure groups, and public opinion.
- 322 The Foreign Service (3)** **Riley**
Department of State; diplomatic and consular services; American diplomatic practice and procedure.
- 323 International Relations of the Western Hemisphere (5)** **Mander**
The Monroe Doctrine; Pan-Americanism; special interests in the Caribbean; hemisphere solidarity; the "Good Neighbor" policy; Latin American and World War II; Latin America and the United Nations.
- 324 Contemporary International Relations in Europe (5)** **Hitchner**
European diplomacy and international relations between the two world wars; problems of European integration; contemporary developments.
- 328 The United Nations and Specialized Agencies (5)** **Mander**
The structure and functions of the United Nations and specialized agencies; accomplishments; proposals for strengthening; relations of regional bodies and member states.
- 335J Japanese Foreign Policy in Asia (3)** **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.
- 336 National Power and International Politics (5)** **Martin**
Geographical, economic, and political foundations of the major powers as factors in international relations of the world.
- 420 Foreign Relations of the Soviet Union (5)** **Roshetar**
Ideological, historical, and strategic components of Soviet foreign policy; Comintern, Cominform, and international Communist movement; Soviet policy in foreign trade, international law and organization, and in specific geographic areas.
- 425-426 International Law (3-3)** **Martin**
World law as developed by custom and agreement and as exhibited in decisions of international tribunals and municipal courts.
- 427 International Government and Administration (5)** **Hitchner**
Law and organization in international affairs; regional and general international institutions.
- 429 International Relations in the Far East (5)** **Maki**
China, Japan, Southeast Asia; the Western Powers in Asia; the Far East in world politics.
- 430 International Relations in the Middle and Near East (5)** **Mander**
Islamic backgrounds. Special countries, Egypt, Turkey, Iran, Israel, Saudi Arabia. Recent crises and their significance.
- 432 American Foreign Policy in the Far East (5)** **Michael, Taylor**
Relationship to diplomacy, trade, and internal politics.

FOREIGN AND COMPARATIVE GOVERNMENT

- 343 Modern British Government (5)** **Cassinelli, Hitchner**
Contemporary British government and politics; current problems of the parliamentary system.

- 344 Chinese Government (5)** **Michael**
Imperial government; transition period; national government; present forms of local government; constitutional draft; present political situation. (Offered alternate years; offered 1961-62.)
- 345J Japanese Government (3)** **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, permission.
- 346 Governments of Western Europe (5)** **Cassinelli, Hitchner**
Modern government and politics of France and Germany.
- 347 Governments of Eastern Europe (5)** **Reshetar**
Survey of the Communist regimes of Poland, Hungary, Czechoslovakia, East Germany, and the Balkans.
- 441 Political Institutions of the Soviet Union (5)** **Reshetar**
Ideological and historical bases of Soviet politics; Leninism-Stalinism; Communist Party organization and membership; administrative agencies; the police and army; law and the judiciary; Soviet federalism and nationality policy.
- 445 Comparative Political Institutions (5)** **Hitchner, Martin**
Analytical study of doctrines, forms, functions, processes, and controls of all governmental systems, without regard to region or country.

GENERAL

- 398 Honors Course for Seniors (5)**
Open to qualified majors in the last quarter of the senior year. Prerequisite, permission of Department.
- 499 Individual Conference and Research (2-5, maximum 10)**
Open to qualified majors in the senior year. No more than one registration in 499 under the same instructor will be permitted. A second registration with a different instructor may be permitted only in very exceptional cases and with departmental approval. Prerequisite, permission of instructor.

COURSES FOR GRADUATES ONLY

- 506, 507, 508 Contemporary Problems, Domestic and Foreign (3,3,3)** **Martin**
- 511, 512, 513 Seminar in Readings in Political Science (3,3,3)** **Cole**
Important writings of the masters in political science; the political classics.
- 514 Seminar in Problems of Political Theory (3)** **Harbold**
Selected topics, historical and conceptual, national, regional, and universal.
- 515 Scope and Methods in Political Science (3)** **Harbold**
Inquiry into the philosophic foundations of various approaches in political science and their possible contributions to an understanding of politics. Substantial background in philosophy, as well as in political science, is highly desirable.
- 520J Seminar on the Foreign Policy of the Soviet Union (3)** **Reshetar**
Offered jointly with the Far Eastern and Russian Institute. Prerequisite, permission.
- 521 Seminar in the Theory of International Relations (3)** **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)** **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)** **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.
- 530 Seminar in Regional Foreign Policy (3)** **Mander**
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.
- 541J The Soviet Political System (4)** **Reshetar**
Critical appraisal of the principal research methods, theories, and types of literature dealing with the government and politics of the Soviet Union. Offered jointly with the Far Eastern and Russian Institute. Prerequisite, permission.
- 542 Seminar in Commonwealth Governments (3)** **Mander**
Analysis of the governments of Canada, Australia, and New Zealand; their relations with the United Kingdom.
- 543 Seminar in British Government (3)** **Hitchner**
Advanced studies in British parliamentary government.
- 545J Seminar on Japanese Government and Diplomacy (3, maximum 6)** **Maki**
Offered jointly with the Far Eastern and Russian Institute.

- 550, 551, 552 Seminar in Politics (3,3,3)** **Bone, Gottfried**
 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.
- 562, 563, 564 Public Law (3,3,3)** **Cole**
 Constitutional and legal concepts governing governmental authority and institutions and the conduct of governmental activities.
- 570-571-572 The Administrative Process (3-3-3)** **Kroll**
 An analysis of the administrative process relying primarily upon case materials and emphasizing policy formation, organization behavior, the nature of administrative roles, and the mechanisms of responsibility.
- 573-574-575 Public Management (3-3-3)** **Shipman**
 Expression of public policy through program activity, program planning, programming and scheduling, budgeting, staffing, fiscal and other operating controls, evaluations of effectiveness. Prerequisite, admission to graduate curriculum in public administration, or special approval.
- 576-577-578 Administrative Problems (3-3-3)** **Shipman**
 Methods employed in the analysis of administrative problems, programs, organization, process, procedure, and staffing; the design of organizations and operations. Prerequisite, admission to graduate curriculum in public administration or special approval.
- 580, 581, 582 Seminar in Metropolitan and Urban Planning Problems (3,3,3)** **Warren, Webster**
 The metropolitan community; nature, characteristics, functions, governmental structure, and intergovernmental relations. Urban planning; theory, law and administration, policy determination and public relations. Methods and devices for plan implementation. Drafting local ordinances for planning, zoning, subdivision control, and urban renewal.
- 600 Research (*)**
- 700 Thesis (*)**

PREMAJOR

Advisory Office: 121 Miller Hall

The premajor category is dedicated to those students in the first or second year who have not made a definite choice of major before entering the University. These students may select, in consultation with an adviser, a program of studies which will meet the broad general requirements of the College and at the same time provide an experimentation and exploration in the subject areas of the college. Each program is planned according to the individual needs of the student.

No one may continue beyond his sophomore year as a premajor.

PSYCHOLOGY

Acting Executive Officer: GEORGE P. HORTON, M40 Denny Hall

The Department of Psychology offers courses leading to the degrees of Bachelor of Science, Master of Science, and Doctor of Philosophy. The Departments of Physiology and Psychology offer a joint program in physiological psychology leading to the degree of Doctor of Philosophy. In addition, the Department offers major and minor academic fields for students in the College of Education; see the *College of Education Bulletin*.

The Department includes the Bailey and Babette Gatzert Institute of Child Development consisting of the Nursery School, Child Development Clinic, and Research Laboratory.

BACHELOR OF SCIENCE

In this elective curriculum, at least 36 credits in psychology are required. Students planning to major in psychology must complete at least 15 credits in psychology with a minimum grade-point average of 3.00 before entering the Department. General Psychology (100 or 150) is prerequisite to all other courses in psychology. Courses must include: 100 or 150, 301, 400; one course from 406, 426, 441, 451, 484, 499; and 16 credits in psychology electives, preferably chosen from 305, 308, 345, 405, 413, 416, 427. Students majoring in psychology are

required to maintain a grade-point average of 2.50 in all psychology courses taken at this University. Transfer students must complete a minimum of 15 credits in this Department.

In addition to the honors course, General Psychology 150, an undergraduate honors program can be developed on an individual basis.

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 as outlined in the *Graduate School Bulletin*. 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)**
Introduction to the principles of human behavior. (See also 150 Honors.)
- 101 Psychology of Adjustment (5)** **Wilson**
Application of psychological principles to the problems of everyday life. Prerequisite, 100.
- 150 General Psychology—Honors (5)** **Forrin**
Introduction to the principles of human behavior. Prerequisite, permission. Not open to students who have taken 100.
- 245 Individual Differences (3)** **Woodburne**
The interrelationships and patternings of human traits and capacities. Prerequisite, 100.
- 301 Statistical Methods (5)** **Baer, Edwards, Heathers, Smith**
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. Prerequisites, 100 and Mathematics 101, or permission.
- 305 Abnormal Psychology (5)** **Strother**
Introduction to the field of psychopathology; analysis of forms, nature, and causes of disorders of behavior and personality. Prerequisite, 15 credits in psychology, including 306 or 308.
- 306 Developmental Psychology (5)** **Baer, Bijou, Birnbrauer**
The psychological development of the child and the antecedent conditions from infancy to adolescence. For nonmajors only. Not open to students who have taken 308. Prerequisite, 100.
- 308 Genetic Psychology (5)** **Baer**
A comparative approach to problems of psychological development with special emphasis on the effects of early childhood experience on later behavior. Not open to students who have taken 306. Prerequisite, 100. For majors only.
- 320 Directed Observation of Early Childhood Development (3)** **Harris**
Analysis of developmental trends and age-level expectancies of the preschool-age child with interpretations of typical behavior manifestations. Prerequisite, 306 or 308, or permission.
- 321 Program Planning for Young Children (5)** **Evans**
Directed observation in the nursery school laboratory with study and analysis of the daily program. Developmental characteristics of the preschool-age child as a basis for building a nursery school curriculum. Teacher role. Prerequisite, 320 and permission.
- 322 Practicum in the Nursery School (10)** **Evans**
Scheduled participation in the laboratory program for children. Development of skills in individual and group guidance of young children in the use of creative play materials and equipment, books, stories, music. Attendance at monthly evening parent meetings and one home visit required. Prerequisite, 321 and permission.
- 324 Practicum in Parent Relationships (3)** **Evans**
Laboratory experience with parents of nursery school children. Methods and techniques for setting up observations, individual conferences, leading group meetings and workshops. Prerequisites, Social Work 401 and permission. To be taken concurrently with 322.
- 331 Applied Psychology (3)** **Culbert**
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.
- 345 Social Psychology (3)** **Culbert, McKeever, Stotland**
Psychology of human institutions. Prerequisite, 100.
- 400 Psychology of Learning (5)** **Smith**
Theories and experimental research in the field of human learning. Prerequisite, 301.
- 401, 402 Contemporary Psychological Theory (3,3)** **McKeever**
Current approaches to theory construction in psychology. Prerequisite, permission.

- 403 Psychology of Motivation (3)** **Smith**
Theories and experimental research concerning the role of organic conditions and of social rewards and punishments in determining direction and efficiency of effort. Prerequisite, 400.
- 405 Personality (5)** **Sarason**
Personality theories and research, with emphasis on Freud, Lewin, and Miller and Dollard. Prerequisite, 15 credits in psychology, including 305, or permission.
- 406 Experimental Psychology (5)** **Loucks**
Practice in planning, conducting, and reporting laboratory research. Prerequisite, 301.
- 409AJ Training of the Mentally Retarded (5)**
Practical problems in the care and training of mentally retarded children, including those with multiple handicaps. Organization of classes for these children, regulations for state aid, and records needed will be studied. Offered jointly, at Buckley, Washington, with the College of Education. Prerequisite, permission.
- 409BJ Psychology of the Mentally Retarded (5)**
Characteristics and development of mentally retarded children. Multiple disabilities will be observed and discussed. The course aims to develop understanding of the place these children occupy in their homes, schools, and community, and the challenges they present in each sphere of living. Offered jointly, at Buckley, Washington, with the College of Education. Prerequisite, permission.
- 409CJ Training the Emotionally Disturbed (5)**
Special problems encountered in teaching emotionally disturbed children. Offered jointly, at Buckley, Washington, with the College of Education. Prerequisite, permission.
- 409DJ Psychology of the Emotionally Disturbed (5)**
Characteristics and behavior of different types of emotionally disturbed children. The course aims to develop understanding of the problems presented by these children. Offered jointly, at Buckley, Washington, with the College of Education. Prerequisite, permission.
- 409WJ Advanced Workshop in the Education of the Retarded (10)**
Seminar with provision for supervised work with retarded children. Offered jointly, at Buckley, Washington, with the College of Education. Prerequisites, at least 10 credits in course work on the mentally retarded, and permission.
- 413 Tests and Measurements (5)** **Heathers**
Evaluation and interpretation of college level group paper and pencil tests. Emphasis on statistical problems involved in test construction. Prerequisite, 301.
- 414, 415 Thinking and Problem Solving (3,3)** **Culbert, McKeever**
A survey of the experimental literature of concept formation and problem solving. Prerequisites, 414 for 415, psychology majors with senior or graduate standing, and permission.
- 416 Animal Behavior (3)** **Horton**
Principles in relation to human behavior, with emphasis on the principles underlying the organism's mode of adjusting to its environment. Prerequisite, permission.
- 421 Neural Basis of Behavior (5)** **Woodburne**
Anatomical and physiological principles underlying the integrative action of the nervous system and the relationship of these principles to the problems of behavior. Prerequisite, 10 credits in biology or permission.
- 422 Physiological Psychology (5)** **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)** **Horton**
Sensory and perceptual phenomena; sensory equipment; theories of sense-organ function. Prerequisites, 100 and 421, or permission.
- 426 Animal Laboratory (5)** **Smith**
Supervised training in experimental work with animals. Prerequisites, 400 or 427, and permission.
- 427 Conditioning (5)** **Loucks**
Experimental work on conditioning, with emphasis on specific research techniques; significance for the several fields of psychology. Prerequisite, permission.
- 435 Applied Experimental Psychology (3)** **Culbert, Horton**
A survey of experimental studies on the relation of human abilities and limitations to problems of design and operation of industrial machines, display systems, and special devices. Prerequisite, 100 or permission.
- 441 Perception (5)** **Culbert**
A consideration of the ways in which experience is organized. Perceptual aspects of the various sensory modalities, relationships between physicalistic and psychological dimensions, nonstimulus determiners of the perceived world, and mediational effects of language are among the central topics treated. Discussion centers around major theories of perception, but emphasis is upon the experimental data relevant to these. Some experiments and demonstrations. Prerequisite, 100.
- 445 Theories of Social Psychology (5)** **Stotland**
Individual determinants of social behavior, processes and outcomes of social interaction, their effects on the individual and group. Prerequisites, psychology major with senior or graduate standing, or permission.
- 446 Objective Assessment of Personality (3)** **Edwards**
Methods and techniques of observing and measuring personality, sociological, and behavioral variables of interest to the social psychologist. Problems of research design in personality and social psychology. Prerequisite, 100 or permission.

- 447 Psychology of Language (5)** Culbert
Psychological principles applied to linguistic development and organization; relation of symbolism to human behavior. Prerequisite, 100.
- 449 Psychology of Social Movements (3)** Stotland
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.
- 450 Techniques in Social Psychology (5)** Stotland
Practice and discussion of methods of systematic observation, content analysis, public opinion questionnaire construction, interviewing; experimental manipulation in social psychology. Prerequisites, psychology majors with senior or graduate standing, or permission.
- 451 Laboratory in Social Psychology (5)** Stotland
Individual research projects. Prerequisite, 450.
- 462 Readings in Psychology (1-3, maximum 9)**
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.
- 484 Laboratory in Child Behavior (5)** Baer, Birnbrauer
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.
- 490 Development of Behavior (5)** Baer
An account of the environmental control of the development of human behavior in terms of general behavior theory. Prerequisite, 308. For majors only.
- 499 Undergraduate Research (1-3, maximum 9)**
The name of the staff member with whom research will be done should be indicated in registration. Prerequisites, 301 and permission.

COURSES FOR GRADUATES ONLY

- 501 Problems in Learning Theory (3)** McKeever
Selected topics in the interpretation and evaluation of current theories of learning. Prerequisite, permission.
- 507 History of Psychology (5)** Esper
Experimental and theoretical backgrounds of modern psychology, especially in the nineteenth century. Prerequisites, graduate standing and permission. (Formerly 507-508.)
- 509 Problems in Developmental Psychology (3)** Baer, Bijou
A critical analysis of current theoretical problems, of approaches to theory formulation, and a review of some typical pieces of research in the field of child behavior and personality development. Prerequisites, 306 or 308, and permission.
- 514-515 Experimental Design (3-3)** 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)** 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. (Offered alternate years; offered 1962-63.) Prerequisites, 301 and 413, or permission.
- 517 Factor Analysis (5)** Horst
Mathematical and theoretical foundations; alternative methods of analysis; computational procedures; applications to psychological problems. (Offered alternate years; offered 1962-63.) Prerequisite, 516 or permission.
- 518 Test Construction (5)** Horst
Correlation analysis; statistical bases of test construction and of the use of test batteries; practice in test construction. (Offered alternate years; offered 1962-63.) Prerequisite, 517 or permission.
- 520 Seminar (2)**
May be repeated for credit. Prerequisite, permission.
- 523 Seminar in the History of Psychology (2)** Esper
May be repeated for credit. Prerequisite, permission.
- 524 Seminar in Physiological Psychology (2)** Horton, Loucks
May be repeated for credit. Prerequisite, permission.
- 525 Seminar in Genetic and Comparative Psychology (2)** Horton
May be repeated for credit. Prerequisite, permission.
- 527 Seminar in Social Psychology (2)** Edwards, Stotland
May be repeated for credit. Prerequisite, permission.
- 528 Seminar in Experimental Psychology (2)** Hermans
May be repeated for credit. Prerequisite, permission.
- 529 Seminar in Clinical Psychology (2)** Bijou, Sarason, Strother
May be repeated for credit. Prerequisite, permission.

- 530 Seminar in Theory (2)**
May be repeated for credit. Prerequisite, permission.
- 531 Seminar in Learning and Motivation (2)**
May be repeated for credit. Prerequisite, permission.
- 544-545 Psychology of Social Attitudes (3-3)** **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. (Not offered 1961-62.)
- 581 Individual Testing (Children) (5)**
Construction, administration, and scoring of individual mental tests used with children. Prerequisites, 306 or 308, 413, and permission.
- 582 Individual Testing (Adults) (5)**
Construction, administration, and scoring of clinical psychological tests used with adults. Prerequisites, 305, 413, 581, and permission.
- 585 Experimental Problems in Clinical Psychology (5)** **Bijou, Birnbrauer**
Analysis of research and theories of concepts and processes of deviant behavior. Prerequisite, permission.
- 587 Advanced Personality Theory (3)** **Sarason**
The theories of personality development relating to the psychodynamics of personality organization. Prerequisite, 405 or permission.
- 588 Psychopathology (3)** **Strother**
Major historical and contemporary theories of psychopathology and research in the main categories of the behavior disorders. Prerequisite, 587.
- 589 Theories and Systems of Psychotherapy (3)** **Strother**
A review of some of the principal theories and systems. Prerequisite, 588.
- 591 Projective Personality Tests (3)** **Sarason**
Theory of projective tests; practice in scoring and interpreting projective tests with emphasis on the Rorschach. Prerequisite, 581, 582, or permission.
- 592 Projective Personality Tests (3)** **Sarason**
Training in interpretation of normal Rorschach records; review of literature on the use of the Rorschach in psychopathology. Prerequisite, 591 or permission.
- 593 Projective Personality Test Research (3)** **Sarason**
Review of relevant research literature; experimental problems in application of projective techniques to the field of personality. Prerequisites, 591, 592, and permission.
- 596 Field Work in Clinical Psychology (3-5, maximum 36)** **Bijou, Strother**
Field training in clinics and institutions for students of clinical psychology. May be repeated for credit. Prerequisite, permission.
A. Clerkship in child testing B. Clerkship in adult testing C. Externship
- 599 Survey of Clinical Psychometrics (2)** **Strother**
The nature, development, and clinical application of psychological tests. Prerequisites, permission and registration in the School of Social Work.
- 600 Research (*)**
The name of the staff member with whom nonthesis research will be done should be indicated in registration. Prerequisite, permission.
- 700 Thesis (*)**

PREVENTIVE MEDICINE

Executive Officer: J. THOMAS GRAYSTON, B506 Health Sciences Building

The Department of Preventive Medicine, a part of the School of Medicine, offers professional courses in public health leading to the Bachelor of Science degree for students in the College of Arts and Sciences. Within the public health curriculum, students may choose an option in environmental health, biometry, or health education.

The environmental health option prepares students for the position of environmental health specialist or general sanitarian with health agencies or industry. Opportunities are provided for undergraduate research projects or individual study on current basic or applied environmental health problems through the Department or its Environmental Research Laboratory. The option also prepares its majors for graduate study in areas such as occupational health, radiological health, or hospital administration. The curriculum outlined can be modified to fit the needs or goal of each major, once the basic course requirements are satisfied.

The biostatistics option is designed to prepare students for positions as statistical

analysts in public health departments and agencies, and also to assist in the statistical aspects of medical and biological research programs. This option utilizes a certain number of relevant courses in the Department of Mathematics. Special undergraduate research topics in biostatistics are available through Preventive Medicine 480.

For students in the College of Education, the Department, in cooperation with the School of Physical and Health Education, offers a health education teaching major which may be combined with physical education, a science, a social science, or some other field. For combinations with physical education, counseling is provided by the School of Physical and Health Education (see page 149); for other combinations, counseling is provided by the Department of Preventive Medicine. Requirements for all teaching fields are described in the *College of Education Bulletin*.

In cooperation with the Department of Dental Hygiene, in the School of Dentistry, a joint program is offered which leads to the degree of Bachelor of Science with a major in public health dental hygiene; see the *School of Dentistry Bulletin*. For this program, the health education option is prescribed.

BACHELOR OF SCIENCE

A minimum of 36 credits in preventive medicine courses is necessary for the Bachelor of Science degree for students in the College of Arts and Sciences. Electives must include courses necessary to satisfy College group requirements. See page 23. While the order of the curriculum requirements in each option is not rigidly fixed, it is suggested that the courses be taken in the following sequence.

BIOMETRY

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Engl. 101 Composition ...	3	Chem. 100 Chem. Science		Chem. 120 Gen. and	
Math. 104 Plane Trig. ...	3	or 101 General	5	Organic	5
Psychol. 100 General	5	Engl. 102 Composition	3	Engl. 103 Composition	3
Sociol. 110 Survey	5	Math. 105 College Algebra	5	Health Educ. 110 or 175	
Phys. Educ. activity	†	Phys. Educ. activity	†	Health	2
ROTC	†	ROTC	†	Phys. Educ. activity	†
				ROTC	†

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Math. 124 Calc. with		Math. 125 Calc. with		Math. 126 Calc. with	
Anal. Geom.	5	Anal. Geom.	5	Anal. Geom.	5
Physics 101 General	4	Physics 102 General	4	Physics 103 General	4
Physics 107 Lab.	1	Physics 108 Lab.	1	Physics 109 Lab.	1
Zool. 111 General	5	Zool. 112 General	5	Zool. 208 Elem. Human	
ROTC	†	ROTC	†	Physiol.	5
				Approved electives	3
				ROTC	†

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Math. 401 Matrices	3	Math. 482 Stat. Inference	3	Prev. Med. 323 Intro. to	
Math. 391 Elementary		Approved electives	10	Public Health	3
Probability	3			Micro. 301 General	5
Speech 220 Public				Approved electives	8
Speaking	5				

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Prev. Med. 420 Intro. to		Prev. Med. 422 Intro.		Prev. Med. 424 Public	
Epidem. and Biostat.	3	to Environ. Health	3	Health Programs	3
Prev. Med. 477 Stat.		Prev. Med. 472 Applied		Prev. Med. 476 Sample	
Meth. in Biol. Assay	3	Stat. in Health Sci.	4	Survey Techniques	3-5
Prev. Med. 480 Problems 2-6		Prev. Med. 480 Problems 2-6		Prev. Med. 480 Problems 2-6	
Biol. 451 Genetics	3	Approved electives	6	Prev. Med. 482 Field	
Approved electives	5			Practice	5

† See page 23 for Physical Education activity requirements.

† See page 23 for ROTC requirements.

ENVIRONMENTAL HEALTH: (Basic Option)**First Year**

FIRST QUARTER	CREDITS
Chem. 100 Chem. Sci. or	
101 General	5
Engl. 101 Composition	3
Health Educ. 110 or 175	
Health	2
Physics 101 General	4
Physics 107 Lab.	1
Approved electives	3
Phys. Educ. activity	†
ROTC	‡

SECOND QUARTER	CREDITS
Chem. 150 General	4
Engl. 102 Composition	3
Physics 102 General	4
Physics 108 Lab.	1
Approved electives	3
Phys. Educ. activity	†
ROTC	‡

THIRD QUARTER	CREDITS
Chem. 160 General	3
Chem. 170 Qual. Analysis	3
Engl. 103 Composition	3
Physics 103 General	4
Physics 109 Lab.	1
Phys. Educ. activity	†
ROTC	‡

Second Year

FIRST QUARTER	CREDITS
Chem. 221 Quant.	
Analysis	5
Educ. 180 Drawing	3
Math. 104 Plane Trig.	3
Zool. 111 General	5
ROTC	‡

SECOND QUARTER	CREDITS
Math. 105 College Algebra	5
Sociol. 110 Survey	5
Zool. 112 General	5
ROTC	‡

THIRD QUARTER	CREDITS
Chem. 102 Gen. and Org.	5
Zool. 208 Elem. Human	
Physiol.	5
Approved electives	5
ROTC	‡

Third Year

FIRST QUARTER	CREDITS
Prev. Med. 323 Intro. to	
Public Health	3
B. Law 307 Bus. Law	3
Econ. 211 General	3
Speech 220 Public	
Speaking	5
Approved electives	2

SECOND QUARTER	CREDITS
Prev. Med. 422 Intro. to	
Environ. Health	3
Micro. 301 General	5
Psychol. 100 General	5
Approved electives	3

THIRD QUARTER	CREDITS
Civil Engr. 350 Intro. to	
San. Engr.	3
Biochem. 361 Biochem.	3
Biochem. 363 Biochem.	
Lab.	2
H.-S.S. 270 Engr. Report	
Writing	2
Approved electives	6

Fourth Year

FIRST QUARTER	CREDITS
Prev. Med. 420 Intro. to	
Epidem. and Biostat.	3
Prev. Med. 440 Water	
and Waste Sanitation	4
Prev. Med. 450 Meas.	
and Control of Air Poll.	2
Prev. Med. 464 Comm.	
Health Ed. Techniques	3
Prev. Med. 480	
Problems	2
Approved electives	6

SECOND QUARTER	CREDITS
Prev. Med. 441 Milk	
and Food Sanitation	3
Prev. Med. 453	
Indust. Hygiene	3
Prev. Med. 480	
Problems	2-6
Approved electives	3-5

THIRD QUARTER	CREDITS
Prev. Med. 424 Pub.	
Health Programs	3
Prev. Med. 442 Vector	
Control and Gen. San.	3
Prev. Med. 480	
Problems	2
Micro. 444 Med.	
Parasitol.	4
Approved electives	5

Summer

Recommended: 15 hours Field Practice—Prev. Med. 482, 483, 484.

ENVIRONMENTAL HEALTH: (Technical Option)**First Year**

FIRST QUARTER	CREDITS
Chem. 100 Chem. Science	
or 101 General	5
Engl. 101 Composition	3
Health Educ. 110 or 175	
Health	2
Physics 101 General	4
Physics 107 Lab.	1
Approved elective	2
Phys. Educ. activity	†
ROTC	‡

SECOND QUARTER	CREDITS
Chem. 150 General	4
Engl. 102 Composition	3
Math. 104 Plane Trig.	3
Physics 102 General	4
Physics 108 Lab.	1
Phys. Educ. activity	†
ROTC	‡

THIRD QUARTER	CREDITS
Chem. 160 General	3
Chem. 170 Qual. Analysis	3
Engl. 103 Composition	3
Physics 103 General	4
Physics 109 Lab.	1
Phys. Educ. activity	†
ROTC	‡

Second Year

FIRST QUARTER	CREDITS
Chem. 102 Gen. and	
Organic	5
Chem. 221 Quant. Analysis	5
Math. 105 College	
Algebra	5
ROTC	‡

SECOND QUARTER	CREDITS
Math. 124 Calc. with	
Anal. Geom.	5
Sociol. 110 Survey	5
Zool. 111 General	5
ROTC	‡

THIRD QUARTER	CREDITS
Math. 125 Calc. with	
Anal. Geom.	5
Zool. 112 General	5
Zool. 208 Elem. Human	
Physiol.	5
ROTC	‡

† See page 23 for Physical Education activity requirements.

‡ See page 23 for ROTC requirements.

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Prev. Med. 323 Intro. to Pub. Health Prin. and Pract.	3	Prev. Med. 422 Intro. to Environ. Health	3	Civil Engr. 350 Intro. to San. Engr.	3
Physics 320 Intro. to Mod. Physics	3	Micro. 301 General	5	Biochem. 361 Biochem. Biochem. 363 Biochem. Lab.	2
Speech 220 Public Speaking	5	Physics 323 Intro. to Nuclear Physics	3	H.-S.S. 270 Engr. Report Writing	2
		Psychol. 100 General	5	Approved electives	5

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Prev. Med. 420 Intro. to Epidem. and Biostat.	3	Prev. Med. 441 Milk and Food Sanitation	4	Prev. Med. 424 Pub. Health Programs	3
Prev. Med. 440 Water and Waste Sanitation	4	Prev. Med. 453 Indust. Hygiene	3	Prev. Med. 442 Vector Control and Gen. San.	3
Prev. Med. 450 Meas. and Control of Air Pollution.	2	Prev. Med. 480 Problems	2-6	Prev. Med. 480 Problems	2-6
Prev. Med. 480 Problems	2-6	Approved electives	5	Micro. 444 Med. Parasitology	4
Approved electives	3			Approved electives	3

Summer

Recommended: 5-15 hours Field Practice—Preventive Medicine 482, 483, 484.

HEALTH EDUCATION: (Major Academic Field for Teacher Certification) B.S.—College of Education—suggested plan.

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Biol. 101J- General	5-	Biol. -102J General	5	Engl. 103 Composition	3
Engl. 101 Composition	3	Engl. 102 Composition	3	Physics 100 Survey	5
Speech 100 Basic Speech Improvement	5	Sociol. 110 Survey	5	Psychol. 100 General	5
Approved electives	2	Approved elective	2	Approved elective	2
Phys. Educ. activity	†	Phys. Educ. activity	†	Phys. Educ. activity	†
ROTC	†	ROTC	†	ROTC	†

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Anthro. 100 Intro. to Study of Man or 201 Physical	5	Chem. 100 Chem. Science or 101 General	5	Anat. 301 General	4
Art 100 Intro. to Art (or approved sub.)	2-5	Home Ec. 300 Nutrition	2	Chem. 102 General	5
Educ. 209 Educ. Psychol.	3	Music 107 Survey (or approved sub.)	5	Zool. 208 Elem. Human Physiol.	5
Approved electives	0-6	Approved electives	4-5	Approved electives	0-3
ROTC	†	ROTC	†	ROTC	†

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Prev. Med. 323 Intro. to Pub. Health Prin. and Pract.	3	Educ. 370S Secondary School Methods	3	Prev. Med. 424 Pub. Health Programs	3
Prev. Med. 461 School and Community Health Prog.	5	Hist. 464 Hist. of Wash. and Pacific Northwest	5	Educ. 405 Problems of Adolescence	3
Educ. 188 Prin. of Educ.	3	Micro. 310 General	5	Home Ec. 356 Family Relationships	3
Speech 332 Group Discussion	5	Approved electives	2	Approved electives	6

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Health Educ. 453 Methods and Materials	3	Prev. Med. 422 Intro. to Environ. Health	3	Prev. Med. 482 Field Practice	6
Prev. Med. 420 Intro. to Epidem. and Biostat.	3	Educ. 360 Curriculum Develop. or 410 Educational Sociol.	3	Educ. 371X or S Directed Teaching	12
Prev. Med. 464 Community Health Educ. Techniques	3	Educ. 390 Evaluation or Educ. 447 Principles of Guidance	3		
Health Educ. 429 First Aid and Safety	3	Approved electives	6		
Psychiatry 450 Personality Develop.	2				
Approved elective	1				

† See page 23 for Physical Education activity requirements.

‡ See page 23 for ROTC requirements.

HEALTH EDUCATION: (Public Health emphasis) B.S.—College of Arts and Sciences (without Teacher Certification).

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Biol. 101J- General	5-	Biol. -102J General	5-	Engl. 103 Composition	3
Engl. 101 Composition	3	Engl. 102 Composition	3	Psychol. 100 General	5
Speech 100 Basic Speech		Sociol. 110 Survey	5	Approved electives	7
Improvement or 220		Approved electives	3	Phys. Educ. activity	†
Public Speaking	5	Phys. Educ. activity	†	ROTC	‡
Approved electives	2	ROTC	‡		
Phys. Educ. activity	†				
ROTC	‡				

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Anthro. 100 Intro. to		Chem. 100 Chem. Science or		Anat. 301 General	4
Study of Man or 201		101 General	5	Chem. 102 Gen. and	
Physical	5	Educ. 209 Educational		Organic	5
Educ. 188 Principles		Psychol.	3	Zool. 208 Elem. Human	
of Educ.	3	Approved electives	9	Physiol.	5
Approved electives	7	ROTC	‡	Approved elective	1
ROTC	‡			ROTC	‡

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Prev. Med. 461 School		Home Ec. 300 Nutrition	2	Prev. Med. 424 Pub.	
and Community Health		Home Ec. 356 Family		Health Programs	3
Prog.	5	Relationships	3	Prev. Med. 492J	
Prev. Med. 323 Intro. to		Micro. 301 General	5	International Health	2
Pub. Health Prin.		Approved electives	5	Conjoint 496 Concept of	
and Pract.	3			the Child or Educ. 402	
Speech 332 Group				Child Study & Develop.	3
Discussion	5			Approved electives	7
Approved electives	2				

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Health Educ. 453 Methods		Prev. Med. 422 Intro. to		Prev. Med. 482	
and Materials	3	Environ. Health	3	Field Practice	6
Prev. Med. 420 Intro. to		Prev. Med. 463 Community	3	Prev. Med. 483	
Epidem. and Biostat.	3	Org. for Health Educ.	3	Field Practice	6
Prev. Med. 464 Community		Prev. Med. 480 Pub.	3	Prev. Med. 484	
Health Educ. Techniques	3	Health Problems	3	Field Practice	3
Health Educ. 429 First		Prev. Med. 485J School			
Aid and Safety	3	Health Problems	3		
Psychiatry 450 Personality		Approved electives	4		
Develop.	2				
Approved elective	1				

This option requires 36 credits in Preventive Medicine courses and 15 credits in Education courses to be chosen from recommended offerings.

COURSES FOR UNDERGRADUATES

- 323 Introduction to Public Health Principles and Practices (3)** **Wilkey**
A survey of principles, practices, and the agencies concerned. This basic course is required of all public health majors.
- 420 Introduction to Epidemiology and Biostatistics (3)** **Alexander, Bennett**
Descriptive, analytic, and experimental epidemiology as presented in examples from the field of communicable disease. Includes descriptive statistics as applicable in epidemiology. Prerequisites, 323, Microbiology 301 or permission, or graduate standing.
- 422 Introduction to Environmental Health (3)** **Hatlen**
Relationship of man to his environment, how it affects his physical well-being, and what he can do to influence this environment for the protection of his health. Emphasis on environmental factors involved in transmission of communicable diseases and hazards due to exposure to chemical and physical materials in our environment. Prerequisite, 323 or 461 or permission, or graduate standing.
- 424 Public Health Problems (3)** **Vavra**
Current problems and programs of major concern in the following areas: maternal and child health, accident prevention, mental health, chronic diseases, and medical economics. Prerequisite, 323 or 461 or permission, or graduate standing.
- 440 Water and Waste Sanitation (4)** **Hatlen**
Advanced study of the sanitary control of water supplies and sewage and refuse disposal, with emphasis on the knowledge and skills utilized by the sanitarian. Prerequisite, 422 or permission.

† See page 23 for Physical Education activity requirements.

‡ See page 23 for ROTC requirements.

- 441 Milk and Food Sanitation (4)** **Hatlen**
Advanced study of the sanitary control of the production, processing, and distribution of milk and food. Prerequisite, 422 or permission.
- 442 Vector Control and General Sanitation (3)** **Hatlen**
Advanced study of control of rodents and arthropod vectors of disease; control of environmental utilities, including plumbing, swimming pools, bathing beaches, recreation areas, housing, schools, and other topics of general sanitation. Prerequisite, 422 or permission.
- 450 Measurement and Control of Air Pollution (2)** **Breyse**
Description of methods for air pollution research and control, including field survey techniques, stack sampling, continuous monitoring, and use of control equipment. Administrative problems are also discussed. For preventive medicine majors; others by permission.
- 453 Industrial Hygiene Techniques (3)** **Breyse**
Field and industrial laboratory testing procedures for chemical and physical hazards as employed by industrial health workers. Prerequisite, permission.
- 460J Field Training in Health Education (5)** **Vavra**
Four and one-half 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. (Offered Summer Quarter only.) Prerequisite, permission.
- 461 School and Community Health Programs (5)** **Mills, Reeves**
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. Prerequisite, junior standing.
- 463 Community Organization for Health Education (3)** **Vavra**
Trends and problems in community health education, including community organization. Prerequisite, 323 or 461, or permission.
- 464 Community Health Education Techniques (3)** **Vavra**
Practice in the techniques of working with groups; preparation and use of visual education materials. Prerequisite, 323 or 461, or permission.
- 470 Introduction to Biometry (3)** **Bennett**
Statistical methods used in the compilation, interpretation, and presentation of vital data. Prerequisite, permission.
- 472 Applied Statistics in Health Sciences (2-4)** **Bennett**
Application of statistical techniques to biological and medical research; design and interpretation of experiments. Prerequisite, permission.
- 476 Sample Survey Techniques (3-5)** **Bennett**
Methods appropriate for conducting and analyzing results of sample surveys. (Offered when demand is sufficient.) Prerequisite, permission.
- 477 Statistical Methods in Biological Assay (3)** **Bennett**
Methods appropriate to estimation of the dose-effect relationship; biological standardization; microbiological assay; design of experiments. (Offered when demand is sufficient.) Prerequisite, permission.
- 480 Public Health Problems (*, maximum 6)**
Special assignments in the field of public health. Prerequisite, permission.
- 482 Field Practice in Public Health (2-6)**
An assignment to a local health department for supervised application of public health practices. Prerequisite, permission.
- 483 Field Practice in Public Health (6)**
An assignment to a local health department for practice in program planning. Prerequisite, permission.
- 484 Field Practice in Public Health (3)**
An assignment to a local health department for training in the utilization of community resources. Prerequisite, permission.
- 485J School Health Problems (3)** **Christian, Vavra**
Analysis of and planning for school health programs based on developmental needs of the school-age child. Offered jointly with the School of Nursing. Prerequisite, permission.
- 490 Public Health Administration (3)**
Public health administration including philosophy, legal aspects, program and fiscal planning, personnel management, and public relations. Prerequisite, 420, 422, 424, or permission.
- 492J Problems in International Health (2)**
Conference and discussion based on a survey of international health organizations and the services offered by regions and countries. Offered jointly with the School of Nursing. Open to any senior or graduate student. Prerequisite, permission.
- Conjoint 496 (Med.) Concept of the Child (3)** **Deisher**
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 Preventive Medicine. Prerequisite, permission.
- 499 Undergraduate Research (*)**
Prerequisite, permission.

COURSES FOR GRADUATES ONLY

502J Applied Group Development Principles (3)

Murray, Vavra

A study of the factors that contribute to productive group effort with application of group development principles for professional health personnel. Offered jointly with the School of Nursing. Prerequisites, Speech 332 or equivalent, and background in the health field, and permission.

RADIO-TELEVISION

(See Communications, page 57.)

ROMANCE LANGUAGES AND LITERATURE

Executive Officer: HOWARD L. NOSTRAND, 217 Denny Hall

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, the Department offers an elective curriculum with a major in French, Italian, or Spanish. Major and minor academic fields for the Provisional Teaching Certificate are offered in French and Spanish. Candidates for the certificate may major in this Department as students in either the College of Arts and Sciences or the College of Education; see the *College of Education Bulletin*. Curricula in Latin-American studies and in an area study of France are provided by the Division of General Studies (see page 92).

The Department offers courses in English, which require no knowledge of a foreign language. These courses are recommended to students in other departments but are not applicable to undergraduate or graduate majors in the Department of Romance Languages and Literature.

The first two high school years of French, Italian, or Spanish correspond to courses 101-102, 103; the third high school year corresponds to French 201 and 202, and Spanish 201, 202, 203. Students with high school credit in a Romance Language are placed according to the following pattern:

1. With one semester ($\frac{1}{2}$ unit), a student should enter the most elementary course offered for which he would receive full credit for a beginning college course in a language; (French, Italian, Spanish 101-, or Spanish 110-).
2. With two semesters (1 unit) a student with high school grade of A or B should enter French or Italian 103, Spanish 103 or 112; while a student with a high school grade lower than B should enter French or Italian -102, Spanish -102 or 121-.
3. With three semesters ($1\frac{1}{2}$ units) and high school grades lower than B a student should enter: French or Italian 103; Spanish 121-, 103, or 112.
4. With four semesters (2 units) a student should enter: French or Spanish 201; Italian 210 or 212.
5. With five semesters ($2\frac{1}{2}$ units) a student should enter: French or Spanish 202; Italian 211 or 213.
6. With six semesters (3 units) a student should enter: French 222 and/or 301; Spanish 301 and 304; Italian courses as recommended by the Department. A student with more than six semesters must consult with a Department adviser.

A student who has any doubt about placement should consult his adviser or the Department office *before* registering to avoid the possibility of entering a course for which he will not receive credit, or a course he could omit.

Any of the prerequisites for courses in this Department may be waived at the instructor's discretion. Students with A or high B standing are encouraged to skip

one or more quarters between 101- and 301, or to enroll in the honors sections in French 101-, -102, 103, 201, 202, or in Spanish 101-, -102, 103, 201, 202, and 203. These sections provide a stimulating program for students with exceptional linguistic ability. The basic material covered is the same as in the regular sections, but the content is enriched by a greater opportunity for oral practice and supplementary reading. Students are encouraged to proceed at a rate which will best utilize their individual capacities.

BACHELOR OF ARTS

The Bachelor of Arts degree may be obtained with a major in French, Spanish, or Italian.

The general requirements for an undergraduate major in a Romance language are proficiency in the language and knowledge of the literature and culture of France, the Hispanic peoples, or Italy, as outlined in syllabi obtainable from the Department. The following programs of courses are designed to develop the required proficiency.

FRENCH MAJOR. A minimum of 50 credits of course work (or equivalent) in French beyond the level of 103, plus Romance 401 or 402. Required are: 201, 202 (or a third high school year of French); 222, 301; 304, 305, and 306; 327 or 328 or 329 or 330; 409; 12 elective credits in literature courses numbered above 400.

SPANISH MAJOR. A minimum of 43 credits of course work (or equivalent) in Spanish beyond the level of 103, plus Romance 401 or 402. Required are: 201, 202 and 203 (or a third high school year of Spanish); 212, 301, 302, and 303; 304, 305, and 306; 327 or 328 or 329 or 330; 409; 9 elective credits in literature courses numbered above 400; and some additional directed reading.

ITALIAN MAJOR. A minimum of 38 credits of course work (or equivalent) in Italian beyond the level of 103, plus Romance 401 or 402. Required are: 212, 213, and 214; 421, 422, and 423. Beyond these courses, an individualized program may include supervised study and exercises in the language laboratory.

The Department recommends that students majoring in a Romance language elect the natural and social science sequences in the General Education program to fulfill the group requirements, and the art and philosophy sequences in that program to acquire a background for literature (see page 91).

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.

ADVANCED DEGREES

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

Students working toward the Master of Arts degree may elect one of three programs. Two of these are thesis programs: one provides for specialization in Romance languages and literature, the other for specialization in problems of foreign language learning. Both are designed for those who may wish to continue their studies for the Ph.D. degree. The third program is a nonthesis, terminal program for students preparing to teach in a school or junior college.

Two doctoral programs are offered. One is intended for students whose primary interest is in language and literature. The other is for those who wish to specialize in the training and supervision of language teachers or in research in the teaching of foreign languages.

Students who intend to work toward advanced degrees must meet the requirements of the Department and the Graduate School as outlined in the *Graduate School Bulletin*.

COURSES*(For courses in English Translation, see page 187.)***ROMANCE LINGUISTICS AND LITERATURE, GENERAL AND COMPARATIVE****401, 402 Introduction to Romance Linguistics (2,2)****Dorfman**

Basic concepts of general and comparative linguistics and their application to evolution of the Romance languages. The first quarter is devoted mainly to phonology; the second, to morphology. The courses may be taken in reverse order. Prerequisite, junior standing or the equivalent of one college year of a Romance language or Latin.

Courses for Graduates Only**505, 506, 507 Romance Linguistics (2,2,2)****Dorfman**

Principles of comparative linguistics; a brief history of the Romance languages and detailed investigation of their linguistic evolution.

521, 522, 523 Phonemic Analysis and Description (2,2,2)**Dorfman**

Phonology as functional phonetics; brief history of the phoneme idea; comparison of the variant phonemic systems in the Romance languages and other linguistic structures; functional and structural analysis of linguistic expression.

531 Problems in Romance Linguistics (2-5, maximum 10)**572J, 573J Romance Language Teachers' Seminar (2½, 2½)****Simpson**

The teaching of foreign languages. Conducted as a workshop. Opportunity for directed practice teaching of elementary school children. (Offered Summer Quarter only.) Offered jointly with the College of Education.

581, 582, 583 Methodology Bibliography of Research (2,2,2)**Nostrand, Weiner**

Bibliographical resources for Romance literatures; recurrent types of research problems and the accumulating methodology; standards of evidence; the evaluation and organization of evidence; the philosophies of literary history and its relation to bibliography and criticism.

584, 585, 586 Seminar in Romance Culture (3,3,3)

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)**599 Research in Romance Linguistics (2-5, maximum 15)****700 Thesis (*)****702 Degree Final (0)**

Limited to students completing a nonthesis degree program.

CATALAN**Courses for Graduates Only****535 Catalan Language and Literature (5)****Simpson**

Survey of the political and literary history of Catalonia. Readings and reports on modern Catalan literary works. (Offered when demand is sufficient.)

FRENCH**101-102, 103 Elementary (5-5, 5)**

Methods and objectives are primarily oral-aural. Oral practice in the Language Laboratory is required. Honors sections are designated in the *Yearly Time Schedule* by an asterisk. No credit is granted for 101- until -102 (or a more advanced course, as approved by the Department) has been completed satisfactorily. Prerequisite for -102: 101- or one high school semester, or equivalent; for 103: A, B, or C in -102; A or B in second high school semester; or any passing grade in the third high school semester.

130 Conversational French (2½-4, maximum 8)

For participants in the Living Language Group program only. (Offered Summer Quarter only.) Prerequisite, 103 or equivalent.

201, 202 Intermediate (5,5)

Intensive practice in reading and writing. Systematic review of French grammar. Oral practice through imitation of assigned dialogues and free oral composition. Students especially interested in scientific French may do outside reading in their own field as partial fulfillment of the course requirements. Honors sections are designated in the *Yearly Time Schedule* by an asterisk. Prerequisite for 201: 103 or two years of high school French; for 202: 201 or equivalent.

222 Introduction to French Literature (5)

Transition between reading for content on the intermediate level and the critical reading ability required for more advanced courses in French literature. Introduction to problems of style, genre, and aesthetics. Prerequisite, 202 or three years of high school French, or equivalent.

301 French Stylistics (3)

Functional grammar review; creative written and oral composition and reading with special attention to problems of style. Prerequisite, 202 or three years of high school French, or equivalent.

- 304, 305, 306 Survey of French Literature (5,5,5)**
Masterpieces from early times to the present. 304: 1100-1680—Middle Ages through the Classical Period. 305: 1680-1800—The Age of Enlightenment and Pre-romanticism. 306: 1800-1960—Romanticism, realism, naturalism, symbolism, and twentieth-century literature. Prerequisite, 222 or equivalent.
- 327, 328, 329 Advanced Conversation (2,2,2)**
Prerequisite, 222 or permission.
- 330 Conversational French (2½-4, maximum 12)**
For participants in the Living Language Group program only. (Offered Summer Quarter only.) Prerequisite, 202 or equivalent.
- 358, 359 Advanced Syntax (2,2)**
Syntax from the teacher's standpoint. Prerequisite, 222 or equivalent.
- 390 Supervised Study (2-5, maximum 20)**
Prerequisite, permission of Executive Officer.
- 409 Advanced Phonetics (3)**
Training in diction and oral expression; interpretation of literary texts; phonetics as a teaching device. Prerequisite, 222 or equivalent, or permission of instructor.
- 421 Fiction: 1660-1800 (3)**
Voltaire, Prevost, and Diderot. (Offered Spring Quarter, 1962.) Prerequisite, 222 or equivalent.
- 424 Fiction: 1800-1850 (3)**
Balzac, Stendhal. (Offered Summer Quarter, 1962.) Prerequisite, 222 or equivalent.
- 425 Fiction: 1850-1900 (3)**
Flaubert, Maupassant, Zola. (Offered Autumn Quarter, 1961.) Prerequisite, 222 or equivalent.
- 426 Fiction: 1900-1950 (3)**
Proust, Sartre, Camus. (Offered Winter Quarter, 1963.) Prerequisite, 222 or equivalent.
- 430 Advanced Conversational French (1-3, maximum 6)**
Continuation of 330. Advanced conversational problems primarily for teachers. For participants in the Living Language Group program only. (Offered Summer Quarter only.)
- 431 Poetry: Baroque (3)**
(Offered Summer Quarter, 1962.) Prerequisite, 222 or equivalent.
- 432 Poetry: Romantic (3)**
(Offered Spring Quarter, 1963.) Prerequisite, 222 or equivalent.
- 433 Parnassian and Symbolist Poetry (3)**
(Offered Autumn Quarter, 1962.) Prerequisite, 222 or equivalent.
- 434 Twentieth-Century Poetry (3)**
(Offered Winter Quarter, 1962.) Prerequisite, 222 or equivalent.
- 454 Nonfiction of the Classic Period (3)**
La Rochefoucauld and his contemporaries. (Offered Winter Quarter, 1964.) Prerequisite, 222 or equivalent.
- 455 Eighteenth-Century Nonfiction (3)**
Voltaire, Montesquieu, Rousseau. (Offered Spring Quarter, 1963.) Prerequisite, 222 or equivalent.
- 456 Nineteenth-Century Nonfiction (3)**
Mme. de Staël, Chateaubriand, and their contemporaries. (Offered Winter Quarter, 1962.) Prerequisite, 222 or equivalent.
- 457 Twentieth-Century Nonfiction (3)**
Péguy, Maurras, and others. (Offered Autumn Quarter, 1962.) Prerequisite, 222 or equivalent.
- 461 Seventeenth-Century Drama (3)**
Corneille, Racine, Molière. (Offered Winter Quarter, 1963.) Prerequisite, 222 or equivalent.
- 462 Eighteenth-Century Drama (3)**
Marivaux, La Chaussée, Voltaire. (Offered Spring Quarter, 1962.) Prerequisite, 222 or equivalent.
- 463 Nineteenth-Century Drama (3)**
The French theater from Hugo to Becque. (Offered Autumn Quarter, 1963.) Prerequisite, 222 or equivalent.
- 464 Twentieth-Century Drama (3)**
Giraudoux, Sartre, Ionesco, and others. (Offered Autumn Quarter, 1961.) Prerequisite, 222 or equivalent.

Courses for Graduates Only

- 105-106 Elementary (5-5)**
Designed for the rapid acquisition of a reading knowledge of French. No auditors. Prerequisite, graduate standing or permission.
- 501 Studies in Renaissance Prose (5)**
Rabelais and Montaigne. (Offered Autumn Quarter, 1962.)

Keller

- 502 Studies in Renaissance Poetry (5)** **Creore**
The *Pléiade*. (Offered Autumn Quarter, 1961.)
- 504 Contemporary French Literature (5)** **David**
Parties and schools of thought after World War I. Emphasis on "intelligence" and related concepts such as the "heart" and "honor." (Offered Spring Quarter, 1964.)
- 513 Old French Literature (3)** **Simpson**
Literary backgrounds; reading and discussion of selected texts. (Offered when demand is sufficient.)
- 521 Studies in Fiction: 1660-1800 (3)** **Hanzoli**
The French novel and *conte philosophique* during the period 1680 to 1800. Diderot and his contemporaries, Marivaux, Prévost, Rousseau, Laclos, and Voltaire. (Offered Summer Quarter, 1965.)
- 524 Studies in Fiction: 1800-1850 (3)**
Development of the French novel in the first half of the nineteenth century. Hugo, Balzac, Sand, and others. (Offered Winter Quarter, 1962.)
- 525 Studies in Fiction: 1850-1900 (3)** **Simpson**
The French novel in the second half of the nineteenth century; Flaubert, Zola, Bourget, and others. (Offered Autumn Quarter, 1962.)
- 526 Studies in Fiction: 1900-1950 (3)** **C. Wilson**
The French novel in the twentieth century. The works of Proust, Gide, Aymé, Camus, Sartre, and their contemporaries. (Offered Autumn Quarter, 1964.)
- 532 Studies in Nineteenth-Century Poetry (3)** **Snyder**
The Romantic period. Critical examination of the works of Hugo, Lamartine, and Vigny. (Offered Spring Quarter, 1962.)
- 533 Studies in Parnassian and Symbolist Poetry (3)** **Nostrand**
Critical examination of the poetry of Leconte de Lisle, Hérédia, Prudhomme, and Baude-
laire. (Offered Summer Quarter, 1963.)
- 534 Studies in Twentieth-Century Poetry (3)** **Weiner**
Critical examination of the poetry of René Char, Valéry, Artaud, Aragon, and others. (Offered Autumn Quarter, 1963.)
- 541, 542, 543 History of the French Language (2,2,2)** **Dorfman**
Phonological, morphological, and syntactical development of the French language from its origins to the present. (Offered alternate years; offered 1963-64.)
- 554 Studies in Seventeenth-Century Nonfiction (3)** **Keller**
Critics and essayists including La Rochefoucauld, Descartes, Pascal, La Bruyère, and Mme. de Sévigné. (Offered Summer Quarter, 1962.)
- 555 Studies in Eighteenth-Century Nonfiction (3)** **Hanzoli**
Critics and essayists such as Voltaire, Montesquieu, Rousseau, and Diderot. (Offered Summer Quarter, 1964.)
- 556 Studies in Nineteenth-Century Nonfiction (3)** **David**
Critics and essayists such as Mme. de Staël, Chateaubriand, Sainte-Beuve, Tocqueville, Comte, Renan, and Taine. (Offered Winter Quarter, 1963.)
- 557 Studies in Twentieth-Century Nonfiction (3)** **David**
Contemporary critics including Péguy, Maurras, Chartier, Guitton, Thibaudet, Maurier, and Valéry. (Offered Spring Quarter, 1964.)
- 561 Studies in Seventeenth-Century Drama (3)** **Keller**
Research in the drama of Racine, Corneille, or Molière. (Offered Winter Quarter, 1962.)
- 562 Studies in Eighteenth-Century Drama (3)** **Hanzoli**
The works of Marivaux, Crébillon, Voltaire, La Chaussée, Diderot, and Beaumarchais. (Offered Winter Quarter, 1965.)
- 563 Studies in Nineteenth-Century Drama (3)** **Creore**
The works of Hugo, Musset, Scribe, Augier, and Dumas *fils*. (Offered Spring Quarter, 1963.)
- 564 Studies in Twentieth-Century Drama (3)** **Chessex**
The works of Breux, Currel, Lenormand, Anouilh, Montherland, Sartre, Cocteau, Giraudoux, Beckett, and Ionesco. (Offered Summer Quarter, 1962.)
- 575, 576 Literary Criticism (5,3)** **Nostrand, Weiner**
Major philosophies of criticism and their exponents. Influences which affected standards, purposes, and methodologies. 575: nineteenth and early twentieth centuries. (Offered Spring Quarter, 1962.) 576: twentieth century. (Offered Winter Quarter, 1963.)
- 580 Explication de Texte (3)** **David**
Close study of short pieces of French prose and poetry. The method consists of a literary analysis of the text from the different viewpoints: biographical, historical, etc. Lectures, discussion, and student *explications*. (Offered Spring Quarter, 1962.)
- 590 Special Seminar and Conference (2-5, maximum 20)**
Group seminars and conferences will be scheduled under this number to meet special needs. For individual conferences under this number, permission of the Executive Officer is required.

600 Research (2-5, maximum 20)

700 Thesis (*)

702 Degree Final (0)

Limited to students completing a nonthesis degree program.

ITALIAN

101-102, 103 Elementary (5-5,5)

210, 211 Elementary Italian Conversation (2,2)

Prerequisite, 103 or permission for 210; 210 or permission for 211.

212, 213, 214 Readings in Modern Italian Literature (3,3,3)

Budel

Prose and poetry of the nineteenth and twentieth centuries. Oral practice and language laboratory exercises. Functional review of grammar. Prerequisite, 103 or permission.

390 Supervised Study (2-5, maximum 20)

Prerequisite, permission of Executive Officer.

421, 422, 423 Survey of Italian Literature (3,3,3)

Budel

Masterpieces of Italian literature from the thirteenth to the twentieth century.

421: Dante, Petrarca, Boccaccio.

422: Pulci, Poliziano, Castiglione, Ariosto, Machiavelli, Michelangelo, Tasso, Bandello, Aretino; Renaissance literary theory.

423: Foscolo, Manzoni, Leopardi, Verga, Carducci, D'Annunzio, Pirandello, Moravia, Pavese, De Filippo, Vittorini.

Courses for Graduates Only

512, 513 Dante (3,3)

Budel

Dante and the *Dolce stil nuovo*; *La vita nuova*, *Le rime*. Dante's literary aesthetics: *De vulgari eloquentia*, *Il convivio* and *La Divina commedia*. (Offered 1962-63.)

531 Literary Problems (2-5, maximum 20)

Budel

Field (see A-F below) must be specified in registration. For individual conferences under this number (but not for group projects), permission of the Executive Officer is required.

A. Middle ages and fourteenth century

D. Eighteenth century

B. Renaissance

E. Nineteenth century

C. Baroque

F. Twentieth century

541, 542, 543 History of the Italian Language (2,2,2)

Budel, Dorfman

Phonological, morphological, and syntactical development of the Italian language from its origin to the present. (Offered 1962-63.)

551, 552, 553 Seminar in Humanist and Renaissance Prose and Poetry (3,3,3)

Budel

551: Humanism and Early Renaissance: Petrarca, Boccaccio; Pulci, Poliziano, Lorenzo il Magnifico, Boiardo, Sannazaro, Marsilio Ficino, Pico della Mirandola. (Offered 1961-62.)

552: High Renaissance: Castiglione, Ariosto, Machiavelli, Folengo, Bembo, Trissino. (Offered 1961-62.) 553: Late Renaissance: Michelangelo, Tasso, Bandello, Pietro Aretino. Renaissance literary theory from Coluccio Salutati to Scaligero. (Offered 1962-63.)

561, 562, 563 Italian Literature of the Nineteenth and Twentieth Centuries (3,3,3)

Budel

(Offered 1962-63.)

600 Research (2-5, maximum 20)

700 Thesis (*)

702 Degree Final (0)

Limited to students completing a nonthesis-degree program.

PORTUGUESE

101-102, 103 Elementary (5-5,5)

C. Wilson

390 Supervised Study (2-5, maximum 20)

C. Wilson

Course for Graduates Only

541, 542, 543 History of the Portuguese Language (2,2,2)

Dorfman

Phonological, morphological, and syntactical development of the Portuguese language from its origins to the present. Prerequisite, Romance 401 or equivalent. (Offered when demand is sufficient.)

PROVENÇAL

Course for Graduates Only

534 Old Provençal (3)

Simpson

(Offered when demand is sufficient.)

SPANISH

101-102, 103 Elementary (5-5,5)

Recommended for prospective majors and minors and those who wish to work toward a speaking knowledge of the language. Methods and objectives are primarily oral-aural. Oral practice in the language laboratory is required. Honors sections are designated in the *Yearly Time Schedule* by an asterisk. Prerequisite for -102: 101-, one high school semester, or equivalent; for 103: A, B or C in -102; A or B in second high school semester; or any passing grade in the third high school semester. No credit is granted for 101- until -102 (or a more advanced course as approved by the Department) has been completed satisfactorily. See 121-.

110-111, 112 First-Year Reading Spanish (5-5,5)

A beginning course for nonmajors, in which the acquisition of a reading knowledge is stressed. Prerequisite for -111; 110- or equivalent; for 112: -111, or grade of A or B in the second high school semester, or any passing grade in the third high school semester, or equivalent.

121- Basic Grammar Review (5-)

Refresher course; should be taken instead of 103 by students who received a grade of D in -102, or C or D in the second high school semester. 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 (2½-4, maximum 8)

For participants in the Living-Language Group program only. (Offered Summer Quarter only.) Prerequisite, 103.

201, 202, 203 Intermediate (3,3,3)

Modern texts, composition, and functional grammar. Prerequisite for 201: 103, 112, or 121-, or four high school semesters, or equivalent.

210, 211 Elementary Spanish Conversation (2,2)

Prerequisites, 103, 112 or 121-, or equivalent for 210; 210 or permission for 211.

212, 213, 214 Modern Readings (2,2,2)

Directed reading with primary emphasis on the acquisition of an extensive vocabulary. Prerequisite, 202 or permission.

301, 302, 303 Advanced Composition and Conversation (3,3,3)

Prerequisite, 203 or equivalent.

304, 305, 306 Survey of Spanish Literature (3,3,3)

Masterpieces from early times to the present. These courses are scheduled so that they may be taken concurrently with 301, 302, 303. 304: From the *Poema de Mio Cid* to 1498. 305: From 1498 to 1681. 306: From 1681 to the present. Prerequisite, 203 or equivalent.

327, 328, 329 Advanced Conversation (2,2,2)

Prerequisite, 302 or equivalent, or permission.

330 Conversational Spanish (2½-4, maximum 12)

For participants in the Living-Language Group program only. (Offered Summer Quarter only.) Prerequisite, 203 or equivalent.

390 Supervised Study (2-5, maximum 20)

Prerequisite, permission of Executive Officer.

409 Phonetics, Pronunciation, Intonation (3)

Vargas-Baron

Analysis of sounds; training in correct and natural pronunciation. Prerequisite, 301 or equivalent.

430 Advanced Conversational Spanish (1-3, maximum 6)

Continuation of 330. Advanced conversational problems primarily for teachers. For participants in the Living-Language Group program only. (Offered Summer Quarter only.)

441, 442, 443 Drama (3,3,3)

W. Wilson

Historical development of the drama in Spain from its beginnings to the present. Selected texts, collateral reading, and reports. 441: 1150-1635. 442: 1635-1681. 443: 1681 to the present. (Offered 1961-62.) Prerequisite, 203 or equivalent.

451, 452, 453 Spanish Literature Since 1700 (3,3,3)

451: 1700 through the Romantic Period. 452: 1850-1898. 453: 1898 to the present. (Offered 1962-63.) Prerequisite, 203 or equivalent.

461, 462, 463 Spanish Literature of the Golden Era (3,3,3)

W. Wilson

Poetry, drama, historical narrative, and prose fiction of the Golden Era from 1498 to 1681. 461: Poetry. 462: Drama. 463: Prose. (Offered 1963-64.) Prerequisite, 203 or equivalent.

471, 472, 473 Individual Authors (3,3,3)

This course is devoted to one or more representative Spanish or Spanish-American authors of any period according to the needs of the students. (Offered when demand is sufficient.) Prerequisite, 203 or equivalent.

481, 482, 483 Spanish-American Literature (3,3,3)

Alcala, Vargas-Baron

General survey. 481: The colonial period and early years of independence. 482: The middle years of the nineteenth century. 483: The twentieth century. (Offered alternate years; offered 1961-62.) Prerequisite, 203 or equivalent.

485 Romanticism, Realism, and Naturalism in Spanish America (3)

Vargas-Baron

Leading Romantic and Costumbrista authors (1810-1890). (Offered alternate years; offered 1962-63.) Prerequisite, 203 or equivalent.

- 486 The Modernista Movement in Spanish-American Literature (3)** **Vargas-Baron**
The leading poets, essayists, and novelists of South America (1890-1920). (Offered alternate years; offered 1962-63.) Prerequisite, 203 or equivalent.
- 487 The Contemporary Spanish-American Novel (3)** **Vargas-Baron**
(Offered alternate years; offered 1962-63.) Prerequisite, 203 or equivalent.

Courses for Graduates Only

- 511 The Poema de Mio Cid (3)** **Sousa**
(Offered alternate years; offered 1961-62.)
- 512 Epic Poetry (3)** **Sousa**
Epic material in old Spanish literature and its later treatment in poetry and drama. Special investigations and reports. (Offered alternate years; offered 1961-62.)
- 513 The Spanish Ballad (3)** **Ayllon**
Origin and evolution. (Offered alternate years; offered 1961-62.)
- 515 The Contemporary Spanish-American Short Story (3)** **Alcala**
(Offered 1962-63.)
- 521 The Renaissance in Spain (5)** **Ayllon**
(Offered alternate years; offered 1963-64.)
- 531 Literary Problems (2-5, maximum 20)**
Field (see A-H below) must be specified in registering. For individual conferences under this number (but not for group projects) permission of the Executive Officer is required. Maximum credit to be 5 in any one subdivision.
- | | |
|-----------------------|--------------------------------|
| A. Middle Ages | E. Nineteenth century |
| B. Renaissance | F. Twentieth century |
| C. Golden age | G. Spanish colonial literature |
| D. Eighteenth century | H. Latin America |
- 541, 542, 543 History of the Spanish Language (2,2,2)** **Sousa**
Phonological, morphological, and syntactical development of the Spanish language from its origins to the present. (Offered 1962-63.)
- 571 The Modern Essay (3)** **Alcala, Vargas-Baron**
Leading essayists of Spain and Spanish America. (Offered 1963-64.)
- 572 Modern Poetry (3)** **Alcala, Vargas-Baron**
Romanticism and later movements in Spanish and Spanish-American poetry. (Offered 1963-64.)
- 600 Research (2-5, maximum 20)**
- 700 Thesis (*)**
- 702 Degree Final (0)**
Limited to students completing a nonthesis degree program.

COURSES IN ENGLISH TRANSLATION

Recommended as appropriate minor or supporting studies for students majoring in other departments. Courses in English translation are not applicable toward undergraduate or graduate majors in the Department of Romance Languages and Literature.

FRENCH

- 416 Rabelais and Montaigne in English (3)** **Keller**
- 417 Racine and Moliere in English (3)** **Chessex**
- 418 Literature of the Enlightenment in English (3)** **Hanzeli**
Voltaire, Rousseau, Diderot.
- 419 Nineteenth-Century Fiction in English (3)** **Weiner**
- 420 Twentieth-Century Fiction in English (3)** **Weiner**

ITALIAN

- 318 Italian Literature in English (5)** **Budel**
- 384 Renaissance Literature of Italy in English (2)** **Budel**
Lectures and collateral reading. May be counted as an elective in an English major or minor.
- 481, 482 Dante in English (2,2)** **Budel**
May be counted as an elective in an English major or minor.

ROMANCE LITERATURE

- 460 The Literature of the Renaissance in English (5)** **Keller**
The place of the Renaissance in the formation of modern attitudes and values. Principal intellectual trends are studied through the literature, particularly the writings of Erasmus, Castiglione, Vives, Rabelais, Montaigne, and Bacon.

SPANISH

- 315 Latin-American Authors in English (5)** **Vargas-Baron**
An approach to Latin-American civilization and its characteristic values, through lectures and the reading and discussion of several outstanding literary works in translation.
- 318 Don Quijote in English (3)**
- 345 Spanish Literature of the Renaissance in English (3)** **Ayllon**
A study of prose and poetry emphasizing the picaresque novel, the theater, and the secular and religious poets.
- 420 Contemporary Spanish Essay and Drama in English (3)** **Alcala**
Unamuno, Ortega, and Lorca: their critique of modern culture. Existentialist anticipations; mass man and dehumanized art.

SCANDINAVIAN LANGUAGES AND LITERATURE

Executive Officer: SVERRE ARESTAD, 215 Denny Hall

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 Norwegian or Swedish, as well as courses in Danish and literature courses in English.

In all Scandinavian languages, courses 101-102 and 103 may be taken with 104-105 and 106 to make 5-credit courses.

BACHELOR OF ARTS

At least 45 credits in the major language are required, of which 20 must be in upper-division courses.

NORWEGIAN MAJOR. Required courses are: Norwegian 101-102, 103, 104-105, 106, 220, 221, 222, 300, 301, 302, 450, and 490. Other courses may be substituted with the approval of the adviser.

SWEDISH MAJOR. Required courses are: Swedish 101-102, 103, 104-105, 106, 220, 221, 222, 300, 301, 302, 409, 450, and 490. Other courses may be substituted with the approval of the adviser.

MASTER OF ARTS

Students who intend to work toward this advanced degree must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. 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**

- 101-102, 103 Elementary Danish (3-3,3)**
Fundamentals of oral and written Danish.
- 104-105, 106 Danish Reading (2-2,2)**
Should accompany 101-102, 103.
- 220, 221, 222 Introduction to Danish Literature (2,2,2)** **Arestad**
Modern drama and prose fiction. Prerequisite, -102 or equivalent.
- 300, 301, 302 Modern Danish Literature (3,3,3)** **Arestad**
Reading of representative works from nineteenth- and twentieth-century Danish literature. Prerequisite, 222 or equivalent.
- 490 Supervised Reading (*, maximum 5)** **Arestad**
Prerequisite, 302 or permission.

NORWEGIAN

- 101-102, 103 Elementary Norwegian (3-3,3)** **Arestad**
Fundamentals of oral and written Norwegian.
- 104-105, 106 Norwegian Reading (2-2,2)**
Should accompany 101-102, 103.

- 220, 221, 222 Introduction to Norwegian Literature (2,2,2)** Arestad
Modern drama and prose fiction. Prerequisite, -102 or equivalent.
- 223, 224, 225 Conversational Norwegian (2,2,2)**
Prerequisite, -102 or equivalent.
- 226, 227, 228 Norwegian Composition (1,1,1)**
Prerequisite, -102 or equivalent.
- 300, 301, 302 Modern Norwegian Literature (*, maximum 3, *, maximum 3, *, maximum 3)** Arestad
Reading of representative works of Ibsen, Bjørnson, Lie, Garborg, Hamsun, Undset, Bojer, Dunn, and others. Prerequisite, 222 or equivalent.
- 303, 304, 305 Advanced Conversational Norwegian (2,2,2)**
Prerequisite, 225 or equivalent.
- 306, 307, 308 Advanced Norwegian Composition (1,1,1)**
Prerequisite, 228 or equivalent.
- 450 History of Norwegian Literature (3)** Arestad
Prerequisite, 222 or equivalent.
- 490 Supervised Reading (*, maximum 5)** Arestad
Prerequisite, 302 or permission.

SWEDISH

- 101-102, 103 Elementary Swedish (3-3,3)** Johnson
Fundamentals of oral and written Swedish.
- 104-105, 106 Swedish Reading (2-2,2)**
Should accompany 101-102, 103.
- 220, 221, 222 Introduction to Swedish Literature (2,2,2)** Johnson
Modern drama and prose fiction. Prerequisite, -102 or equivalent.
- 223, 224, 225 Conversational Swedish (2,2,2)**
Prerequisite, -102 or equivalent.
- 226, 227, 228 Swedish Composition (1,1,1)**
Prerequisite, -102 or equivalent.
- 300, 301, 302 Modern Swedish Literature (2,2,2)** Johnson
Representative works of Strindberg, Fröding, Heidenstam, Lagerlöf, Söderberg, Lagerkvist, Moberg, and other recent and contemporary writers. Prerequisite, 222 or equivalent.
- 303, 304, 305 Advanced Conversational Swedish (2,2,2)**
Prerequisite, 225 or equivalent.
- 306, 307, 308 Advanced Swedish Composition (1,1,1)**
Prerequisite, 228 or equivalent.
- 409 Recent Swedish Literature (3)** Johnson
Drama, poetry, prose fiction. Prerequisite, 302 or equivalent.
- 450 History of Swedish Literature (3)** Johnson
Prerequisite, 222 or equivalent.
- 455 History of the Swedish Language (3)** Johnson
Prerequisite, 222 or equivalent.
- 490 Supervised Reading (*, maximum 6)** Johnson
Prerequisite, 302 or permission.

SCANDINAVIAN COURSES IN ENGLISH

- 100 Modern Scandinavian Culture (2)** Arestad
- 230 Scandinavian Culture and Institutions (2)** Arestad
- 309, 310, 311 The Scandinavian Novel in English (2,2,2)** Arestad, Johnson
From the sagas through representative novels of Strindberg, Jacobsen, Hamsun, Lagerlöf, Nexö, Undset, Dunn, Gunnarsson, and Laxness.
- 382 Twentieth-Century Scandinavian Drama in English (2)** Johnson
Outstanding twentieth-century plays, with introductory consideration of Ibsen and Strindberg.
- 480 Ibsen and His Major Plays in English (2)** Arestad
- 481 Strindberg and His Major Plays in English (2)** Johnson

COURSES FOR GRADUATES ONLY

- 500, 501, 502 Old Icelandic (2,2,2)** Johnson
- 507 Ibsen (*, maximum 5)** Arestad
- 508 The Scandinavian Novel (*, maximum 5)** Arestad
- 510, 511, 512 Strindberg (2,2,2)** Johnson

515 Modern Danish and Norwegian Poetry (3)	Arestad
516 Modern Danish and Norwegian Drama (3)	Arestad
517 Modern Swedish Poetry (3)	Johnson
518 The Swedish Novel (3)	Johnson
700 Thesis (*)	

SOCIAL WORK, PREPROFESSIONAL PROGRAM

Adviser: RICHARD G. LAWRENCE, 103 Social Work Hall

A major leading to the Bachelor of Arts degree in the field of social welfare is available through the Division of General Studies, College of Arts and Sciences (see page 92).

Seniors planning to prepare for professional social work should make application to the School of Social Work early in the Winter Quarter preceding the Autumn Quarter in which they wish to begin their graduate education. See *School of Social Work Bulletin* for a complete description of professional courses and admission requirements.

COURSES FOR UNDERGRADUATES

- 391 **Supervised Study (2-6, maximum 6)** Lawrence
A selected social welfare problem, studied academically and in a field agency. Prerequisites, 400 and permission.
- 400 **Field of Social Welfare (5)** Lawrence, Parsons
The origin, development, and present status of social service programs, with particular emphasis on the relationship of program resources, human needs, and the methods through which services are provided. Prerequisite, upper-division standing.
- 401 **Principles of Interviewing (2)** Lawrence, Reiss
The interview as a basic method of helping people. Analysis of interviews from case records, with the objectives 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, upper-division standing.

SOCIOLOGY

Executive Officer: ROBERT E. L. FARIS, 108A Smith Hall

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 major and minor academic fields for students in the College of Education; see the *College of Education Bulletin*.

The Washington Institute for Sociological Research and the Office of Population Research are both part of the Department of Sociology. The Research Institute is available to graduate students and faculty. Its projects are primarily in long-term basic research. The Office of Population Research has been designed to expand the research and student-training programs in the fields of demography and human ecology as well as to carry on basic research. As a part of the training program, laboratory facilities and research fellowships are available to qualified students.

The Department cooperates with other departments and schools in a program leading to the degree of Master of Urban Planning (see the *Graduate School Bulletin*).

BACHELOR OF ARTS

In this elective curriculum, at least 50 credits in sociology are required. Courses must include: 110 or 310; 223; 230 or 331 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.

A 2.30 grade-point average in sociology courses is required for graduation in this curriculum.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. 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 being admitted 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 or a program of related courses. At least 9 of the sociology credits must be in courses numbered 500 and above. A reading knowledge of a foreign language is required. 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 taken. The master's thesis must be submitted seven weeks before the degree is to be granted.

DOCTOR OF PHILOSOPHY. Candidates must complete a program of courses approved by the Department. Half of the credits, including the thesis, must be in courses numbered 500 and above. The residence requirement is three years, two of them at the University of Washington. One of the two years must be spent in continuous full-time residence.

A reading knowledge of two foreign languages is required.

A completed thesis must be submitted seven weeks before the degree is conferred.

A general, written examination will cover four fields of specialization, one of which must be research methods and social statistics. A minor sequence or a program of related courses in addition to the fields, is also required.

A final oral examination is given on the completion of all requirements, including the thesis.

COURSES FOR UNDERGRADUATES

- 110 Survey of Sociology (5)** Larsen
Basic principles of social relationships. Primarily for freshmen and sophomores. Not open to students who have taken 310.
- 223 Social Statistics (5)** Costner, Miyamoto, Watson
Methods and sources for quantitative investigation. Prerequisite, 110 or 310.
- 230 Introduction to Human Ecology (5)** Cohen, Schmid, Watson
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)** Miyamoto
Socialization of the individual; social processes; and interactions of persons in groups. Prerequisites, 110 or 310, and Psychology 100.
- 270 Social Disorganization and Deviant Behavior (5)**
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)** Larsen
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.

- 331 Population Problems (5)** **Watson**
Major quantitative and qualitative problems of population in contemporary society. Prerequisite, 110 or 310.
- 352 The Family (5)**
The family as a social institution; personality development within the family; marriage adjustment; changing family patterns; disorganization and reorganization. Prerequisite, 110 or 310.
- 362 Race Relations (5)** **Barth, Noel**
Interracial contacts and conflicts. Prerequisite, 110 or 310.
- 365 Urban Community (5)** **Cohen**
Comparative and analytic study of organization and activities of urban groups. Prerequisite, 110 or 310.
- 371 Criminology (5)** **Hayner, Schrag**
Factors associated with crime and delinquency. Criminological theories. Survey of correctional facilities and programs. Visits to agencies and institutions. Prerequisite, 110 or 310.
- 389 Reading in Selected Fields (2-5, maximum 15)**
Open only to qualified undergraduate students by permission.
- 410 History of Sociological Thought (5)** **Catton**
Contributions of individual theorists (from Comte to the present) to a coherent body of testable hypotheses; emphasis on cumulative development of concepts and principles, emergence of sociology as a science, probable future developments. Prerequisite, 110 or 310.
- 411, 412, 413 Systematic Sociology (3,3,3)** **Dodd**
Prerequisite, permission.
- 414 Sociological Theory (5)** **Schrag**
Modern scientific theory applied to social behavior; sociology as a natural science. Prerequisite, 20 credits in social science.
- 415 Theory of Social Organization (5)** **Wager**
Prerequisite, 110 or 310.
- 420 Methods of Sociological Research (5)** **Faris**
A general survey of the principal methods of research used in sociology, and of special issues and problems in methodology. Prerequisite, 223 or equivalent.
- 421 Methodology: Case Studies and Interviewing (3)** **Larsen**
Prerequisites, 223 and 420.
- 423 Advanced Social Statistics (5)** **Costner**
Application of statistical methods to the analysis of sociological data. Prerequisite, 223.
- 425J Graphic Techniques in the Social Sciences (5)** **Schmid**
Theory and practice of presenting statistical data in graphic form. Construction of bar, line, pictorial, and other types of charts and graphs, and areal distribution maps, etc., used for research and publicity purposes in sociology, geography, economics, education, and community planning. Offered jointly with the Department of Geography. Prerequisite, 223 or approved equivalent.
- 426 Methodology: Quantitative Techniques in Sociology (3)** **Costner**
Measures of relationships among variables and among attributes; calculation techniques; application to typical sociological problems; interpretation. Prerequisites, 223 and 423, or equivalents.
- 427 Statistical Classification and Measurement (3)** **Costner**
Application of statistical principles and methods to problems of classification and measurement in social research. Prerequisite, 423 or equivalent.
- 428-429 Sampling and Experimentation (3-3)** **Costner**
Application of statistical principles and methods to problems of sampling and experimentation in social research. Prerequisite, 423 or equivalent.
- 430 Human Ecology (5)** **Cohen, Schmid**
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.
- 440 Primary Interaction and Personal Behavior (5)** **Faris**
Social sources of cooperative motives; social basis of the self; nature of primary groups; institutional roles; exceptional and unconventional roles; methodology. Prerequisite, 110 or equivalent.
- 442 Public Opinion (3)** **Larsen**
The nature of public opinion; formation and measurement of public opinion; the operation of public opinion polls. Prerequisite, 240 or equivalent.
- 443 Mass Communication (5)** **Larsen**
Control, structure, and functioning of mass media of communications as a force in social life; methods of research. Prerequisite, 240 or equivalent.
- 445 Social Movements (3)** **Miyamoto**
Social movements as collective enterprises to establish new social orders; types, formation, and organization of movements. Prerequisite, 240 or equivalent.
- 447 Social Control (5)**

- 448 Sociometric Analysis and Group Structure (5)** **Schrag**
Analysis of the theory and techniques used in the description and experimental investigation of group structure and process. Study of formation, organization, cohesion, and disorganization of social groups through sociometric techniques. Prerequisites, 223, 240, and senior standing.
- 450 Contemporary American Institutions (5)** **Wager**
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)** **Catton**
Forces causing social change; basic trends in American life. Prerequisite, 15 credits in social science.
- 453 Social Factors in Marriage (3)** **Leik**
Review and analysis of empirical research in courtship and marriage, marital adjustment, and specific areas of marriage and family life. Prerequisites, 223 and 352.
- 455 Housing in the American Community (5)** **Cohen**
- 458 Institutional Forms and Processes (5)** **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 and upper-division standing.
- 459 Comparative Social Systems: Latin America (3)** **Hayner**
Unique social values; differential changes in social systems of village, town, and city; special attention to Mexico and other Latin countries. Prerequisites, 110 or 310 and senior standing.
- 460 Social Differentiation (5)** **Barth**
Analysis of societal organization based on sex, age, residence, occupation, community, class, caste, and race. Prerequisite, 110 or 310.
- 463 American Negro Community (3)** **Barth**
Internal structure of class and caste patterns; resultant personality and institutional development. Prerequisite, 110 or 310.
- 466 Industrial Sociology (5)** **Wager**
Analysis of work plants such as factory, office, and store; work group processes and applied problems. Prerequisite, 110 or 310.
- 467 Industry and the Community (3)** **Wager**
Nature of the economy. Theories of industry-community relations. Varieties and types of relations between industry and community. Process of power. Impact of technological change. Levels of worker participation in the community. Integration of industry and other communal institutions. Prerequisite, 110 or 310.
- 468 Sociology of Occupations and Professions (5)** **Wager**
Frameworks for study of occupations and professions; occupational structure and mobility in American society and relation to adult socialization and career development; occupational and professional associations and society. Prerequisites, 240 and 15 hours of social science.
- 472 Juvenile Delinquency (5)** **Hayner, Schrag**
Factors in delinquency. Juvenile courts, detention, probation. Programs of treatment and prevention. Volunteer services. Prerequisite, 371 or equivalent.
- 473 Corrections (5)** **Hayner, Schrag**
Social control of crime. Police, courts, institutions and correctional agencies for adult offenders. Individual and group therapies. Captive communities. Prerequisite, 371 or equivalent.
- 474 Probation and Parole (3)** **Hayner**
Probation and parole systems. Roles of judges, parole board members, and professional personnel. Criteria for parole selection. Attitudes toward probationers and parolees. Prerequisite, 473 or equivalent.
- 475 Problems in the Administration of Correctional Programs (3)** **Schrag**
Objectives, and relative effectiveness of alternative procedures aimed at their attainment. Participation in research designed to evaluate correctional policies. Observation of administrative methods. Prerequisites, 371 and 473, or equivalents.
- 499 Undergraduate Research (2-5, maximum 15)**
Open only to qualified undergraduate students by consent of instructor.

COURSES FOR GRADUATES ONLY

- N510, N511, N512 Departmental Seminar (0,0,0)**
Monthly meetings with reports on independent research by graduate students and staff members.
- 521, 522, 523 Seminar in Methods of Sociological Research (3,3,3)**
Prerequisites, 223, 414, and 420, or equivalents.
- 528 Seminar in Selected Statistical Problems in Social Research (3)**
Prerequisite, 426.
- 530 Advanced Human Ecology (3)** **Schmid**
Prerequisites, 230 or 430, and 15 credits in social science.

- 531 Demography (3)** **Schmid**
Research problems in population and vital statistics. Prerequisites, 331 and 15 credits in social science or permission.
- 540 Seminar in Social Interaction (3)** **Miyamoto**
Evaluation of studies in social interaction. Analyzes types of interaction, interaction models, and such major variables as roles, self-conception, and the influence of norms. Prerequisite, 440 or equivalent.
- 541 Seminar on Small Group Research (3)** **Miyamoto**
Theories, methodology, and studies in the area of small group research. Covers such topics as interaction channels, group cohesion, group locomotion, and consensus in groups. Prerequisite, permission.
- 543 Communications Seminar (3)** **Larsen**
Sociological research in mass communication. Emphasis on the role of groups in providing norms and networks in the flow of information and influence from the mass media. Prerequisite, 443 or equivalent.
- 550, 551, 552 Marriage and the Family (3,3,3)** **Leik**
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.
- 566, 567 Industrial Sociology Seminar (3,3)** **Wager**
Research training in industrial sociology. Readings and field projects. Prerequisite, 466 or equivalent.
- 571 Correctional Communities (3)** **Hayner**
Prerequisites, 371 and 473, or equivalent.
- 572 Analysis of Criminal Careers (3)** **Hayner**
Personal and social factors in criminal maturation and reformation. Prerequisites, 371 and 473, or equivalent.
- 573 Crime Prevention (3)** **Hayner**
Prerequisites, 371 and 472, or equivalent.
- 574 Seminar in Methods of Criminological Research (3)** **Schrag**
Provides training in the technical analysis of published research in criminology; designs and processes studies in parole prediction, prediction of prison adjustment, and prediction of treatment effect. Prerequisite, permission.
- 599 Reading in Selected Fields (2-5, maximum 15)**
Open only to qualified graduate students by permission.
- 600 Research (2-5)**
Original field projects carefully planned and adequately reported. Certain projects can be carried on in connection with the Institute for Sociological Research or the Office of Population Research. Open only to qualified graduate students by permission.
- 700 Thesis (*)**

SPEECH

Executive Officer: HORACE G. RAHSKOPF, 209 Parrington Hall

The Department of Speech offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. In addition, it offers, for students in the College of Education, major and minor academic fields in speech education, and major academic fields for elementary education majors in both speech education and speech and hearing therapy; see the *College of Education Bulletin*.

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 of literature, teaching of speech, radio-TV speech, speech correction, and hearing.

Related courses are given in many other parts of the University. Courses in drama, communications, education, English, biology, philosophy, psychology, and sociology are of particular importance to speech students.

BACHELOR OF ARTS

In this elective curriculum at least 50 credits in approved courses are required. These must include: 100, 140, 220, 230, 310, 332, 400, and one additional course in speech science (e.g., 411, 415, 470, 480). The student must pass proficiency tests in speaking and oral reading, which should normally be taken not later than the junior year. In case of individual need, additional specific courses may be re-

quired. The student will elect certain of his courses in humanities, social sciences, and sciences with approval of the Department. During the junior and senior years, he may specialize in one or more of the areas of speech study.

Students majoring in speech who wish to specialize in speech and hearing therapy are required to complete the following courses: 100, 310, 400, 470, 471, 473, 475, 474-484 (9 credits), 480, 481, 482, 485, 487, and at least one of the following: 140, 220, 230, 332, or 415.

Students who transfer to a major in speech after entrance to the University must present a cumulative grade-point average of 2.50 in all University courses unless otherwise authorized by the Department, and students majoring in speech are required to maintain a grade-point average of 2.50 in all speech courses.

ADVANCED DEGREES

Students who intend to work toward an advanced degree in speech must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin* and present a background of undergraduate study acceptable to the Department.

MASTER OF ARTS. Candidates must complete 36 credits of approved course work of which 12 credits should be in a minor or supporting courses from closely related areas. Thesis research may be in any subdivision of the field.

DOCTOR OF PHILOSOPHY. Two major areas of concentration are available: (1) public address and rhetoric including argumentation and discussion, and (2) speech correction and hearing including experimental phonetics.

COURSES FOR UNDERGRADUATES

GENERAL

- 100 Basic Speech Improvement (5)** **LaRusso**
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 communication, with emphasis on the more informal uses of speech in daily life. Frequent conferences with instructor. Required for the Provisional Teaching Certificate.
- 400 Backgrounds in Speech (3)** **Rahskopf**
The nature of speech as an activity of daily life and as a field of study.
- 499 Undergraduate Research (1-5, maximum 15)**
Prerequisite, permission. Field must be indicated in registration.
- | | |
|----------------------------|-----------------------|
| A. Voice and phonetics | E. Teaching of speech |
| B. Public address | F. Radio-TV speech |
| C. Argument and discussion | G. Speech correction |
| D. Oral interpretation | H. Hearing |

VOICE AND PHONETICS

- 110 Voice Improvement (2)** **Tiffany**
Study and application of principles basic to good voice quality, vocal variety, and the effective use of the voice in reading and speaking. Group and individual listening and speaking projects make use of laboratory and recording facilities. Two class meetings and one laboratory hour per week.
- 111 Articulation Improvement (2)** **Tiffany**
Introductory study of the sounds of American English and application of this study to individual problems in articulation and pronunciation. Analysis and correction of sub-standard speech patterns. Group and individual listening and speech projects with laboratory and recording facilities. Two class meetings and one laboratory hour per week.
- 211 Phonetics (3)** **Tiffany**
Phonetic and phonemic analysis of the sound system of the English language with special application to the problems of speech improvement and speech correction. (Offered alternate years; offered 1962-63.)
- 310 Voice Science (5)** **Tiffany**
Study of the basic speech mechanism in action, and description of speech sounds. Emphasis is placed upon articulatory phonetics with a brief introduction to acoustic phonetics.
- 411 Anatomy of the Vocal Organs and Ear (5)** **Palmer**
Structure and function of the organs concerned with phonation, articulation, and hearing. Not open to students who have credit for 495. Prerequisite, 5 credits in anatomy, physiology, or zoology, or permission.

- 415 Advanced Voice and Phonetics (5)** **Tiffany**
Detailed description of the sound system of English with particular emphasis on variations of speech sounds in context and applications of acoustic phonetics. Prerequisites, 111, or 211, or 310, or permission.

RHETORIC AND PUBLIC ADDRESS

- 220 Introduction to Public Speaking (5)** **Nilsen**
A beginning course in public speaking, emphasizing choice and organization of material, sound reasoning, audience analysis, oral style, and delivery. Frequent speeches before the class, followed by conferences with instructor. Not open to students who earned credit for 120 prior to Autumn Quarter, 1961.
- 320 Public Speaking (5)** **Franzke**
Continuation of 220, 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. Primarily for students not majoring in speech. Prerequisite, 220 (formerly 120) or permission.
- 327 Extempore Speaking (3)** **Franzke**
Primarily for students in engineering and industrial design. Not open to other students in the College of Arts and Sciences, nor to those who have taken 220 (formerly 120).
- 420 Advanced Public Speaking (5)** **Baskerville**
Preparation and delivery of longer public speeches. Emphasis on style, thought organization, and proof. Analysis of model speeches. Prerequisite, 220 (formerly 120) or permission.
- 421 Persuasion (3)** **Pence**
Extended study of audience analysis with application of principles of attention and motivation to influencing audience attitudes and action. Practice in persuasive speaking. Prerequisite, 220 or 230, or permission.
- 425, 426 American Public Address (5,5)** **Baskerville**
Historical and critical study of principal speakers and speeches and of their relationship to American political, social, and intellectual life. A lecture, discussion, and reading course. 425: Revolutionary period to late nineteenth century; 426: late nineteenth century to the present. (425 not offered 1961-62.)
- 428 British Public Address (5)** **Strother**
Historical and critical study of principal speakers and speeches and of their relationship to British political and social life. Rhetorical analysis of speeches. (Offered alternate years; offered 1961-62.)

ARGUMENT AND DISCUSSION

- 230 Essentials of Argument (5)** **Pence**
Argument as a technique in the investigation of social problems; evidence, proof, refutation, persuasion; training in argumentative speaking.
- 235 Parliamentary Procedure (3)** **Franzke**
Methods of organizing and conducting public meetings, based on *Robert's Rules of Order*.
- 332 Principles of Group Discussion (3 or 5)** **Crowell, Nilsen**
Discussion as an everyday community activity, with emphasis on the informal cooperative problem-solving methods of committee, conference, and round-table groups. Only 3 credits can be obtained through extension; 5 credits in residence. Prerequisite, 100 or 230, or permission.
- 335 Methods of Debate (3)** **Strother**
Introduction to debate as a method of advocacy with study and practice of its more important forms. Concurrent registration in 339 not permitted. Prerequisite, 220 or 230, or permission.
- 339 Forensic Workshop (1-3, maximum 9)** **Strother**
Discussion of selected public questions before audiences on and off campus. No more than 3 credits may be earned in one year, and these should normally be distributed through at least two consecutive quarters. The student should confer with the workshop director before completing registration. Prerequisite, permission.
- 432 Problems of Discussion Leadership (3)** **Crowell**
A critical analysis of leadership in committee and conference, with emphasis on the development of speech effectiveness in the cooperative achievement of goals. Prerequisite, 332.
- 436 Methods of Public Discussion (5)** **Franzke**
Includes practice in the use of the panel, symposium, lecture forum and debate forum. Prerequisite, 220 (formerly 120) or 230.

ORAL INTERPRETATION OF LITERATURE

- 140 Oral Interpretation (5)** **Grimes**
Development and use of fundamental techniques for analysis and reading aloud of prose and poetry. (Formerly 240.)
- 340 Oral Interpretation of Prose (3)**
Study of literary prose, especially narrative, for the purpose of developing ability to communicate its full meaning to an audience. Prerequisite, 140.
- 345 Choral Speaking (3)** **Grimes**
Group speaking as a classroom method in teaching speech and literature; selection and use of prose and poetry materials for group utterance. (Offered alternate years; offered 1962-63.) 140 is recommended.

349 Oral Interpretation Workshop (2, maximum 10)

Presentation of literature before audiences on and off campus. The student should confer with the workshop director before completing registration. Prerequisite, 140.

440 Oral Interpretation of Poetry (3)

Grimes

Problems of interpretation pertaining to oral presentation of various types of poetry. Prerequisite, 140 or 340.

TEACHING OF SPEECH**359 Speech in the Classroom (3)**

Nelson

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 144O.

457 Debate and Discussion Problems in High School and College (2½)

Evaluation of debate and discussion in high school and college and consideration of methods of directing them; specific consideration of debate questions in current use; bibliographies, analyses, and briefs. (Offered Summer Quarter only.)

RADIO-TV SPEECH**260 Radio-TV Speech (3)**

Bird, Hogan

The development and practice of speech techniques in radio and television broadcasting. Three lecture and discussion periods and two one-hour laboratory periods each week. Prerequisite, 110 and 111, or permission.

361 Advanced Radio-TV Speech (3)

Bird, Hogan

Analysis of audience situations, group discussions, and audience participation programs. Prerequisite, 260 or permission.

SPEECH CORRECTION**N79 Speech Clinic (0)**

Palmer

Open to any University student with hearing difficulties or speech problems such as stuttering, lisping, or similar defects. Meetings are arranged after interview with the instructor for individual or group instruction.

170 Directed Observation—Speech and Hearing Therapy (1)

For premajors desiring general orientation in speech and hearing therapy.

470, 471 Speech Correction (3 or 5, 5)

Carrell, Hanley

Nature, etiology, and therapy of disorders of speech. 470: introduction, developmental, and functional disorders, cleft palate. 471: dysphasia, dysarthria, dysphonia, stuttering. 470 prerequisite for 471 except by permission. Only 3 credits can be obtained in 470 through extension; 5 credits in residence.

473 Diagnostic Methods in Speech Correction (5)

Wingate

Prerequisite, 471.

474 Clinical Practice in Speech Correction (1-5, maximum 15)

Kunze

Total undergraduate credits in 474 and 484 together cannot exceed 20 credits. Prerequisites, 471 and 473, which may be taken concurrently.

475 Stuttering (2)

Wingate

Nature, etiology, and treatment of stuttering. Prerequisite, 470 or permission.

476 Language Development of the Child (3)

Wingate

Principles of growth and development with emphasis on normal and abnormal speech and language development. (Offered alternate years; offered 1962-63.)

478 Interview Techniques for Speech and Hearing Rehabilitation (3)

Wingate

(Offered alternate years; offered 1961-62.)

HEARING**480 Introduction to Hearing (3 or 5)**

Hanley

Description of normal audition; elementary structure and function of the hearing mechanism; types of deficient hearing and their effects on speech. Only 3 credits can be obtained through extension; 5 credits in residence.

481, 482 Principles and Methods of Aural Rehabilitation (5,5)

Palmer

481: comprehensive study of the principles of aural rehabilitation, with emphasis on the nature of the problems involved and the needs of individuals with hearing loss. 482: continued study of principles with emphasis upon the techniques of speech reading, auditory training, speech therapy for the hard of hearing as well as the instrumentation utilized. Prerequisite, 480; 481 prerequisite for 482 except by permission.

484 Clinical Practice in Aural Rehabilitation (1-5, maximum 15)

Palmer

Total undergraduate credits in 474 and 484 together cannot exceed 20 credits. Prerequisites, 480 and 481.

485 Medical Background for Audiology (2)

Diseases and injuries of the ear resulting in reduced audition. (Offered alternate years; offered 1962-63.)

487 Audiometry (3)

Hanley

Theory and practice of audiometry and other methods of measuring hearing. Prerequisite, 480 or permission.

488 Hearing Aid Evaluation and Selection (2)

Hanley

Types and characteristics of group and individual hearing aids; special tests and fitting procedures. (Offered alternate years; offered 1962-63.) Prerequisite, 487 or permission.

COURSES FOR GRADUATES ONLY

- N500 Departmental Seminar (0)**
Reports of research by graduate students and staff members.
- 501 Introduction to Graduate Study in Speech (3)** **Crowell**
- 510 Experimental Phonetics (3)** **Tiffany**
Application of experimental methods to research in voice and phonetics; critical review of research literature. (Offered alternate years; offered 1962-63.) Prerequisite, 415 or permission.
- 521 Studies in Greek and Roman Rhetoric (5)** **Rahskopf**
Critical analysis of writings on rhetoric by Plato, Aristotle, Cicero, Quintilian, and others.
- 522 Studies in Medieval and Renaissance Rhetoric (5)** **LaRusso**
A critical analysis of selected persons, works, and topics related to the development of rhetorical theory during the Middle Ages and the Renaissance. (Offered alternate years; offered 1961-62.) Prerequisite, 521.
- 523 Studies in Modern Rhetoric (5)** **Penco**
Critical analysis of writings on rhetoric by Cox, Wilson, Bacon, Campbell, Blair, Whately, and others. (Offered alternate years; offered 1962-63.) Not open to students who received credit for 522 prior to Spring Quarter, 1957.
- 525 Rhetorical Criticism (3)** **Baskerville**
The history and method of rhetorical criticism. Application of critical standards to notable British and American speeches. Prerequisite, 425, 426, or 428.
- 530 Experimental Problems in Public Address (3-5)** **Penco**
Analysis of theoretical considerations in audience and listening behavior; application of measurement techniques. (Offered alternate years; offered 1961-62.) Prerequisites, 430 or equivalent, and permission.
- 540 Studies in Oral Interpretation (3)** **Grimes**
Critical analysis of writings by Sheridan, Walker, Rush, Delsarte, Bell, Curry, Emerson, and others. (Offered alternate years; offered 1961-62.) Prerequisite, 440.
- 550 Studies in Speech Education (3)** **Nelson**
Philosophical, curricular, and methodological problems of speech instruction. (Offered alternate years; offered 1962-63.)
- 570, 571, 572, 573 Organic Disorders of Speech (3,3,3,3)**
Etiology, diagnosis, and therapy. 570: morphogenic disorders, especially cleft palate and dental malocclusions. (Offered alternate years; offered 1962-63.) 571: dysarthria, especially cerebral palsy. (Offered alternate years; offered 1961-62.) 572: aphasia. (Offered alternate years; offered 1962-63.) 573: pathologic disorders of voice. (Offered alternate years; offered 1961-62.) Prerequisite for each course, 471 or permission.
- 574 Advanced Clinical Practice in Speech Correction (1-5, maximum 10)**
Prerequisite, 474
- 575 Stuttering Therapy (3)** **Carrell**
(Offered alternate years; offered 1962-63.) Prerequisite, 475 or permission.
- 578 Psychogenic Factors in Speech and Hearing Disorders (2)** **Wingate**
Psychogenic factors as etiological agents in speech and hearing disorders. (Offered alternate years; offered 1961-62.) Prerequisite, Psychology 305 or permission.
- 580 Advanced Audiology (5)** **Hanley**
Methods, techniques, and instruments used in the measurement of auditory function. Review of research literature. (Offered alternate years; offered 1962-63.) Prerequisite, 480 or permission.
- 584 Advanced Clinical Practice in Aural Rehabilitation (1-5, maximum 10)**
Prerequisite, 484.
- 587 Advanced Audiometry (2)** **Hanley**
Special diagnostic and predictive tests of auditory functions; clinical practice. (Offered alternate years; offered 1961-62.) Prerequisite, 487.
- 588 Advanced Audiometry (2)** **Hanley**
Clinical diagnostic procedures involved in threshold finding, pre-surgical and surgical audiometry and electroencephalographic audiometry. Prerequisite, 487. (Offered alternate years; offered 1962-63.)
- 589 Advanced Audiometry (2)** **Hanley**
Clinical procedures utilized in the measurement of auditory recruitment and aural overload. Special attention will be placed on the Rainville masking technique. Prerequisite, 487. (Offered alternate years; offered 1961-62.)
- 590 Seminar in Theory of Speech (2, maximum 6)** **Rahskopf**
Prerequisite, 400 or permission. (Offered 1962-63.)
- 591 Seminar in Voice and Phonetics (2, maximum 6)** **Tiffany**
Prerequisite, permission. (Offered 1961-62.)
- 592 Seminar in Rhetoric and Public Address (2, maximum 6)**
Prerequisite, permission. (Offered 1961-62.)
- 593 Seminar in Argument and Discussion (2, maximum 6)**
Prerequisite, permission. (Offered 1963-64.)

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| <p>594 Seminar in Oral Interpretation (2, maximum 6)
Prerequisite, permission. (Offered 1962-63.)</p> <p>595 Seminar in the Teaching of Speech (2, maximum 6)
Prerequisite, permission. (Offered 1961-62.)</p> <p>597 Seminar in Speech Correction (2, maximum 6)
Prerequisite, permission. (Offered 1962-63.)</p> <p>598 Seminar in Hearing (2, maximum 6)
Prerequisite, permission. (Offered 1962-63.)</p> <p>600 Research (*)</p> <p>700 Thesis (*)</p> | <p>Grimes</p> <p>Nelson</p> |
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ZOOLOGY

Executive Officer: ARTHUR W. MARTIN, 142 Johnson Hall

The Department of Zoology offers programs 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 major academic field in biology is offered for students in the College of Education, in addition to a minor academic field in zoology; see the *College of Education Bulletin*.

Biology 101J-102J and Zoology 114, 118, 118L, and 203 are given to meet the needs of other students and will not be counted toward departmental majors. All biology courses except 101J-102J may be used for zoology credit. Fisheries 301 and 402 may be used for zoology credit upon request.

The Department should be notified of intention to take a degree in zoology not later than the end of the junior year.

BACHELOR OF ARTS

In the elective curriculum, at least 36 credits in zoology are required. Courses must include: 111, 112, 400 or 458, 453-454 or 456, and Biology 451 and 451L. 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: 111, 112, 400, 433, 434, 453-454, and 456; Biology 451 and 451L; Botany 112; a year of college physics; Chemistry 160, 170, 231, 232, 241, 242; and a year of college French or German. The group requirements of the College of Arts and Sciences must also be fulfilled.

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 2.50 and a 3.00 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 as outlined in the *Graduate School Bulletin*.

COURSES FOR UNDERGRADUATES

"Permission," in course descriptions below, refers to permission of instructor.

BIOLOGY

101J-102J General Biology (5,5)

Kohn, Kruckeberg, Orians

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)** **Gartler**
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)** **Cloney**
Structure and function of the cell. Prerequisite, Botany 112 or Zoology 112.
- 401L Cytology Laboratory (2)** **Cloney**
Prerequisite, 401 concurrently and permission.
- 451 Genetics (3)** **Roman**
A general course recommended for majors in the biological sciences. Prerequisite, 10 credits in biological science.
- 451L Genetics Laboratory (2)**
Must be accompanied by 451.
- 452 Cytogenetics (3)** **Roman**
Chromosomal behavior in relation to genetics. Prerequisite, 451 or permission.
- 452L Cytogenetics Laboratory (2)** **Hawthorne**
Must be accompanied by 452.
- 453 Topics in Genetics (2, maximum 6)**
Current problems and research methods. Prerequisite, 451, organic chemistry, or permission.
- 454 Evolutionary Mechanisms (3)** **Kruckeberg**
Mutation, isolation, and natural selection as determinants of evolutionary change; emphasis on plants. (Offered alternate years; offered 1962-63.) Prerequisites 451.
- 472 Principles of Ecology (3)** **Edmondson**
Population biology, interactions between organisms in biological communities, relationship of community to environment. Prerequisite, 10 credits in upper-division biological science or permission.
- 472L Ecology Laboratory (2)** **Edmondson**
Prerequisite, 472 concurrently and permission.
- 473 Limnology (5)** **Edmondson**
Biological, physical, and chemical features of lakes and other inland waters. Prerequisites, Zoology or Botany 112, one year of college chemistry, upper-division standing, and permission.

ZOOLOGY

- 111, 112 General Zoology (5,5)** **Edmondson, Griffiths, Osterud, Whiteley**
Introduction to general principles of zoology and to major groups of animals. 111: invertebrate phyla through molluscs; protoplasm and cell metabolism; mitosis; principles of embryology. 112: annelids through chordates; gametogenesis, genetics; speciation; organ systems; evolution; ecology. Prerequisite for 112: 111.
- 114 Evolution (2)** **Martin**
General survey of evolution of animals, including man. For nonmajors.
- 118 Survey of Physiology (5)** **Martin**
Elementary human physiology. For nonmajors.
- 118L Elementary Physiology Laboratory (1)** **Martin**
Specifically for physical education majors. May be taken by others only with permission. Prerequisite, 118 concurrently.
- 204 Forest Zoology (5)** **Larson**
A nonlaboratory general zoology course with emphasis on arthropods and chordates as the groups of greatest practical importance in the forest fauna. Prerequisites, Botany 111, 115, 216.
- 208 Elementary Human Physiology (5)** **Flørey**
Each organ system is described and its function illustrated in the laboratory. Prerequisite, freshman chemistry.
- 330 Natural History of Marine Invertebrates (5)** **Kohn**
A field and laboratory course emphasizing the habits, habitats, identification, and inter-relationships of marine animals. Prerequisite, permission.
- 362 Natural History of Vertebrates (5)** **Snyder**
A field and laboratory course on the natural history of fishes, amphibians, reptiles, birds, and mammals. Prerequisites, permission and 112, or 10 credits in biological sciences.
- 381 Microtechnique (4)** **Cloney**
Critical evaluation of each step in microslide preparation. Prerequisites, 112 and permission.
- 400 General Physiology (5)** **Flørey**
Cell environment, metabolism and growth, irritability, general phenomena of organ function. Prerequisites, Chemistry 232, Physics 103 and 109 (or high school physics) and 10 credits in biological sciences.
- 402 History of Zoology (3)**
(Not offered 1961-62.) Prerequisite, 20 credits in zoology or permission.
- 403 Comparative Vertebrate Histology (5)**
Microscopic anatomy of the tissues and organs of vertebrates. Prerequisite, 112. (Not offered 1961-62.)

- 409 Ethology (3)** **Orians**
Perception, nervous integration, movement, motivation, instinct, learning, and social behavior in animals, with emphasis upon their evolution and selective significance. Prerequisite, permission.
- 409L Ethology Laboratory (2)** **Orians**
Experiments with orientation, motivation, learning, and social behavior in animals, including special student research problems. Prerequisite, permission. (May be taken concurrently with 409.)
- 423 Protozoology (5)** **Osterud**
Introduction to the biology of the Protozoa, with emphasis on free-living forms. Prerequisite, 112 and upper-division standing, or permission.
- 432 Marine Invertebrate Zoology (8)**
Morphology and phylogeny of marine invertebrates. (Offered at Friday Harbor, Washington, Summer Quarter only.) Not open to students who have had 433, 434. Prerequisite, 112.
- 433, 434 Invertebrate Zoology (5,5)** **Illg, Kohn**
Morphology and phylogeny of invertebrates exclusive of terrestrial arthropods. Not open to students who have had 432. Prerequisites, 112, and permission.
- 435 Parasitology (5)** **Osterud**
A general course covering the principles of parasitism and the major groups of animal parasites. Prerequisite, 112 and upper-division standing, or permission.
- 444 Entomology (5)** **Hatch**
Structure, classification, and economic relationships of insects. Prerequisite, 112 or permission. (Not offered 1961-62.)
- 453-454 Comparative Anatomy of Chordates (5-5)** **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)** **Haggis**
A descriptive and comparative study of development of chordates. Prerequisite, 112.
- 457 Experimental Morphogenesis (3)** **Fernald**
An experimental analysis of mechanics of development on the morphological level. Prerequisite, 456.
- 457L Experimental Morphogenesis Laboratory (2)** **Fernald**
Prerequisite, permission.
- 458 Vertebrate Physiology (6)** **Martin**
Emphasis on mammalian organ systems. Prerequisites, two quarters of college chemistry and 20 credits in biological sciences.
- 462 Vertebrate Systematics and Life Histories (5)** **Orians, Snyder**
Systematics, evolution, life history, distribution, behavior, and interrelationships of vertebrate animals. Prerequisites, 112 or equivalent, and permission.
- 464 Natural History of Birds (5)** **Richardson**
A lecture, laboratory, and field course. Prerequisites, 111, 112, and permission. (Offered alternate years; offered 1962-63.)
- 465 Natural History of Mammals (5)** **Richardson**
A lecture, laboratory, and field course. (Alternates with 464; not offered 1961-62.) Prerequisites, 111, 112, and permission.
- 498 Special Problems in Zoology (1-5, maximum 15)**
Prerequisites, 30 credits in zoology and permission.

COURSES FOR GRADUATES ONLY

"Permission," in course descriptions below, refers to permission of instructor.

BIOLOGY

- 501 Advanced Cytology (5)** **Cloney**
Prerequisite, permission.
- 508 Cellular Physiology (3)** **Whiteley**
The cell membrane and permeability, cytoplasmic physiology, intracellular energetics and biosynthesis, physiology of cell division, cell movement. Prerequisite, Zoology 400 or permission.
- 508L Cellular Physiology Laboratory (2)** **Whiteley**
Prerequisite, concurrent registration in Biology 508 or 509, and permission.
- 509 Cellular Physiology (3)** **Whiteley**
Chemistry and physiology of the interkinetic and dividing nucleus, nucleocytoplasmic interactions, physiology of differentiated cells. (Biology 508 and 509 may be elected separately, or in either sequence.) Prerequisite, Zoology 400 or permission.
- 573 Topics in Limnology (2)** **Edmondson**
Prerequisite, permission. May be repeated for credit.

ZOOLOGY

- 506 Topics in Experimental Embryology (2, maximum 6)**
Prerequisite, permission.
- 516 Chemical Embryology (3)** Whiteley
Physiology of larval development, oöplasmic segregation; differentiation of macromolecular substances; cellular and tissue interactions; nuclear and hormonal control mechanisms in development. Prerequisite, permission.
- 516L Chemical Embryology Laboratory (2)** Whiteley
Must be accompanied by 516.
- 517 Chemical Embryology (3)** Whiteley
Sex determination; biochemistry of gametogenesis; sperm metabolism; fertilization; mechanisms and syntheses in cleavage. (Zoology 516 and 517 may be elected separately or in either sequence.) Prerequisite, permission.
- 517L Chemical Embryology Laboratory (2)** Whiteley
Must be accompanied by 517.
- 520, 521, 522 Seminar (1,1,1)**
- 533 Advanced Invertebrate Zoology (6)**
The rich and varied invertebrate fauna of the San Juan Archipelago is studied, emphasizing systematics and ecology, with opportunity for developing individual research problems. (Offered at Friday Harbor, Washington, Summer Quarter only.) Prerequisite, 10 credits in invertebrate zoology or equivalent.
- 534 Topics in Advanced Invertebrate Zoology (2)** Illg
Advanced considerations in morphology, ecology, phylogeny of invertebrates; emphasizing current developments. Prerequisites, 434 or equivalent, and permission.
- 536 Advanced Invertebrate Embryology (6)**
Morphological and experimental studies of development of selected types of marine invertebrates. (Offered at Friday Harbor, Washington, Summer Quarter only.) Prerequisites, 433, 434, and 456.
- 537 Comparative Invertebrate Physiology (3)** Floroy
Selected chapters of comparative physiology of nerve, muscle, circulation, respiration, renal function, and hormone action. Prerequisites, 400 and 434, or permission.
- 537L Comparative Invertebrate Physiology Laboratory (2)** Floroy
Exercises in kymographic, oscilloscopic and other recording of mechanical, electrical, and metabolic phenomena of invertebrate organ function. Must be accompanied by 537. Prerequisite, permission.
- 538 Advanced Invertebrate Physiology (6)**
Physiological bases of ecology, evolution, and tolerance to stress, as illustrated by many diverse forms. (Offered at Friday Harbor, Washington, Summer Quarter only.) Prerequisites, chemistry through organic and 10 credits in invertebrate zoology, or equivalent.
- 554 Advanced Vertebrate Morphology (3)** Snyder
Current problems and trends in vertebrate anatomy emphasizing functional relationships. Prerequisites, -454, 456, and permission.
- 558 Comparative Vertebrate Physiology (6)** Martin
Advanced studies with particular reference to cold-blooded vertebrates and to birds. Prerequisites, 400 or 458, and permission.
- 578 Advanced Ecology (5)** Orians
Fundamental properties of populations; population regulation; community productivity and structure. Prerequisites, Biology 472 or equivalent, and permission.
- 581 Systematic Zoology (4)** Illg
History, principles, and procedures of zoological taxonomy; review of biological bases of phylogeny; history and principles of zoological nomenclature. Prerequisite, permission.
- 598 Seminar in General and Comparative Physiology (2)** Floroy
Study and discussion of classical and current literature in the field of general and comparative physiology. Prerequisites, 400, 433, 434, and permission.
- 600 Research (*)**
- 700 Thesis (*)**



RESERVE OFFICERS TRAINING PROGRAM

RESERVE OFFICERS TRAINING PROGRAM

THE DEPARTMENT of Military Science, Naval Science, and Air Science conduct the ROTC programs under agreements between the University and the United States Army, Navy, and Air Force. At the University these programs are coordinated by the Dean of the College of Engineering.

The University requires male students to take at least two years of ROTC training. (For exemptions, see page 246.) The two-year basic programs offered by the Departments of Military Science and Air Science, and the four-year course offered by the Department of Naval Science, satisfy this requirement. In addition to the basic courses, the Department of Military Science and the Department of Air Science each offers for selected students, an advanced course which leads to commissioning in the Army or Air Force. The four-year course of the Department of Naval Science, also for selected students, leads to commissioning in the Navy or Marine Corps.

Students enrolling in Naval ROTC, and those who take the advanced course of Army or Air Force ROTC must agree in writing to complete the course of training and accept a commission in the service for which they are trained. *The honoring of this commitment is a condition of graduation from the University.*

MILITARY SCIENCE

Professor of Military Science: Col. GUINN B. GOODRICH, 318 Miller Hall

The basic program (freshmen and sophomores) of the Military Science Department requires drill one hour each week. Classroom military studies for freshmen are not required Autumn Quarter. One hour per week is required Winter Quarter, and two hours of classroom work are required Spring Quarter. As a substitute for these classroom hours in Autumn Quarter of the freshman year, registration is required in a selected 3-credit or 5-credit course in another department. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*. Sophomores are required to attend two hours per week in classroom military studies. The advanced course requires classroom attendance four hours each week, drill one hour each week, and a summer camp of six weeks in the Summer Quarter following the junior year. In addition to the regular courses of instruction, light aircraft flight instruction is offered to a limited number of senior cadets, when federal funds are available.

When a cadet completes the advanced course, and is graduated from the University, he receives a commission as second lieutenant in the United States Army Reserve. A cadet graduating with a high academic rating and an outstanding ROTC record may be designated a Distinguished Military Graduate and may, thereby, be qualified for commissioning in the regular army.

Cadets for the advanced course are selected from applicants who show special aptitude during the basic course. In certain cases, previous active service in the army may be substituted for the basic course in qualifying for enrollment in the advanced course. To enroll in the advanced course, a cadet must meet requirements as to scholarship, physical fitness, and leadership potential, and must be of such an age that he may qualify for graduation and completion of ROTC training before his twenty-eighth birthday. The advanced ROTC cadet receives an allowance of approximately \$27.00 per month throughout the two years in which he is under contract and is paid approximately \$106 for summer-camp training.

Cadets are issued the regulation U.S. Army uniform, with distinctive ROTC insignia, and are required to wear the uniform on drill day each week. Upon registration a rental of \$25.00 is required for the uniform and other government equipment issued. Upon return of the uniform and other equipment, a refund is made. The Army furnishes textbooks and equipment needed for military science instruction.

Inquiries about the Army ROTC should be addressed to the Professor of Military Science.

COURSES FOR UNDERGRADUATES

101, 102, 103 Military Science I—Basic (0,1,2)

Organization of the Army and ROTC; United States Army and National Security; individual weapons and marksmanship; leadership training.

201, 202, 203 Military Science II—Basic (2,2,2)

American military history; map and aerial photograph reading; introduction to basic tactics and techniques; leadership training and exercise of command.

301, 302, 303 Military Science III—Advanced (3,3,3)

Small unit tactics and communications; organization, function, and mission of the arms and services; military teaching principles; leadership; exercise of command.

360 Military Science III—Advanced Camp (3)

Six-weeks training at an army installation. Emphasis is placed on field training and the practical application of subjects taught during the academic year. (Offered Summer Quarter only.)

401, 402, 403 Military Science IV—Advanced (3,3,3)

Supply and evacuation; troop movements; motor transportation, command and staff; estimate of the situation and combat orders; military intelligence; the military team; training management; military administration; military justice; role of the United States in world affairs and the present situation; leadership; officer indoctrination; and exercise of command.

NAVAL SCIENCE

Professor of Naval Science: Col. T. J. COLLEY, USMC, 309 Clark Hall

The Department of Naval Science offers to selected students a four-year program, taken concurrently with their work toward a baccalaureate or higher degree, which prepares them for commissions in the regular or reserve components of the United States Navy or Marine Corps.

NAVAL ROTC STUDENTS (CONTRACT PROGRAM)

At the beginning of Autumn Quarter each year the Professor of Naval Science selects approximately fifty students to enter the Naval ROTC contract program. These students must have the following general qualifications:

1. Be eligible for admission to the University.
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, which include vision of 20/20, no cavities in teeth, and height between 64 and 78 inches.

4. Be unmarried and agree to remain unmarried until commissioned.

In addition, with the consent of their parents, they must agree to complete the four-year course unless released by the Secretary of the Navy, and to make one summer cruise of approximately three weeks. This cruise is normally scheduled during the summer between the junior and senior years.

Students who attain junior or senior standing in the Naval ROTC must complete the program as a condition of graduation from the University unless excused or dismissed from this requirement by authority of the Secretary of the Navy.

Entrance to the Naval ROTC program entitles students to deferment from the draft under the Selective Service Act of 1948 as amended. The Naval ROTC student, upon completion of program requirements, is required to accept a commission in the United States Naval Reserve or Marine Corps Reserve, if offered. Active-duty of reserve officers commissioned from the Naval ROTC contract program is contingent upon the needs of the service at the time of graduation.

Naval ROTC students have the status of civilians entering into a mutual agreement 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 the uniforms and books used in naval science courses.

Students in the Naval ROTC program may enter any University curriculum that can normally be completed in four years. Students working toward a bachelor's degree in certain fields which may require more than four years for completion, such as engineering, architecture, and education, are eligible for entrance to the program. The Navy Class A swimming test must be passed and mathematics through trigonometry satisfactorily completed (unless previously completed in high school) by the end of the second year.

All Naval ROTC students take the same naval science courses for the first two years. Students who plan to be commissioned in the Marine Corps or Marine Corps Reserve take Marine Corps 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 the Naval Reserve take Supply Corps subjects during this period.

High school graduates interested in entering the Naval ROTC program should write to the Professor of Naval Science during the summer before University entrance.

MIDSHIPMEN, USNR (REGULAR PROGRAM)

Each year, at the beginning of Autumn Quarter, the Navy assigns a limited number of students to the Naval ROTC Unit, University of Washington, for appointment as midshipmen in the Naval Reserve. Qualifications are, in general, the same as those listed above for contract students. Midshipmen are appointed after a nation-wide competitive examination held in December of each year and selection by state selection committees. They are deferred from induction until graduation and receive tuition, all textbooks, uniforms, and \$50.00 per month for four years. Application to take the annual examination must reach the appropriate Naval activity before a deadline date set in November of each year for entrance to college the following year.

Applications and further information about the regular program may be obtained from the University Naval ROTC headquarters.

COURSES FOR UNDERGRADUATES

111, 112, 113 Naval Orientation (3,3,3)

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)**
Gun ammunition; principles of gun construction; semi-automatic and rapid fire guns; introduction to fire control; theory and operation of fire control systems; general concept of anti-submarine warfare.
- 213 Naval Weapons (3)**
Guided missiles; nuclear weapons; concept and organization of the attack carrier striking force; mine warfare; concept and organization of amphibious warfare; space technology.
- 214 Weapons Laboratory (1)**
Practical work on naval weapons and fire control computers.

LINE

- 311 Naval Engineering (3)**
Principles of ship propulsion, marine steam power plants and auxiliary systems; elements of stability and damage control.
- 312 Naval Engineering and Navigation (3)**
Engineering department organization and administration plus marine internal combustion and nuclear power plants; terrestrial navigation including dead reckoning, piloting and electronic developments.
- 313 Navigation (3)**
Celestial navigation; theory and practical work required in the daily work of the navigator at sea.
- 411 Naval Operations (3)**
Tactical communications; rules of the nautical road; maneuvering board; screening instructions.
- 412 Naval Operations and Administration (3)**
Combination of fleet communications, weather, and management.
- 413 Naval Administration (3)**
Leadership, management, and the naval judicial system.

MARINE CORPS

- 321 Evolution of the Art of War (3)**
Introduction to the art of war; broad resumé of the evolution and history of warfare from the earliest recorded battles through the Mexican War.
- 322 Evolution of the Art of War (3)**
A continuation of the resumé of the history of warfare with emphasis on the Civil War; brief coverage of the Spanish American War, World War I and World War II.
- 323 The Study of Modern Basic Strategy and Tactics (3)**
An introduction to the theoretical principles of modern strategy and tactics; brief resumé of U.S. foreign and military policy; extensive discussion of marine division organization.
- 421 Amphibious Warfare (3)**
Introduction to the development of amphibious warfare; detailed study of the amphibious campaigns of World War II; resumé of the Korean conflict.
- 422 Amphibious Warfare (3)**
A study of the detailed planning for an amphibious operation including Marine Corps Staff organizations, command relationship and task organizations.
- 423 Military Justice and Leadership (3)**
Introduction to the basic principles of the Uniform Code of Military Justice; a study of the principles of military leadership.

SUPPLY CORPS

- 331 Organization and Logistic Navy Accounting and Finance (3)**
Introduction to supply corps; national security organization; Navy Bureau system; supply demand control point concept; naval finance; appropriation, property and cost accounting.
- 332 Advanced Navy Accounting and Basic Supply Afloat (3)**
Naval accounting; balance sheet reconciliation; reports and returns; organization and administration of supply afloat; afloat requirements determination and stock control.
- 333 Advanced Supply Afloat (3)**
Afloat custody and stowage and security of material; surveys; issues, transfers, and financial management of afloat inventories; special supply systems.
- 431 Ship's Stores Afloat: Clothing and Small Stores (3)**
Operating procedures, records, reports, and returns for ship's stores afloat; operating procedures, records, reports, and returns for clothing and small stores afloat.

AIR SCIENCE

Professor of Air Science: Col. ROY W. GUSTAFSON, Physics Annex 3

The basic program of the Department of Air Science consists of three quarters of military classroom instruction on the Foundations of Air Power. These are offered in the Spring Quarter of the first year and the Autumn and Winter Quar-

ters of the second year. During each of the other three quarters, the student must substitute an approved University course in lieu of Air Science. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*. Leadership laboratory is required each of the six quarters of the basic program and is conducted one hour each week.

After completing the basic program, students may apply for entrance to the Advanced Air Force ROTC, which is designed to select and train college men as future Air Force officers. A limited number of outstanding students, including veterans, are selected for the advanced program, and each student selected must:

1. Successfully complete the two-year Basic Air Force ROTC program or, if a veteran, complete as much of the basic program as determined by the Professor of Air Science.
2. Execute a written agreement with the government to complete the advanced program, contingent upon remaining in the University, and to attend a summer training camp at the time specified.
3. Request immediate discharge from any reserve or National Guard organization other than the Air Force Reserve (according to law, discharge from any reserve unit must be granted).
4. Agree to complete all requirements for appointment as a second lieutenant before his twenty-eighth birthday. This age requirement is reduced to twenty-six and one-half years for flying personnel.
5. Successfully complete general survey and screening tests as prescribed.
6. Be selected by the Professor of Air Science and the President of the University.
7. Complete the advanced program as a prerequisite for graduation from the University.

The two-year advanced course requires classroom attendance four hours a week, plus one hour of practice in the leadership laboratory. In the first year of the advanced course, cadets study the knowledge and skills required of a junior officer in the Air Force with special emphasis on staff duties and leadership. This includes Air Force leadership doctrine, staff organization and functions, communicating, instructing, problem solving techniques, leadership principles and practices, and the military justice system. Between the junior and senior years, advanced-course cadets are required to attend a four-week summer camp. During the senior year, cadets participate in a study of global relations of special concern to the Air Force officer, with attention to such aspects as weather, navigation, geography, international relations, and their service as commissioned officers.

Advanced Air Force ROTC students are paid subsistence allowances of approximately \$27.00 a month. While attending summer camp they are paid at the rate of \$75.00 a month and are furnished travel to and from the camp, subsistence, housing, uniforms, and medical attention.

Students in the basic program are furnished complete uniforms of the type worn by Air Force personnel. Students in the advanced program are furnished officers' uniforms which become their personal property when commissioned. They are normally required to wear the uniform on drill days; wearing it to ROTC classes other than drill is optional. The Air Force furnishes all textbooks used in air science courses. At the time of registration each student must pay a \$25.00 rental, which, except for a \$2.50 laundry and cleaning charge to students in the basic program, is refunded when the uniform and textbooks are returned undamaged.

Inquiries about enrollment or other information should be addressed to the Professor of Air Science.

COURSES FOR UNDERGRADUATES

FOUNDATIONS OF AIR POWER AND FUNDAMENTALS OF AEROSPACE WEAPON SYSTEMS

133 Air Science 1—Basic (2)

A general survey of air power designed to provide an understanding of the elements and potentials of aerospace power. An introduction to elements of an aircraft, aerodynamics, and space vehicles. Leadership laboratory.

231 Air Science 2—Basic (2)

An outline of professional opportunities in the USAF. Also included are the background of the military policy of the United States and the current national organization for defense. Aerospace missiles and aircraft, their propulsion systems, and the types of warheads used with aerospace weapon systems are also introduced. Cadet noncommissioned officer training.

232 Air Science 2—Basic (2)

An introduction to the principles, mechanics, and implications of chemical, biological, and nuclear weapons and warfare; and the defensive, strategic, and tactical organizations and operations of the USAF, including modern targeting and electronic warfare. Also introduces problems, mechanics, and military implications of future space operations, and contemporary aerospace military thought. Cadet noncommissioned officer training.

AIR FORCE OFFICER DEVELOPMENT**301 Air Science 3—Advanced (3)**

Staff organization and functions and the skills required for effective staff work, with emphasis on communication. The course includes both principles and practice. Cadet junior officer training.

302 Air Science 3—Advanced (3)

Continuation of the study of staff work with emphasis on report writing and group problem solving. The course includes an introduction to military justice. Cadet junior officer training.

303 Air Science 3—Advanced (3)

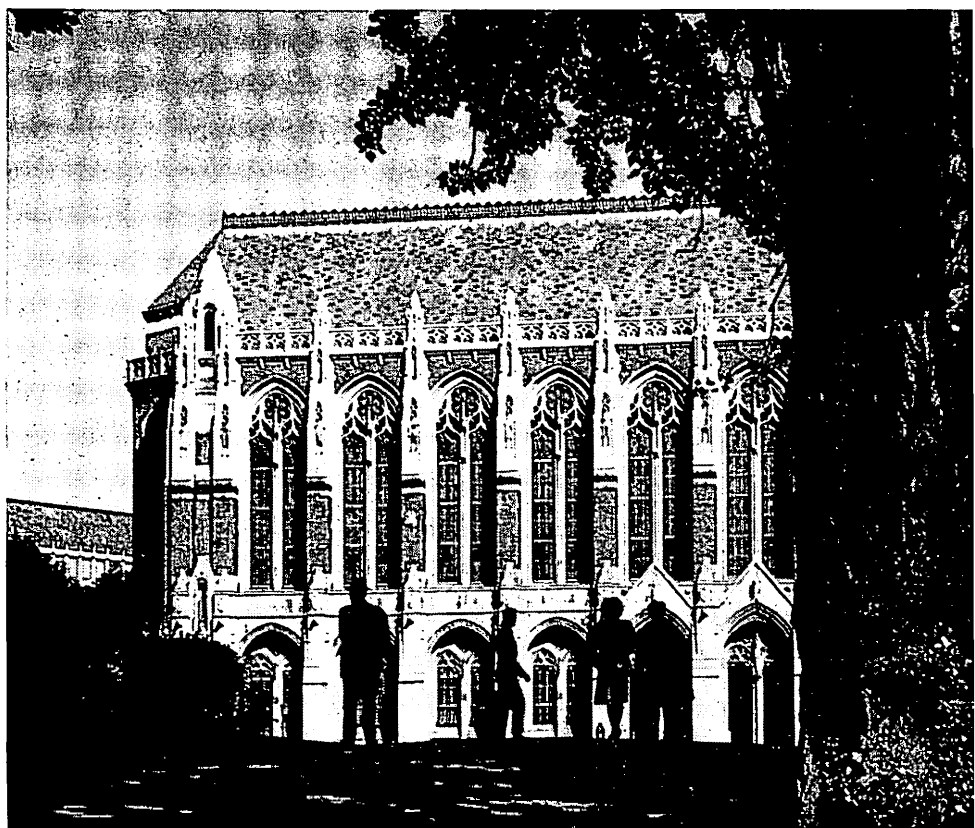
Basic psychological and sociological principles of leadership and their application to leadership practice and problems. Cadet junior officer training.

304 Air Science 3—Advanced Camp (3)

Four weeks training at an Air Force base; familiarization with duties and problems encountered by the Air Force junior officer.

491, 492, 493 Air Science 4—Advanced (3,3,3)

Military application of weather and aerial navigation; military aspects of the geography of climate, political geography, and international relations; flight training for pilot candidates; preparation for commissioned service; and cadet senior officer training.



FACULTY
OF THE COLLEGE
OF ARTS AND SCIENCES

FACULTY OF THE COLLEGE OF ARTS AND SCIENCES

(As of September 1, 1961)

A single date following the name indicates the beginning of service in the University. When two dates are given, the second, in parentheses, is the date of promotion to present academic rank.

DEPARTMENT OF ANTHROPOLOGY

- Alexander, James M., 1960, *Acting Instructor of Anthropology*
B.A., 1950, New Mexico; M.S., 1955, Clemson College, South Carolina
- Avis, Virginia, 1959 (1960), *Assistant Professor of Anthropology*
B.A., 1955, New Mexico; M.A., 1958, Ph.D., 1959, Chicago
- Caro, Isabel Sklow, 1960 (1961), *Assistant Professor of Anthropology*
A.B., 1939, M.A., 1950, Chicago
- Garfield, Viola Edmundson, 1937 (1955), *Associate Professor of Anthropology*
B.A., 1928, M.A., 1931, Washington; Ph.D., 1939, Columbia
- Greengo, Robert E., 1957, *Assistant Professor of Anthropology*
A.B., 1948, M.A., 1951, California; Ph.D., 1957, Harvard
- Gunther, Erna, 1923 (1941), *Professor of Anthropology; Director of Washington State Museum*
A.B., 1919, Barnard; A.M., 1920, Ph.D., 1928, Columbia
- Hopen, C. Edward, 1959, *Acting Assistant Professor of Anthropology*
B.A., 1948, British Columbia
- Jacobs, Melville, 1928 (1952), *Professor of Anthropology*
A.B., 1922, City College of New York; A.M., 1923, Ph.D., 1931, Columbia
- Krieger, Alex D., 1960 (1961), *Research Professor of Anthropology*
B.A., 1936, California; M.A., 1939, Oregon; D.Sc., 1954, Univ. Nacional de Mexico
- Li, Fang-kuei, 1949 (1950), *Professor of Chinese Linguistics and of Anthropology*
A.B., 1926, Michigan; A.M., 1927, Ph.D., 1928, Chicago
- Obeyesekere, Gananath, 1961, *Acting Instructor in Anthropology*
B.A., 1955, Ceylon; M.A., 1958, Washington
- Ottenberg, Simon, 1955 (1961), *Associate Professor of Anthropology*
B.A., 1948, Wisconsin; Ph.D., 1957, Northwestern

- Poppe, Nicholas Nikolaevich, 1949 (1950), *Professor of Slavic and Altaic Studies and of Anthropology*
M.A., 1923, Petrograd; Ph.D., 1934, Petersburg University (Russia)
- Ray, Verne Frederick, 1933 (1947), *Professor of Anthropology*
B.A., 1931, M.A., 1933, Washington; Ph.D., 1937, Yale
- Read, Kenneth Eyre, 1957 (1958), *Associate Professor of Anthropology; Acting Executive Officer of the Department of Anthropology*
B.A., 1939, M.A., 1945, University of Sydney; Ph.D., 1948, University of London
- Roys, Ralph L., 1959, *Research Professor of Anthropology*
Ph.B., 1900, Michigan; Hon. L.H.D., 1936, Whitman College
- Spiro, Melford E., 1957, *Professor of Anthropology*
B.A., 1941, Minnesota; Ph.D., 1950, Northwestern
- Valentine, Charles Abernethy III, 1961, *Visiting Assistant Professor of Anthropology*
B.A., 1951, M.A., 1953, Ph.D., 1958, Pennsylvania
- Vaucher, Claude A., 1961, *Acting Instructor of Anthropology*
B.S., Seattle Pacific College, 1952; M.A., 1960, Washington
- Watson, James Bennett, 1955, *Professor of Anthropology*
A.B., 1941, A.M., 1945, Ph.D., 1948, Chicago

SCHOOL OF ART

- Alps, Glen Earl, 1945 (1955), *Associate Professor of Art*
B.A., 1940, Colorado State College of Education; M.F.A., 1947, Washington
- Anderson, Frederick Neil, 1945 (1959), *Associate Professor of Art*
B.A., 1943, Washington; M.F.A., 1954, Minnesota
- Benson, Edna Grace, 1927 (1954), *Associate Professor Emeritus of Commercial Art*
B.A., 1909, M.A., 1923, Columbia
- Bonifas, Paul Ami, 1946 (1959), *Associate Professor Emeritus of Art*
1913, School of Fine Arts; 1914, Swiss School of Ceramics (Renens);
1918, University-Laboratory of Geology (Geneva)
- Brazeau, Wendell Phillips, 1945 (1955), *Associate Professor of Art*
B.F.A., 1933, M.F.A., 1947, Washington
- Caplan, Irwin S., 1958, *Lecturer in Art*
B.A., 1941, Washington
- Curtis, Elizabeth Long, 1930 (1960), *Assistant Professor Emeritus of Art*
B.F.A., 1929, M.F.A., 1933, Washington
- Del Giudice, Frank, 1948, *Lecturer in Art*
Pratt Institute
- Du Pen, Everett George, 1945 (1960), *Professor of Art*
B.F.A., 1937, Yale
- Erickson, John Wilbur, 1956 (1960), *Associate Professor of Art*
B.S., 1941, B.F.A., 1947, M.F.A., 1951, Illinois
- Foote, Hope Lucille, 1923 (1948), *Professor of Art*
A.B., 1920, Iowa State Teachers College; M.A., 1923, Columbia
- Fuller, Steven D., 1946 (1958), *Associate Professor of Art*
B.A., 1939, M.F.A., 1948, Washington
- Gonzales, Boyer, 1954, *Professor of Art; Director of the School of Art; Director of Henry Art Gallery*
B.S. in Arch., 1931, Virginia; Student of McFee and Kuniyoshi
- Hafermehl, C. Louis, 1957 (1960), *Associate Professor of Art*
B.F.A., 1940, Bethany College (Kansas); M.F.A., 1955, Cranbrook Academy of Art (Michigan)
- Hensley, Merdecas Hoover, 1939 (1952), *Lecturer in Art*
B.F.A., 1930, M.F.A., 1938, Washington
- Hill, Raymond Leroy, 1927 (1961), *Professor Emeritus of Art*
Graduate, 1913, Rhode Island School of Design

- Hill, Warren T., 1959 (1960), *Assistant Professor of Art*
B.A., 1950, Washington
- Hixson, William John, 1950 (1958), *Associate Professor of Art*
B.A., 1948, M.F.A., 1950, Oregon
- Isaacs, Walter F., 1922 (1956), *Professor Emeritus of Fine Arts*
B.S.F.A., 1909, James Millikin
- Johnson, Pauline, 1941 (1958), *Professor of Art*
B.A., 1929, Washington; M.A., 1936, Columbia
- Jones, Robert C., 1960, *Instructor in Art*
B.F.A., 1953, M.S., 1959, Rhode Island School of Design
- Mason, Alden C., 1946 (1957), *Associate Professor of Art*
B.A., 1942, M.F.A., 1947, Washington
- Moseley, Spencer Altemont, 1948 (1959), *Associate Professor of Art*
B.A., 1948, M.F.A., 1951, Washington
- Myers, Harold Wm., 1960, *Instructor in Art*
A.B., 1952, San Jose State College; M.F.A., 1959, Mills College
- Patterson, Ambrose McCarthy, 1919 (1947), *Professor Emeritus of Painting; Consultant in Painting*
National School of Art (Melbourne); Juliens, Colorossi, Delacuse, Whistler, Simon, and Lhote Schools of Art (Paris)
- Patterson, Viola Hansen, 1947 (1958), *Associate Professor of Art*
B.A., 1921, B.S. in L.S., B.F.A., 1925, M.F.A., 1947, Washington
- Penington, Ruth Esther, 1928 (1951), *Professor of Art*
B.F.A., 1927, M.F.A., 1929, Washington
- Pizzuto, Eugene C., 1957 (1960), *Assistant Professor of Art*
B.S., 1950, Wisconsin; M.F.A., 1951, Cranbrook Academy of Art
- Reed, Truman Gervais, 1951 (1955), *Lecturer in Art; Assistant Director of the Henry Art Gallery*
B.A., 1949, Yale
- Rogers, Millard Buxton, 1952 (1961), *Acting Associate Professor of Art*
B.F.A., 1937, M.F.A., 1940, School of the Art Institute of Chicago; M.A., 1940, Chicago
- Smith, Charles Wallace, 1948 (1959), *Associate Professor of Art*
Pratt Institute; M.F.A., 1956, Cranbrook Academy of Art
- Sperry, Robert, 1954 (1960), *Associate Professor of Art*
B.A., 1950, Saskatchewan; M.F.A., 1955, Washington
- Tsutakawa, George, 1946 (1957), *Associate Professor of Art*
B.A., 1937, M.F.A., 1950, Washington
- Welman, Valentine S., 1954 (1957), *Assistant Professor of Art*
B.F.A., 1952, Denver; M.F.A., 1954, Colorado

ASTRONOMY

- Jacobsen, Theodor Siegmundfeldt, 1928 (1952), *Professor of Astronomy*
B.A., 1922, Stanford; Ph.D., 1926, California

DEPARTMENT OF BOTANY

- Blaser, Henry Weston, 1946 (1948), *Associate Professor of Botany*
B.S., 1931, A.M., 1933, Temple; Ph.D., 1940, Cornell
- Frye, Theodore Christian, 1903 (1947), *Professor Emeritus of Botany; Research Consultant*
B.S., 1894, Illinois; Ph.D., 1902, Chicago
- Hitchcock, Charles Leo, 1937 (1944), *Professor of Botany; Executive Officer of the Department of Botany*
A.B., 1927, Pomona College; A.M., 1929, Claremont Colleges; Ph.D., 1931, Washington University
- Kruckeberg, Arthur Rice, 1950 (1960), *Associate Professor of Botany*
B.A., 1941, Occidental College; Ph.D., 1950, California
- Meeuse, Bastiaan Jacob Dirk, 1952 (1960), *Professor of Botany*
B.Sc., 1936, Doctoraal Examen, 1939, Leiden (Holland); Doctor, 1943, Delft (Holland)

Muhlick, Clarence Victor, 1948 (1952), *Lecturer in Botany*
B.S., 1933, Montana

Neushul, Michael, 1960 (1961), *Assistant Professor of Botany*
B.A., 1955, Ph.D., 1959, UCLA

Stuntz, Daniel Elliot, 1940 (1958), *Professor of Botany*
B.S., 1935, Washington; Ph.D., 1940, Yale

Walker, Richard Battson, 1948 (1960), *Professor of Botany*
B.S., 1938, Illinois; Ph.D., 1948, California

DEPARTMENT OF CHEMISTRY

Anderson, Arthur G., Jr., 1946 (1957), *Professor of Chemistry*
A.B., 1940, Illinois; M.S., 1942, Ph.D., 1944, Michigan

Cady, George Hamilton, 1938 (1947), *Professor of Chemistry; Executive Officer of the Department of Chemistry; Director of Bagley Hall Laboratories*
A.B., 1927, A.M., 1928, Kansas; Ph.D., 1930, California

Crittenden, Alden LaRue, 1947 (1960), *Associate Professor of Chemistry*
B.S., 1942, Ph.D., 1946, Illinois

Dauben, Hyp Joseph, Jr., 1945 (1961), *Professor of Chemistry*
B.A., 1937, M.S., 1937, Ohio State; A.M., 1941, Ph.D., 1941, Harvard

Eggers, David Frank, Jr., 1950 (1956), *Associate Professor of Chemistry*
B.S., 1943, Illinois; Ph.D., 1950, Minnesota

Fairhall, Arthur W., 1954 (1958), *Associate Professor of Chemistry*
B.Sc., 1946, Queen's (Kingston, Ontario); Ph.D., 1952, Massachusetts Institute of Technology

Gregory, Norman Wayne, 1946 (1957), *Professor of Chemistry*
B.S., 1940, M.S., 1941, Washington; Ph.D., 1943, Ohio State

Halsey, George Dawson, Jr., 1951 (1958), *Professor of Chemistry*
B.S., 1943, South Carolina; Ph.D., 1948, Princeton

Lingafelter, Edward Clay, Jr., 1939 (1952), *Professor of Chemistry; Associate Dean of the Graduate School*
B.S., 1935, Ph.D., 1939, California

Pearce, Helen Shinn, 1960, *Lecturer in Chemistry*
B.A., 1927, Oregon; M.S., 1932, Washington

Pocker, Yeshayau, 1961, *Professor of Chemistry*
M.Sc., 1949, Hebrew University (Jerusalem); Ph.D., 1953, D.Sc., 1960, University College (London)

Powell, Sargent Gastman, 1919 (1943), *Professor of Chemistry*
B.S., 1916, M.S., 1916, Washington; Ph.D., 1920, Illinois

Rabinovitch, Benton Seymour, 1948 (1957), *Professor of Chemistry*
B.Sc., 1939, Ph.D., 1942, McGill

Ritter, David Moore, 1944 (1959), *Professor of Chemistry*
S.B., 1933, Ph.D., 1937, Chicago

Robinson, Rex Julian, 1929 (1945), *Professor of Chemistry*
B.A., 1925, DePauw; M.A., 1927, Ph.D., 1929, Wisconsin

Schubert, Wolfgang Manfred, 1947 (1958), *Professor of Chemistry*
B.S., 1941, Illinois; Ph.D., 1947, Minnesota

Seiler, Frank John, 1961, *Lecturer and Manager of Administrative Services in Chemistry*
B.S., 1929, Minnesota; M.S., 1939, State University of Iowa

Simpson, William Tracy, 1948 (1957), *Professor of Chemistry*
A.B., 1943, Ph.D., 1948, California

Sivertz, Victorian, 1926 (1949), *Associate Professor of Chemistry; Executive Secretary of the Department of Chemistry*
B.S., 1922, Washington; M.S., 1924, West Virginia; Ph.D., 1926, McGill

Slutsky, Leon Judah, 1961, *Assistant Professor of Chemistry*
A.B., 1953, Cornell; Ph.D., 1959, Massachusetts Institute of Technology

Stout, George H., 1957, *Assistant Professor of Chemistry*
B.S., 1953; M.S., 1954; Ph.D., 1956, Harvard

Tartar, Herman Vance, 1918 (1952), *Professor Emeritus of Chemistry*
B.S., 1902, Oregon Agricultural College; Ph.D., 1920, Chicago

Vincow, Gershon, 1961, *Assistant Professor of Chemistry*
A.B., 1956, M.A., 1957, Ph.D., 1959, Columbia

Ware, Frank Edward, 1960, *Lecturer in Chemistry*
B.S., 1921, Montana State; M.S., 1924, Iowa; Ph.D., 1930, Iowa State

Wiberg, Kenneth Berle, 1950 (1958), *Professor of Chemistry*
B.S., 1948, Massachusetts Institute of Technology; Ph.D., 1950, Columbia

DEPARTMENT OF CLASSICS

Densmore, Harvey Bruce, 1907 (1952), *Professor Emeritus of Classics; Research Consultant*

A.B., 1903, Oregon; A.B., 1907, Oxford

Edmonson, Colin Neil, 1960, *Acting Assistant Professor of Classics*
B.A., 1950, Arizona; M.A., 1955, California

Fredricksmeyer, Ernest Adolph, 1961, *Assistant Professor of Classics*
B.A., 1952, Lakeland College; M.A., 1953, Ph.D., 1958, Wisconsin

Grummel, William Charles, 1950 (1955), *Associate Professor of Classics*
A.B., 1937, St. Louis; A.M., 1940, Washington University (St. Louis); Ph.D., 1949, New York

McDiarmid, John Brodie, 1949 (1956), *Professor of Classics; Executive Officer of the Department of Classics*

B.A., 1936, Toronto; Ph.D., 1940, Johns Hopkins

Pascal, Paul, 1953 (1956), *Assistant Professor of Classics*
B.A., 1948, Vermont; Ph.D., 1953, North Carolina

Read, William Merritt, 1927 (1945), *Professor of Classics; Director of the University Press*

A.B., 1923, DePauw; M.A., 1924, Ph.D., 1927, Michigan

Rosenmeyer, Thomas Gustav, 1955 (1960), *Professor of Classics*

B.A., 1944, McMaster (Hamilton, Ontario); M.A., 1945, Toronto; Ph.D., 1949, Harvard

Wyatt, William Frank, Jr., 1960, *Acting Assistant Professor of Classics*
B.A., 1953, Bowdoin College; M.A., 1957, Harvard

SCHOOL OF COMMUNICATIONS

Adams, Edwin Hubbard, 1939 (1950), *Associate Professor of Radio-Television*
B.A., 1927, M.A., 1931, Washington State

Ames, William E., 1957, *Assistant Professor of Journalism;*
(1961) *Acting Director of the School of Communications*
B.S., 1948, South Dakota State College; M.S., 1952, Iowa State

Astel, George Bernard, 1943 (1944), *Assistant Professor Emeritus of Journalism*
B.A., 1923, Washington

Baker, Robert A., 1957, *Lecturer in Advertising*

Benson, Merritt Elihu, 1931 (1948), *Professor of Journalism*
LL.B., 1930, Minnesota; B.A., 1942, Washington

Brier, Howard Maxwell, 1947 (1955), *Associate Professor of Journalism*
B.A., 1925, M.Ed., 1931, Washington

Christian, Byron Hunter, 1926 (1949), *Professor of Journalism*
B.A., 1921, M.A., 1929, Washington

Cranston, Pat, 1954 (1957), *Assistant Professor of Radio-Television*
B.J., 1944, M.J., 1954, Texas

Denis, Robert Alan, 1956 (1960), *Assistant Professor in Advertising*
B.F.A., 1949, Colorado; M.S., 1959, Oregon

Edelstein, Alex, 1955 (1959), *Associate Professor of Journalism*
A.B., 1946, San Francisco State; M.A., 1948, Stanford; Ph.D., 1958, Minnesota

Evans, Trevor, 1958, *Lecturer in Advertising*
B.A., 1934, Washington

Everest, Harold Philip, 1940 (1959), *Professor Emeritus of Journalism*
B.A., 1938, M.A., 1950, Washington

- Hopkins, Thomas Francis, 1956 (1958), *Lecturer in Radio-Television*
B.A., 1949, Teaching Certificate, 1950, Washington; M.A., 1954,
Colorado State College of Education
- McKenzie, Vernon, 1928 (1959), *Professor Emeritus of Journalism*
B.A., 1909, Toronto; M.A., 1914, Harvard
- Murton, Clarence Charles, 1943 (1957), *Lecturer in Journalism*
B.A., 1924, Washington
- Niven, Harold Franklin, Jr., 1958, *Assistant Professor of Radio-Television*
B.A., 1948, Denver; M.A., 1949, Stanford; Ph.D., 1958, Ohio State
- Pearson, Harry S., 1949, *Lecturer in Advertising*
- Ryan, Milo, 1946 (1957), *Professor of Radio-Television*
B.A., 1928, M.A., 1934, Michigan
- Smith, Henry Ladd, 1955, *Professor of Journalism*
Ph.B., 1929, Yale; M.A., 1936, Ph.D., 1946, Wisconsin
- Sprague, Frederick D., Jr., 1957, *Lecturer in Advertising*
B.A., 1942, Washington
- Warner, Daniel S., 1954 (1955), *Associate Professor of Advertising*
B.A. 1928, Michigan; M.S., 1958, Oregon

SCHOOL OF DRAMA

- Carr, Kenneth Mills, 1944 (1953), *Assistant Professor of Drama*
B.A., 1942, Eastern Washington College of Education; M.A., 1945, Washington
- Conway, John Ashby, 1927 (1950), *Professor of Drama*
B.A., 1927, Carnegie Institute of Technology
- Crider, James Roberts, 1952 (1957), *Assistant Professor of Drama*
B.A., 1945, Cornell College (Iowa); M.A., 1950, Washington
- Davis, Alanson Bewick, 1947 (1955), *Lecturer and Stage Designer*
A.B., 1947, Washington
- Falls, Gregory Alexander, 1961, *Professor of Drama; Director of the School of Drama*
B.A., 1943, Park College; M.A., 1949, Ph.D., 1953, Northwestern
- Galstaun, Vanick Samuel, 1950 (1959), *Assistant Professor of Drama*
B.A., 1946, San Francisco State College; M.A., 1948, Washington
- Gray, Robert Simpson, 1939 (1961), *Associate Professor of Drama*
B.A., 1936, M.A., 1938, Washington
- Haaga, Agnes Marie, 1947 (1960), *Associate Professor of Drama*
B.A., 1936, Siena College (Tennessee); M.A., 1952, Northwestern
- Harrington, Donal Francis, 1938 (1952), *Professor of Drama*
B.A., 1928, Montana; M.A., 1933, Columbia
- Hughes, Glenn Arthur, 1919 (1941), *Professor of Drama*
B.A., 1916, Stanford; M.A., 1920, Washington
- Lounsbury, Warren Carson, 1948 (1958), *Lecturer in Drama*
A.B., 1946, Western Reserve; M.A., 1953, Washington
- Siks, Geraldine Brain, 1950 (1961), *Associate Professor of Drama*
B.A., 1935, Central Washington College of Education; M.A., 1940, Northwestern

DEPARTMENT OF ECONOMICS

- Ballesteros, Marto A., 1960, *Assistant Professor of Economics*
B.L., 1950, Madrid; M.A., 1954, Ph.D., 1958, Chicago
- Buechel, Henry Theodore, 1946 (1949), *Associate Professor of Economics*
B.A., 1929, M.A., 1937, Washington State; Ph.D., 1949, Wisconsin
- Cartwright, Philip Windsor, 1947 (1960), *Professor of Economics;*
Associate Dean of the College of Arts and Sciences
A.B., 1940, M.A., 1942, Ph.D., 1950, Stanford
- Crutchfield, James Arthur, Jr., 1949 (1957), *Associate Professor of Economics*
A.B., 1940, M.A., 1942, California (Los Angeles); Ph.D., 1954, California
- Gillingham, John Benton, 1947 (1960), *Associate Professor of Economics;*
Executive Officer of the Department of Economics
A.B., 1939, Washington State; M.A., 1941, Wisconsin

- Gordon, Donald Flemming, 1950 (1957), *Associate Professor of Economics*
B.A., 1944, Saskatchewan; M.A., 1946, Toronto; Ph.D., 1949, Cornell
- Hall, James Kendall, 1930 (1934), *Professor of Economics*
B.A., 1925, M.A., 1926, Oregon; Ph.D., 1929, Stanford
- Hopkins, William Stephen, 1946, *Professor of Economics*;
Director of the Bureau of Labor
B.S., 1925, M.A., 1928, Oregon; Ph.D., 1932, Stanford
- Huber, John Richard, 1939 (1949), *Professor of Economics*
B.A., 1931, College of Wooster; M.A., 1933, Ph.D., 1937, Princeton
- McCaffree, Kenneth Maurice, 1949 (1956), *Associate Professor of Economics*
B.A., 1940, Southwestern College; M.A., 1942, Denver; Ph.D., 1950, Chicago
- Morris, Morris David, 1949 (1961), *Professor of Economics*
A.B., 1941, Ph.D., 1954, California
- Mund, Vernon Arthur, 1932 (1937), *Professor of Economics*
B.B.A., 1928, M.B.A., 1929, Washington; Ph.D., 1932, Princeton
- North, Douglass Cecil, 1950 (1960), *Professor of Economics*;
Director of the Institute for Economic Research
B.A., 1942, Ph.D., 1952, California
- Thornton, Judith Grouse, 1961, *Acting Assistant Professor of Economics*
B.A., 1956, Vassar; M.A., 1958, Ph.D., 1960, Radcliffe
- Worcester, Dean Amory, Jr., 1946 (1951), *Associate Professor of Economics*
A.B., 1939, M.A., 1940, Nebraska; Ph.D., 1943, Minnesota

DEPARTMENT OF ENGLISH

- Adams, Robert Pardee, 1947, *Associate Professor of English*
B.A., 1931, Oberlin; Ph.D., 1937, Chicago
- Anderson, Sylvia Finlay, 1920 (1947), *Assistant Professor of English*
B.A., 1919, M.A., 1923, Washington
- Beal, Maud Layton, 1933 (1952), *Assistant Professor Emeritus of English*
B.A., 1926, M.A., 1929, Washington
- Bell, Marjorie Lawson, 1960, *Acting Instructor in English*
B.A., 1931, Washington
- Bentley, G. Nelson, 1952 (1957), *Assistant Professor of English*
A.B., 1941, M.A., 1945, Michigan
- Bluestone, George, 1957 (1959), *Assistant Professor of English*
B.A., 1949, Harvard; M.F.A., 1951, Iowa; Ph.D., 1956, Johns Hopkins
- Bostetter, Edward Everett, 1940 (1959), *Professor of English*
A.B., 1935, Franklin and Marshall (Pennsylvania); M.A., 1937, Ph.D., 1938, Princeton
- Brown, Malcolm Johnston, 1946 (1946), *Associate Professor of English*
B.A., 1931, Ph.D., 1946, Washington
- Burgess, Janna Potgieter, 1937 (1955), *Assistant Professor Emeritus of English*
B.A., 1912, Iowa; M.A., 1928, Washington
- Burns, Harry Hamilton, 1934 (1948), *Associate Professor of English*
B.A., 1928, Ph.D., 1935, Washington
- Burns, Wayne, 1948 (1954), *Associate Professor of English*
A.B., 1938, Miami (Ohio); A.M., 1940, Harvard; Ph.D., 1946, Cornell
- Clemens, Lois Gerard, 1960, *Acting Instructor in English*
A.B., 1935, Nebraska; M.A., 1956, Washington
- Cornu, Max Donald, 1928 (1953), *Professor of English*
LL.B., 1922, M.A., 1926, Ph.D., 1928, Washington
- Cox, Edward Godfrey, 1911 (1947), *Professor Emeritus of English*; *Editorial Consultant and Managing Editor of Modern Language Quarterly*
B.A., 1899, Wabash College; M.A., 1901, Ph.D., 1906, Cornell
- Duckett, Margaret Ruth, 1947 (1952), *Assistant Professor of English*
A.B., 1926, Winthrop College; M.A., 1941, North Carolina
- Eby, Edwin Harold, 1927 (1947), *Professor of English*
Ph.B., 1923, Chicago; Ph.D., 1927, Washington

- Emery, Donald William, 1934 (1954), *Associate Professor of English; Associate Director of Bureau of School Service and Research*
B.A., 1927, M.A., 1928, Iowa
- Ethel, Garland Oral, 1927 (1958), *Associate Professor of English*
B.A., 1923, M.A., 1927, Ph.D., 1928, Washington
- Fowler, David Covington, 1952 (1959), *Associate Professor of English; Associate Dean of the Graduate School*
B.A., 1942, Florida; M.A., 1947, Ph.D., 1949, Chicago
- Garber, Fredrick Meyer, 1961, *Instructor in English*
B.A., 1957, Boston
- Gerstenberger, Donna Lorine, 1960 (1961), *Assistant Professor of English*
A.B., 1951, Whitman; M.A., 1952, Ph.D., 1958, Oklahoma
- Gould, Florence Jones, 1948 (1958), *Associate Professor of English*
A.B., 1928, M.A., 1931, Oregon
- Guberlet, Muriel Lewin, 1943 (1959), *Assistant Professor Emeritus of English*
A.B., 1910, Bethany College (Kansas); A.M., 1928, Washington
- Hall, James Winford, 1949 (1961), *Professor of English; Chairman of Undergraduate Programs*
A.B., 1937, Kansas City; M.A., 1938, Wisconsin; Ph.D., 1949, Cornell
- Hamilton, Albert Charles, 1952 (1959), *Associate Professor of English*
B.A. (Hons.), 1945, Manitoba; M.A., 1948, Toronto; Ph.D., 1952, Cambridge
- Harrington, Catherine Steta, 1961, *Acting Instructor in English*
B.A., 1952, M.A., 1953, Washington
- Harris, Markham, 1946 (1957), *Associate Professor of English*
A.B., 1929, M.A., 1931, Williams
- Harvey, David Dow, 1961, *Instructor in English*
A.B., 1955, Harvard; M.A., 1958, Columbia
- Hatfield, Glenn Wilson, Jr., 1961, *Instructor in English*
B.A., 1952, M.A., 1956, Ohio State
- Heilman, Robert Bechtold, 1948, *Professor of English; Executive Officer of the Department of English*
A.B., 1927, Lafayette; M.A., 1930, Ohio State; M.A., 1931, Ph.D., 1935, Harvard
- Hilen, Andrew Reuben, Jr., 1945 (1959), *Professor of English; Chairman of Graduate Programs*
B.A., 1937, Washington; Ph.D., 1943, Yale
- Irmscher, William Frederick, 1960, *Associate Professor of English; Director of Freshman English*
B.A., 1941, Louisville; M.A., 1947, Chicago; Ph.D., 1950, Indiana
- Jacobs, Morton Yale, 1956 (1961), *Acting Assistant Professor of English*
A.B., 1950, Cornell
- Jones, Frank William, 1955, *Associate Professor of English and Comparative Literature*
B.A., 1934, Manitoba; Ph.D., 1941, Wisconsin; B.A., M.A., 1955, Oxford
- Kaufman, Helen Andrews, 1930 (1959), *Professor Emeritus of English; Research Consultant*
B.A., 1909, Wilson College (Pennsylvania); M.A., 1911, Indiana; Ph.D., 1934, Washington
- Korg, Jacob, 1955 (1956), *Assistant Professor of English*
B.A., 1943, City College of N.Y.; M.A., 1947, Ph.D., 1952, Columbia
- Kuhn, Bertha Mehitabel, 1940 (1960), *Assistant Professor Emeritus of English*
B.A., 1916, M.A., 1917, North Dakota; Ph.D., 1941, Washington
- LaGuardia, Eric, 1961, *Instructor in English*
A.B., 1952, Hobart (New York); A.M., 1955, Columbia
- Lawson, Jane Sorrie, 1922 (1952), *Professor Emeritus of English; Consultant in Composition*
M.A., 1907, St. Andrews (Scotland)
- Leggett, Glenn, 1952, *Associate Professor of English; Vice-Provost of the University*
A.B., 1940, Middlebury College; M.A., 1941, Ph.D., 1949, Ohio State

- Matchett, William H., 1954 (1961), *Associate Professor of English*
B.A., 1949, Swarthmore; M.A., 1950, Ph.D., 1957, Harvard
- McKinlay, Florence Dillow, 1937 (1956), *Assistant Professor Emeritus of English*
B.A., 1908, Lombard (Illinois); M.A., 1931, Washington
- Metzger, Lore, 1960 (1961), *Assistant Professor of English*
B.A., 1946, Hunter College; M.A., 1947, Ph.D., 1956, Columbia
- Nix, Martha Jeanette, 1928 (1961), *Assistant Professor Emeritus of English*
B.A., 1922, M.A., 1925, Washington
- Park, Ben Allen, 1959, *Instructor in English*
B.A., 1951, M.A., 1954, Oklahoma
- Pellegrini, Angelo M., 1930 (1957), *Professor of English*
B.A., 1927, Ph.D., 1942, Washington
- Perrin, Porter Gale, 1947, *Professor of English*
A.B., 1917, Dartmouth; M.A., 1921, Maine; Ph.D., 1936, Chicago
- Person, Henry Axel, 1937 (1961), *Associate Professor of English*
B.A., 1927, Ph.D., 1942, Washington
- Phillips, William Louis, 1949 (1961), *Associate Professor of English; Assistant Dean of the College of Arts and Sciences*
B.A., 1942, Iowa State Teachers College; M.A., 1947, Ph.D., 1949, Chicago
- Redford, Grant H., 1945 (1956), *Associate Professor of English*
B.S., 1937, Utah State; M.A., 1940, Iowa
- Reiffer, Henrietta Brown, 1961, *Acting Instructor in English*
B.A., 1941, University of London; B.A., 1950, M.A., 1959, Washington
- Rivenburgh, Viola K., 1944 (1961), *Assistant Professor of English*
A.B., 1919, Nebraska; M.A., 1926, Hawaii
- Roethke, Theodore Huebner, 1947 (1948), *Professor of English*
A.B., 1929, A.M., 1936, Michigan
- Roseme, Diane Day, 1961, *Acting Instructor in English*
A.B., 1953, California; M.A., 1957, Sacramento State
- Shulman, Robert Philip, 1961, *Instructor in English*
B.A., 1952, Syracuse; M.A., 1954, Ph.D., 1959, Ohio State
- Smith, Eugene Herbert, 1961, *Acting Assistant Professor of English*
B.A., 1950, Oberlin; M.A., 1954, Washington
- Stanton, Robert Bruce, 1956 (1958), *Assistant Professor of English*
B.A., 1949, M.A., 1950, Kansas City; Ph.D., 1953, Indiana
- Stein, Arnold Sydney, 1948 (1953), *Professor of English*
A.B., 1936, Yale; A.M., 1938, Ph.D., 1942, Harvard
- Stein, Roger Breed, 1960 (1961), *Assistant Professor of English*
B.A., 1954, M.A., 1958, Ph.D., 1960, Harvard
- Stirling, Thomas Brents, 1932 (1949), *Professor of English*
LL.B., 1926, Ph.D., 1934, Washington
- Taylor, Donald S., 1954 (1955), *Assistant Professor of English*
B.A., 1947, M.A., 1948, Ph.D., 1950, California
- Taylor, E. Ayers, 1929 (1952), *Professor Emeritus of English*
B.A., 1909, Denver; M.A., 1918, Ph.D., 1925, Chicago
- Thorpe, Berenice Du Rae, 1946 (1952), *Assistant Professor of English*
B.A., 1924, M.A., 1925, Washington
- Thune, Ensaf El Masry, 1960, *Acting Instructor in English*
B.A., 1949, University of Cairo (Egypt); M.A., 1955, Washington
- Vanderbilt, Rolfe Kermit, 1958 (1960), *Assistant Professor of English*
B.A., 1947, Luther College (Iowa); M.A., 1949, Ph.D., 1956, Minnesota
- Wagoner, David R., 1954 (1961), *Associate Professor of English*
B.A., 1947, Pennsylvania State; M.A., 1949, Indiana
- Walters, Margaret Curtis, 1929 (1947), *Assistant Professor of English*
B.A., 1917, Mills College; M.A., 1919, Yale
- Warnke, Frank Joseph, 1961, *Associate Professor of English*
A.B., 1948, Yale; M.A., 1951, Ph.D., 1954, Columbia

Watson, Clara Elsie, 1960, *Acting Instructor in English*

B.A., 1957, Saskatchewan

Weiss, Daniel Aaron, 1955 (1958), *Assistant Professor of English*

B.A., 1939, Northwestern; M.A., 1950, Columbia; Ph.D., 1955, Northwestern

Willis, Leota Snider, 1943 (1953), *Lecturer in English*

B.A., 1923, California; M.A., 1930, Ph.D., 1931, Pennsylvania; Cert. of Studies, 1932, Sorbonne (Paris)

Winther, Sophus Keith, 1925 (1940), *Professor of English*

B.A., 1918, M.A., 1919, Oregon; Ph.D., 1926, Washington

Yaggy, Elinor May, 1943 (1950), *Assistant Professor of English*

B.A., 1929, M.A., 1939, Idaho; Ph.D., 1946, Washington

Zillman, Lawrence John, 1928 (1953), *Professor of English*

B.A., 1928, Ph.D., 1936, Washington

FAR EASTERN AND RUSSIAN INSTITUTE

DEPARTMENT OF FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE

Abernathy, Robert Harwood, 1960, *Visiting Associate Professor of Slavic Linguistics*

B.A., 1945, Arizona; M.A., 1946, Ph.D., 1951, Harvard

Butow, Robert J. C., 1960, *Associate Professor of Japanese History*

A.B., 1947, A.M., 1948, Ph.D., 1953, Stanford

Chang, Kun, 1951 (1957), *Associate Professor of Far Eastern and Slavic Languages and Literature*

B.A., 1938, National Tsinghua (China); M.A., 1949, Ph.D., 1955, Yale

Erlach, Victor, 1948 (1959), *Professor of Slavic Languages and Literature;*

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M.A., 1937, Free Polish University (Warsaw); Ph.D., 1951, Columbia

Gershevsky, Noah David, 1943 (1957), *Associate Professor of Russian Language*

B.S., in Met., 1930, Montana School of Mines

Hsiao, Kung-chuan, 1952 (1959), *Professor of the History of Chinese Thought;*

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Graduate, 1920, National Tsinghua (China); B.A., 1922, M.A., 1923, Missouri; Ph.D., 1926, Cornell

Hung, Beverly Yueh-Pi, 1960, *Instructor in Chinese Language*

B.A., 1956, National Taiwan; M.A., 1958, Michigan

Hurvitz, Leon M., 1955 (1957), *Assistant Professor of Japanese Language and Literature*

B.A., 1949, Chicago; M.A., 1951, Ph.D., 1959, Columbia

Ivask, George, 1960, *Visiting Associate Professor of Russian Language and Literature*

Ph.D., 1954, Harvard

Jackson, W. A. Douglas, 1955 (1960), *Professor of Russian Geography*

B.A., 1946, M.A., 1949, Toronto; Ph.D., 1953, Maryland

Li, Fang-kuei, 1949 (1950), *Professor of Chinese Linguistics and of Anthropology*

A.B., 1926, Michigan; A.M., 1927, Ph.D., 1928, Chicago

Maki, John McGilvrey, 1939 (1956), *Professor of Japanese Government and Politics*

B.A., 1932, M.A., 1936, Washington; Ph.D., 1948, Harvard

McKinnon, Richard Nichols, 1951 (1957), *Associate Professor of Japanese Language and Literature*

A.B., 1947, A.M., 1949, Ph.D., 1951, Harvard

Michael, Franz Henry, 1942 (1948), *Professor of Far Eastern History and Government*

Dr. Jur., 1933, Freiburg (Germany)

Novikow, Elias Theodore, 1947 (1953), *Lecturer in Russian Language*

B.M., 1939, Oklahoma; M.Mus., 1942, Michigan; M.A., 1946, Washington

Pahn, Vadim Otto, 1946 (1953), *Lecturer in Russian Language*

B.A., 1935, B.S., Agr., 1938, British Columbia

Passin, Herbert, 1959, *Visiting Professor of Japanese Studies*

B.A., 1938, M.A., 1941, Chicago

- Poppe, Nicholas Nikolaevich, 1949 (1951), *Professor of Slavic and Altaic Studies and of Anthropology*
Master's, 1923, Petrograd; Ph.D., 1934, Petersburg University (Russia)
- Reifler, Erwin, 1947 (1955), *Professor of Chinese Language*
Dr. Rer. Pol., 1931, Vienna (Austria)
- Shih, Vincent Yu-chung, 1945 (1956), *Professor of Chinese Literature and Philosophy*
B.A., 1925, Fukien Christian (China); M.A., 1930, Yenching (China); Ph.D., 1939, Southern California
- Spector, Ivar, 1931 (1943), *Associate Professor of Russian Civilization*
Graduate, 1919, Teachers' Seminar (Russia); M.A., 1926, Northwestern; Ph.D., 1928, Chicago
- Suh, Doo Soo, 1955, *Lecturer in Korean Languages and Literature*
M.A. equivalent, 1930, Keijo Imperial University (Seoul, Korea); M.A., 1950, Ph.D., 1953, Columbia
- Szeftel, Marc M., 1961, *Professor of Russian History*
LI.M., 1925, University of Warsaw; LI.D., 1934, University of Brussels
- Tatsumi, Henry Saburo, 1935 (1946), *Associate Professor of Japanese Language*
B.A., 1932, M.A., 1935, Washington
- Taylor, George Edward, 1939 (1941), *Professor of Far Eastern History and Politics; Executive Officer of the Department of Far Eastern and Slavic Languages and Literature; Director of the Far Eastern and Russian Institute*
A.B., 1927, A.M., 1928, D.Litt., 1957, Birmingham (England)
- Thompson, Laurence Cassius, Jr., 1957 (1959), *Assistant Professor of Linguistics and Russian*
A.B., 1949, Middlebury College; M.A., 1950, Ph.D., 1954, Yale
- Treadgold, Donald Warren, 1949 (1959), *Professor of Russian History*
B.A., 1943, Oregon; M.A., 1947, Harvard; D.Phil., 1950, Oxford (England)
- Wilhelm, Hellmut, 1948 (1953), *Professor of Chinese History and Literature*
Ph.D., 1932, Berlin (Germany)
- Williston, Frank Goodman, 1943 (1949), *Professor of Far Eastern History*
B.A., 1922, Ohio Wesleyan; M.A., 1926, Ph.D., 1935, Chicago
- Wittfogel, Karl August, 1947 (1949), *Professor of Chinese History*
Ph.D., 1928, Frankfurt (Germany)
- Wylie, Turrell Verl, 1958 (1959), *Assistant Professor of Tibetan Language and Civilization*
B.A., 1952, Ph.D., 1958, Washington
- Yen, Isabella Yiyun, 1960 (1961), *Associate Professor of Chinese Language*
B.A., 1938, National Peking (China); A.M., 1951, Michigan; Ph.D., 1956, Cornell

DIVISION OF GENERAL STUDIES

- Lutey, William Glen, 1934 (1949), *Assistant Professor of Liberal Arts; Director of General Studies*
B.A., 1930, M.A., 1931, Washington

DEPARTMENT OF GENETICS

- Douglas, Howard Clark, 1941 (1958), *Professor of Genetics and Microbiology*
A.B., 1936, Ph.D., 1949, California
- Eaton, Norman R., 1957 (1961), *Research Assistant Professor of Genetics*
B.A., 1951, California; M.S., 1953, Ph.D., 1955, Washington
- Gallant, Jonathan A., 1961, *Assistant Professor of Genetics*
B.S., 1957, Haverford; Ph.D., 1961, Johns Hopkins University
- Gartler, Stanley M., 1957 (1961), *Associate Professor of Genetics and Research Assistant Professor of Medicine*
B.S., 1948, California (Los Angeles); Ph.D., 1952, California
- Hawthorne, Donald C., 1958 (1960), *Research Assistant Professor of Genetics*
B.S., 1950, M.S., 1953, Ph.D., 1955, Washington
- Motulsky, Arno G., 1953 (1961), *Professor of Genetics and Medicine*
B.S., 1945, M.D., 1947, Illinois

Roman, Herschel Lewis, 1942 (1952), *Professor of Genetics; Executive Officer of the Department of Genetics*
A.B., 1936, Ph.D., 1942, Missouri

Stadler, David Ross, 1956 (1957), *Assistant Professor of Genetics*
A.B., 1948, Missouri; M.A., 1950, Ph.D., 1952, Princeton

DEPARTMENT OF GEOGRAPHY

Earle, Frances Merritt, 1931 (1941), *Associate Professor of Geography*
B.A., 1918, Winthrop College; M.S., 1926, Columbia; Ph.D., 1929, George Washington

Heath, Willis Robertson, 1957 (1959), *Assistant Professor of Geography*
B.A., 1954, M.A., 1956, Ph.D., 1958, Washington

Hudson, George Donald, 1951, *Professor of Geography; Executive Officer of the Department of Geography*
Ph.B., 1925, A.M., 1926, Ph.D., 1934, Chicago

Jackson, W. A. Douglas, 1955 (1960), *Professor of Far Eastern and Slavic Languages and Literature and of Geography*
B.A., 1946, M.A., 1949, Toronto; Ph.D., 1953, Maryland

Kakiuchi, Hiroaki George, 1957 (1960), *Assistant Professor of Geography*
A.B., 1952, A.M., 1953, Ph.D., 1957, Michigan

Martin, Howard Hanna, 1930 (1940), *Professor of Geography*
B.S., 1922, Pennsylvania, A.M., 1923, Ph.D., 1929, George Washington; Sc.D. (Hon.), 1937, Monmouth College

Marts, Marion Ernest, 1946 (1961), *Professor of Geography; Director of Division of Evening Classes and of Summer Quarter*
B.A., 1937, M.A., 1944, Washington; Ph.D., 1950, Northwestern

Morrill, Richard Leland, 1960, *Assistant Professor of Geography*
A.B., 1952, Dartmouth; M.A., 1957, Ph.D., 1959, Washington

Murphey, William Rhoads, III, 1952 (1956), *Associate Professor of Geography*
A.B., 1941, A.M., 1942, A.M., 1948, Ph.D., 1950, Harvard

Sherman, John Clinton, 1942 (1954), *Associate Professor of Geography*
A.B., 1937, Michigan; M.A., 1943, Clark; Ph.D., 1947, Washington

Thomas, Morgan David, 1959 (1960), *Associate Professor of Geography*
B.A., 1951, Ph.D., 1954, Queen's University (Belfast)

Ullman, Edward Louis, 1951, *Professor of Geography*
S.B., 1934, Chicago; A.M., 1935, Harvard; Ph.D., 1942, Chicago

DEPARTMENT OF GEOLOGY

Barksdale, Julian Devreau, 1936 (1949), *Professor of Geology*
B.A., 1930, Stanford; Ph.D., 1936, Yale

Coombs, Howard Abbott, 1934 (1949), *Professor of Geology; Executive Officer of the Department of Geology*
B.S., 1929, M.S., 1932, Ph.D., 1935, Washington

Ellis, Ross C., 1954 (1957), *Assistant Professor of Geology*
B.A., 1953, Occidental College; Ph.D., 1959, Washington

Fuller, Richard, *Research Professor of Geology*
B.S., 1924, Ph.D., 1930, Washington

Goodspeed, George Edward, 1919 (1957), *Professor Emeritus of Geology*
B.S. in Min. E., 1910, Massachusetts Institute of Technology

Mackin, Joseph Hoover, 1934 (1947), *Professor of Geology*
B.S., 1930, New York; M.A., 1932, Ph.D., 1936, Columbia

Mallory, Virgil Standish, 1952 (1957), *Associate Professor of Geology*
A.B., 1943, Oberlin; M.A., 1948, Ph.D., 1952, California

McKee, Bates, 1958, *Assistant Professor of Geology*
B.S., 1955, Yale; Ph.D., 1958, Stanford

Misch, Peter Hans, 1947 (1950), *Professor of Geology*
D.Sc., 1932, Goettingen (Germany)

Neumann, Frank, 1953 (1958), *Assistant Professor and Seismologist*

Vance, Joseph Alan, 1957, *Assistant Professor of Geology*
B.S., 1951; Ph. D., 1957, Washington

Wheeler, Harry Eugene, 1948 (1951), *Professor of Geology*
B.S., 1930, Oregon; A.M., 1932, Ph.D., 1935, Stanford

DEPARTMENT OF GERMANIC LANGUAGES AND LITERATURE

Ankele, Felice, 1927 (1952), *Assistant Professor Emeritus of German*
B.A., 1925, M.A., 1926, Ph.D., 1936, Washington

Buck, George Crawford, 1950 (1958), *Assistant Professor of Germanic Literature*
B.A., 1942, Amherst; M.A., 1948, Ph.D., 1954, Yale

Hertling, Gunter, 1961, *Instructor in German*
B.A., 1954, M.A., 1957, Berkeley

Hruby, Antonin, 1961, *Assistant Professor of Germanic Literature*
Ph.D., 1946, Prague

Immerwahr, Raymond, 1960, *Professor of Germanic Literature*
A.B., 1934, Swarthmore; M.A., 1935, Northwestern; Ph.D., 1941, Berkeley

Kahn, Robert Ludwig, 1948 (1960), *Associate Professor of Germanic Literature*
B.A., 1944, M.A., 1945, Dalhousie (Nova Scotia); Ph.D., 1950, Toronto

Lauer, Edward Henry, 1934 (1955), *Professor Emeritus of Germanic Languages and Literature; Dean Emeritus of the College of Arts and Sciences*
A.B., 1906, A.M., 1909, Ph.D., 1916, Michigan

Loeb, Ernst, 1960 (1961), *Assistant Professor of Germanic Literature*
B.A., 1954, M.A., 1956, Pennsylvania; Ph.D., 1961, Washington University

Meyer, Herman Carl Henry, 1934 (1942), *Associate Professor of Germanic Languages; Executive Secretary of the Department of Germanic Languages and Literature*
B.A., 1924, Capital; Ph.D., 1936, Chicago

Reed, Carroll Edward, 1946 (1959), *Professor of Germanic Languages*
B.A., 1936, M.A., 1937, Washington; Ph.D., 1941, Brown

Rey, William Henry, 1950 (1959), *Professor of Germanic Literature; Executive Officer of the Department of Germanic Languages and Literature*
Ph.D., 1937, Frankfurt (Germany)

Sauerlander, Annemarie Margaret, 1947 (1949), *Associate Professor of Germanic Literature*
B.A., 1928, M.A., 1930, Buffalo; Ph.D., 1936, Cornell

Sommerfeld, Franz Rene, 1947 (1961), *Associate Professor of Germanic Literature*
A.B., 1944, California; M.A., 1946, Columbia

Wesner, Elenora M., 1924 (1950), *Assistant Professor Emeritus of German*
B.Ped., 1909, Colorado State Normal School; A.B., 1915, Chicago; M.A., 1923, Northwestern

Wilkie, Richard Francis, Jr., 1937 (1948), *Assistant Professor of Germanic Literature*
B.A., 1934, M.A., 1936, Washington; Ph.D., 1953, California

DEPARTMENT OF HISTORY

Alden, Dauril, 1959 (1960), *Assistant Professor of History*
A.B., 1950, M.A., 1952, Ph.D., 1959, California

Badian, Ernst, 1962, *Professor of History*
A.B., 1945, M.A., 1946, Victoria; B.A., 1950, M.A., 1954, D.Phil., 1956, Oxford

Bridgman, Jon Marshall, 1961, *Assistant Professor of History*
B.A., 1951, Ph.D., 1960, Stanford

Burke, Robert Eugene, 1957 (1960), *Associate Professor of History*
A.B., 1946, Chico State College; M.A., 1947, Ph.D., 1950, California

Butow, Robert J. C., 1960, *Associate Professor of Japanese History*
A.B., 1947, A.M., 1948, Ph.D., 1953, Stanford

Costigan, Giovanni, 1934 (1948), *Professor of History*
B.A., 1926, B.Litt., 1930, M.A., 1930, Oxford; M.A., 1928, Ph.D., 1930, Wisconsin

Dobie, Edith, 1926 (1957), *Professor Emeritus of History*
B.A., 1914, Syracuse; A.M., 1922, Chicago; Ph.D., 1925, Stanford

Emerson, Donald Eugene, 1946 (1953), *Associate Professor of History*
A.B., 1937, Johns Hopkins; M.A., 1938, Columbia; Ph.D., 1942, Johns Hopkins

- Gates, Charles Marvin, 1936 (1951), *Professor of History*
B.A., 1926, Yale; M.A., 1928, Harvard; Ph.D., 1934, Minnesota
- Griffiths, Gordon, 1959 (1961), *Associate Professor of History;*
Acting Executive Officer of the Department of History
A.B., 1936, Ph.D., 1942, California; B.A., 1939, M.A., 1946, Oxford
- Holt, William Stull, 1940, *Professor of History*
A.B., 1920, Cornell; Ph.D., 1926, Johns Hopkins
- Kaminsky, Howard, 1957, *Assistant Professor of History*
M.A., 1949, Ph.D., 1952, Chicago
- Katz, Solomon, 1936 (1950), *Professor of History;*
Dean of the College of Arts and Sciences
A.B., 1930, Ph.D., 1933, Cornell
- Levy, Ernst, 1937 (1952), *Professor Emeritus of History, Law, and Political Science*
J.D., 1906, Berlin; LL.D. (Hon.), 1949, Frankfurt; Ph.D. (Hon.), 1949, Heidelberg
- Levy, Fred Jacob, 1960 (1961), *Assistant Professor of History*
A.B., 1954, A.M., 1956, Ph.D., 1960, Harvard
- Lucas, Henry Stephen, 1921 (1959), *Professor Emeritus of History*
A.B., 1913, Olivet College; A.M., 1915, Indiana; Ph.D., 1921, Michigan
- Lytle, Scott Harrison, 1949 (1957), *Associate Professor of History*
A.B., 1940, Princeton; Ph.D., 1948, Cornell
- Pressly, Thomas James, 1949 (1960), *Professor of History*
A.B., 1940, A.M., 1941, Ph.D., 1950, Harvard
- Savelle, Max, 1947, *Professor of History*
A.B., 1924, M.A., 1926, Ph.D., 1932, Columbia
- Sugar, Peter Frigyes, 1959, *Assistant Professor of History*
A.B., 1954, City College of New York; A.M., 1956, Ph.D., 1959, Princeton
- Szeftel, Marc, 1961, *Professor of History*
Matura, 1919, Stan Staszic Gymnasium (Poland); Magister of Laws, 1925, University of Warsaw (Poland); Docteur en droit, 1934, Lic. Slav. Phil. Hist., 1939, Université Libre (Belgium)
- Treadgold, Donald Warren, 1949 (1959), *Professor of History*
B.A., 1943, Oregon; M.A., 1947, Harvard; D.Phil., 1950, Oxford
- Willis, Frank Roy, 1960 (1961), *Assistant Professor of History*
B.A., 1952, M.A., 1956, Cambridge; B.A., 1954, University of London; Ph.D., 1959, Stanford

SCHOOL OF HOME ECONOMICS

- Bernstein, Nan, 1958, *Instructor in Home Economics and Nutrition*
(Pediatrics) B.S., 1949, Iowa State; M.S.Hyg., 1954, Harvard School of Public Health
- Brockway, Doris J., 1951, *Associate Professor of Home Economics*
B.A., 1926, Washington State; M.A., 1939, Washington
- Buder, Arlynn R., 1961, *Instructor in Home Economics*
B.S., 1951, Michigan State; M.S., 1955, Western Reserve
- Crum, Jeanette, 1956, *Instructor in Home Economics*
B.S., 1930, M.S., 1932, Washington
- Denny, Grace Goldena, 1913 (1950), *Professor Emeritus of Home Economics*
B.A., 1907, Nebraska; M.A., 1919, Columbia
- Dresslar, Martha Estella, 1918 (1955), *Associate Professor Emeritus of Home Economics*
A.B., 1913, Southern California; B.S., 1917, Washington; M.S., 1918, Columbia
- Gould, Sigrid P., 1956, *Instructor in Home Economics*
B.S., 1930, Wooster College; M.A., 1948, Columbia
- Granberg, Grace Grindall, 1960, *Instructor in Home Economics*
B.S. in H.E., 1934, M.S. in H.E., 1960, Washington
- Hall, Florence Turnbull, 1952, *Assistant Professor of Home Economics*
B.S., 1943, Manitoba; M.S., 1945, Minnesota
- Hawthorne, Ruth Estella, 1960, *Assistant Professor of Home Economics*
B.S., 1945, Drexel Institute of Technology; M.A., 1949, Michigan State

- Henderson, Dorothy I., 1959 (1960), *Assistant Professor of Home Economics*
B.S. in H.E., 1944, Georgia State College for Women; M.S., 1951, Tennessee
- Hosmer, Margaret George, 1948 (1954), *Lecturer in Home Economics*
B.S., 1918, North Carolina
- Johnson, Mary Louise, 1945 (1957), *Professor of Home Economics; Director of the School of Home Economics*
B.A., 1940, Hardin-Simmons; M.S., 1942, Wisconsin; D.Sc., 1954, Harvard
- McAdams, Laura Elizabeth, 1941 (1951), *Associate Professor of Home Economics*
B.S., 1923, M.S., 1932, Kansas State College
- Murdoch, Margaret Barr, 1959, *Instructor in Home Economics*
B.S., 1935, Carnegie Institute of Technology; M.A., 1958, Teachers College Columbia
- Nielsen, Mabel Mullikin, 1957, *Assistant Professor of Home Economics*
B.S., 1935, Idaho; M.S., 1941, Iowa State College
- Payne, Blanche, 1927 (1942), *Professor of Home Economics*
B.S., 1916, Kansas State Teachers College; M.A., 1924, Columbia
- Rowntree, Jennie Irene, 1925 (1956), *Professor Emeritus of Home Economics*
B.S., 1918, Wisconsin; M.S., 1925, Chicago; Ph.D., 1929, Iowa
- Shigaya, Mabel Kyo, 1953 (1960), *Instructor in Home Economics*
B.A., 1951, M.A. in H.E., 1960, Washington
- Smith, Dorothy Jean, 1960, *Instructor in Home Economics*
B.S., 1941, M.A. in H.E., 1961, Washington
- Terrell, Margaret Elma, 1928 (1944), *Professor of Home Economics*
B.A., 1923, Penn College (Iowa); M.A., 1927, Chicago

DEPARTMENT OF MATHEMATICS

- Allendoerfer, Carl Barnett, 1951, *Professor of Mathematics; Executive Officer of the Department of Mathematics*
B.S., 1932, Haverford College; B.A., 1934, M.A., 1939, Oxford (England); Ph.D., 1937, Princeton
- Arsove, Maynard Goodwin, 1951 (1961), *Professor of Mathematics*
B.S., 1943, Lehigh; Sc.M., 1948, Ph.D., 1950, Brown
- Avann, Sherwin Parker, 1946, *Assistant Professor of Mathematics*
B.S., 1938, Washington; M.S., 1940, Ph.D., 1942, California Institute of Technology
- Ballantine, John Perry, 1926 (1937), *Professor of Mathematics*
A.B., 1918, Harvard; Ph.D., 1923, Chicago
- Bear, Herbert Stanley, Jr., 1957 (1958), *Assistant Professor of Mathematics*
B.A., 1950, Ph.D., 1957, California
- Beaumont, Ross Allen, 1940 (1954), *Professor of Mathematics*
A.B., 1936, M.S., 1937, Michigan; Ph.D., 1940, Illinois
- Birnbaum, Zygmunt William, 1939 (1950), *Professor of Mathematics; Director of the Laboratory of Statistical Research*
LL.M., 1925, Ph.D., 1929, John Casimir (Lwow, Poland)
- Blumenthal, Robert McCallum, 1956 (1961), *Associate Professor of Mathematics*
B.A., 1952, Oberlin; Ph.D., 1956, Cornell
- Boehme, Thomas Kelman, 1960 (1961), *Assistant Professor of Mathematics*
B.S., 1952, Oklahoma University; M.S., 1957, Oklahoma State; Ph.D., 1960, California Institute of Technology
- Brownell, Francis Herbert, III, 1950 (1961), *Professor of Mathematics*
B.A., 1943, M.S., 1947, Yale; Ph.D., 1949, Princeton
- Chapman, Douglas George, 1949 (1957), *Professor of Mathematics*
B.A., 1938, Saskatchewan; M.A., 1940, Ph.D., 1949, California
- Corson, Harry Herbert, 1958 (1959), *Assistant Professor of Mathematics*
A.B., 1952, Vanderbilt; M.A., 1954, Ph.D., 1957, Duke
- Cramlet, Clyde Myron, 1920 (1948), *Professor of Mathematics*
B.S., 1916, Walla Walla College; M.S., 1920, Ph.D., 1926, Washington
- Dekker, David Bliss, 1948 (1959), *Associate Professor of Mathematics; Director of the Research Computer Laboratory*
A.B., 1941, California; M.S., 1943, Illinois Institute of Technology; Ph.D., 1948, California

- Dubisch, Roy, 1961, *Professor of Mathematics*
B.S., 1938, M.S., 1940, Ph.D., 1943, Chicago
- Fell, James Michael Gardner, 1956 (1960), *Associate Professor of Mathematics*
B.S., 1943, British Columbia; M.S., 1945, Ph.D., 1951, California
- Getoer, Ronald Kay, 1956 (1960), *Associate Professor of Mathematics*
A.B., 1950, M.S., 1951, Ph.D., 1954, Michigan
- Haller, Mary Elizabeth, 1931 (1949), *Associate Professor of Mathematics*
B.A., 1924, M.S., 1931, Ph.D., 1934, Washington
- Hewitt, Edwin, 1948 (1954), *Professor of Mathematics*
A.B., 1940, M.A., 1941, Ph.D., 1942, Harvard
- Hobby, Charles Ray, 1961, *Assistant Professor of Mathematics*
B.A., 1953, California; M.S., 1957, Houston; Ph.D., 1960, California Institute of Technology
- Hufford, George Allen, 1958, *Assistant Professor of Mathematics*
B.S., 1946, California Institute of Technology; M.S., 1948, Washington; M.A., 1952, Ph.D., 1953, Princeton
- Isbell, John Rolfe, 1957 (1959), *Associate Professor of Mathematics*
B.S., 1951, Chicago; Ph.D., 1954, Princeton
- Jans, James P., 1957 (1960), *Associate Professor of Mathematics*
A.B., 1949, M.A., 1950, Ph.D., 1955, Michigan
- Jerbert, Arthur Rudolph, 1921 (1937), *Associate Professor of Mathematics*
B.S., 1916, M.S., 1923, Ph.D., 1928, Washington
- Johnson, Harold H., 1961, *Assistant Professor of Mathematics*
B.A., 1949, M.A., 1950, Ph.D., 1957, California
- Kingston, John Maurice, 1940 (1959), *Associate Professor of Mathematics; Executive Secretary of the Department of Mathematics*
B.A., 1935, Western Ontario; M.A., 1936, Ph.D., 1939, Toronto
- Klee, Victor L., 1953 (1957), *Professor of Mathematics*
B.A., 1945, Pomona College; Ph.D., 1949, Virginia
- Lumer, Gunter, 1961, *Assistant Professor of Mathematics*
B.S., 1948, State College of Montevideo; E.E., 1951, University of Montevideo; Ph.D., 1959, Chicago
- McFarlan, Lee Horace, 1927 (1946), *Professor of Mathematics*
B.S., 1917, Kansas State Teachers College; A.M., 1921, Ph.D., 1924, Missouri
- McMinn, Trevor James, 1956, *Assistant Professor of Mathematics*
B.A., 1942, Utah; Ph.D., 1955, California
- Michael, Ernest Arthur, 1953 (1960), *Professor of Mathematics*
B.A., 1947, Cornell; M.A., 1948, Harvard; Ph.D., 1951, Chicago
- Morel, Anne C., 1960 (1961), *Associate Professor of Mathematics*
B.A., 1941, California (Los Angeles); Ph.D., 1953, California
- Newman, David Stanley, 1961, *Instructor in Mathematics*
B.S., 1956, New Mexico; Ph.D., 1961, Cornell
- Nijenhuis, Albert, 1956 (1961), *Professor of Mathematics*
B.S., 1947, M.S., 1950, Ph.D., 1952, Amsterdam
- Nunke, Ronald John, 1958, *Assistant Professor of Mathematics*
B.S., 1950, M.S., 1951, Ph.D., 1955, Chicago
- O'Keefe, Kathleen, 1959 (1960), *Assistant Professor of Mathematics*
A.B., 1946, M.A., 1948, Ph.D., 1959, California
- Pierce, Richard Scott, 1955 (1960), *Professor of Mathematics*
B.S., 1950, Ph.D., 1952, California Institute of Technology
- Pyke, Ronald, 1960, *Assistant Professor of Mathematics*
B.A., 1953, McMaster; M.S., 1955, Ph.D., 1956, Washington
- Richardson, Roger Wolcott, Jr., 1960, *Assistant Professor of Mathematics*
B.S., 1951, Louisiana State; Ph.D., 1958, Michigan
- Segal, Jack, 1960 (1961), *Assistant Professor of Mathematics*
B.S., 1955, M.S., 1957, Miami; Ph. D., 1960, Georgia
- Selfridge, John Lewis, 1960 (1961), *Associate Professor of Mathematics*
B.S., 1951, Washington; Ph.D., 1958, California (Los Angeles)
- Tate, Robert Flemming, 1953 (1961), *Associate Professor of Mathematics*
A.B., 1944, California; M.A., 1949, North Carolina; Ph.D., 1952, California

- Winger, Roy Martin, 1918 (1956), *Professor Emeritus of Mathematics*
A.B., 1906, Baker; Ph.D., 1912, Johns Hopkins
- Woll, John William Jr., 1961, *Assistant Professor of Mathematics*
B.S., 1952, Haverford College; Ph.D., 1956, Princeton University
- Woolf, William B., 1959 (1960), *Assistant Professor of Mathematics*
B.A., 1953, Pomona College; M.A., 1955, Claremont College; Ph.D., 1959, Michigan
- Ylvisaker, N. Donald, 1961, *Assistant Professor of Mathematics*
B.A., 1954, Concordia; M.A., 1956, Nebraska; Ph.D., 1960, Stanford
- Zuckerman, Helen C., 1952 (1960), *Lecturer in Mathematics*
B.S., 1930, M.S., 1935, Washington
- Zuckerman, Herbert Samuel, 1939 (1952), *Professor of Mathematics*
B.S., 1932, California Institute of Technology; M.S., 1934, Chicago; Ph.D., 1936, California

DEPARTMENT OF METEOROLOGY AND CLIMATOLOGY

- Badgley, Franklin Ilsley, 1950 (1959), *Associate Professor of Meteorology and Climatology*
B.S., 1935, Chicago; M.S., 1948, Ph.D., 1951, New York
- Buettner, Konrad J. K., 1953 (1957), *Professor of Meteorology and Climatology*
B.S., 1922, Gymnasium (Pforte, Germany); Dr.phil., 1926, Goettingen (Germany);
Dr.phil.habil., 1934, Kiel, (Germany)
- Businger, Joost A., 1958 (1961), *Associate Professor of Meteorology and Climatology*
B.S., (Candidaatsexamen) 1947, M.Sc., (Doctoraal examen), 1950, Ph.D., 1954,
University of Utrecht
- Church, Phil Edwards, 1935 (1948), *Professor of Meteorology and Climatology;*
Executive Officer of the Department of Meteorology and Climatology
B.S., 1923, Chicago; M.A., 1932, Ph.D., 1937, Clark
- Danielsen, Edwin F., 1959, *Assistant Professor of Meteorology and Climatology*
B.S., 1951, M.S., 1954, Ph.D., 1958, Washington
- Fleagle, Robert Guthrie, 1948 (1956), *Professor of Meteorology and Climatology*
A.B., 1940, Johns Hopkins; M.S., 1944, Ph.D., 1949, New York
- Reed, Richard John, 1954 (1958), *Associate Professor of Meteorology and Climatology*
B.S., 1945, California Institute of Technology; Sc.D., 1949, Massachusetts
Institute of Technology

SCHOOL OF MUSIC

- Babb, Warren, 1955, *Assistant Professor of Music*
B.A., 1938, M.A., 1939, Harvard
- Beale, James MacArthur, Jr., 1948 (1958), *Associate Professor of Music*
B.A., 1945, Harvard; B.Mus., 1946, M.Mus., 1947, Yale
- Bostwick, Irene Neilson, 1930 (1957), *Associate Professor of Music*
B.M., 1922, M.A., 1950, Washington
- Chapple, Stanley, 1948, *Professor of Music; Director of the School of Music*
D.Mus. (Hon.), 1947, Colby College
- Clarke, Henry Leland, 1958 (1959), *Associate Professor of Music*
A.B., 1928, A.M., 1929, Ph.D., 1947, Harvard
- Cole, William D., 1957 (1961), *Assistant Professor of Music*
B.S., 1946, Illinois; M.A., 1954, Washington
- Eichinger, Walter A., 1936 (1954), *Associate Professor of Music*
B.Mus., 1932, M.Mus., 1933, Northwestern
- Ferrin, Richard Royce, 1959 (1961), *Assistant Professor of Music*
B. of Music, 1950, M. of Music, 1951, Eastman School of Music, University of Rochester
- Geissmar, Else Johanna-Marie, 1947 (1961), *Associate Professor of Music*
L.R.A.M., 1937, Royal Academy (London); M.Mus., 1944, Michigan
- Harris, Edison Davis, 1947, *Associate Professor of Music*
B.S., 1942, New York
- Heinitz, Eva Maria, 1948 (1956), *Associate Professor of Music*
Studied at State Academy of Music (Berlin)

- Hokanson, Randolph, 1949 (1960), *Associate Professor of Music*
Studied with Dame Myra Hess, Howard Ferguson (London)
- Irvine, Demar Buel, 1937 (1960), *Professor of Music*
B.A., 1929, M.A., 1931, California; Ph.D., 1937, Harvard
- Jacobson, Berthe Poncy, 1937 (1948), *Professor of Music*
Diplomas, 1915, Conservatory of Music (Geneva); Diplomas, 1917, Schola Cantorum (Paris);
Diplomas, 1921, Dalcroze School (Geneva)
- Jones, Iris Ann, 1957, *Assistant Professor of Music*
A.B., 1940, College of Holy Names (Oakland); M.A., 1953, Supv. Credit, 1955, California
- Kechley, Gerald, 1947 (1961), *Associate Professor of Music*
B.A., 1946, M.A., 1950, Washington
- Kirchner, George Casino, 1919 (1959), *Associate Professor Emeritus of Music*
Graduate, 1911, Leipzig
- McKay, George Frederick, 1927 (1943), *Professor of Music*
B.Mus., 1923, Rochester
- Moldenhauer, Hans, 1961, *Lecturer in Music*
B.A., 1945, Whitworth; Dr. Mus., 1945, Boguslawski College of Music (Chicago);
D.F.A., 1951, Roosevelt University (Chicago)
- Moore, John Terence, 1948, *Assistant Professor of Music*
B.Mus., 1940, M.Mus., 1941, Illinois
- Munro, Kathleen, 1929 (1945), *Professor of Music*
B.M., 1924, Washington; M.A., 1929, Columbia; Ph.D., 1937, Washington
- Normann, Theodore Frederick, 1940 (1958), *Professor of Music*
B.A., 1925, Macalaster College; M.A., 1928, Columbia
- Ringgold, John Robert, 1957, *Assistant Professor of Music*
B.S., 1941, California
- Risegari, Eilene French, 1945 (1952), *Lecturer in Music*
B.M., 1916, Washington; M.A., 1920, Columbia
- Rosinbum, Ralph Rambo, 1948 (1953), *Assistant Professor of Music*
B.A., 1947, M.A., 1948, Washington
- Sokol, Vilem Mark, 1948 (1958), *Associate Professor of Music*
Mus.B., 1938, Oberlin Conservatory; Grad. Cert., 1939, Conservatory of Music (Prague)
- Terry, Miriam, 1930 (1950), *Associate Professor of Music*
B.M., 1926, M.A., 1948, Washington
- Verrall, John Weedon, 1948 (1959), *Professor of Music*
B.Mus., 1929, Minneapolis College of Music; Cert. of Mus., 1932, Liszt Conservatory
(Budapest); B.A., 1934, Minnesota
- Waddell, John E., Jr., 1960, *Assistant Professor of Music*
B.A., 1950, M.A., 1960, Occidental College
- Welke, Walter Carl, 1929 (1943), *Associate Professor of Music*
B.M., 1927, Michigan
- Werner, August Hansen, 1931 (1932), *Professor of Music*
B.S., 1913, College of Agriculture (Stend, Norway); Graduate, 1924, Master School of
Music (New York)
- Woodcock, Edith, 1930 (1945), *Associate Professor of Music*
B.M., 1925, Rochester; M.M., 1936, Washington
- Zetlin, Emanuel Roman, 1947, *Professor of Music*
B.A., 1916, Imperial Conservatory (Petrograd); Dr. Mus. (Hon.), 1936, Washington
College of Music (Washington, D.C.)

DEPARTMENT OF OCEANOGRAPHY

- Banse, Karl, 1960, *Assistant Professor of Oceanography*
Ph.D., 1955, University of Kiel
- Barnes, Clifford Adrian, 1947 (1955), *Professor of Oceanography*
B.S., 1930, Ph.D., 1936, Washington
- Creager, Joe Scott, 1958, *Assistant Professor of Oceanography*
B.A., 1951, Colorado College; M.S., 1953, Ph.D., 1958, Agricultural and Mechanical
College of Texas
- English, T. Saunders, 1960, *Acting Assistant Professor of Oceanography*
B.S., 1950, M.S., 1951, Iowa State College

Fleming, Richard Howell, 1951, *Professor of Oceanography; Executive Officer of the Department of Oceanography*

B.A., 1929, M.A., 1931, British Columbia; Ph.D., 1935, California

Murphy, Stanley Reed, 1960, *Lecturer in Oceanography, Senior Physicist, Applied Physics Laboratory*

B.A., 1948, Fresno State College; Ph.D., 1959, Washington

Rattray, Maurice, Jr., 1950 (1957), *Associate Professor of Oceanography*

B.S., 1944, M.S., 1947, Ph.D., 1951, California Institute of Technology

Richards, Francis Asbury, 1959, *Associate Professor of Oceanography*

B.S., 1939, Illinois; M.S., 1942, Nevada; Ph.D., 1950, Washington

Thompson, Thomas Gordon, 1919 (1959), *Professor Emeritus of Oceanography*

A.B., 1914, Clark; M.S., 1915, Ph.D., 1918, Washington

DEPARTMENT OF PHILOSOPHY

Boler, John Francis, 1960, *Instructor in Philosophy*

A.B., 1950, Creighton; M.A., 1952, St. Louis University; Ph.D., Harvard

Chihara, Charles Seiyo, 1961, *Instructor in Philosophy*

B.S., 1954, Seattle University; M.S., 1956, Purdue; Ph.D., 1960, Washington

Dietrichson, Paul, 1955 (1961), *Associate Professor of Philosophy*

A.B., 1947, Georgia; Ph.D., 1955, Yale

Greenberg, Robert Sidney, 1960, *Instructor in Philosophy*

B.A., 1956, Reed College

Key, David, 1957 (1960), *Assistant Professor of Philosophy*

A.B., 1951, Kenyon College; M.A., 1953, Ph.D., 1955, Cornell

Melden, Abraham Irving, 1946 (1956), *Professor of Philosophy*

A.B., 1931, California (Los Angeles); A.M., 1932, Brown; Ph.D., 1938, California

Moulton, John Russell, 1961, *Instructor in Philosophy*

B.A., 1950, Dartmouth

Rader, Melvin Miller, 1930 (1948), *Professor of Philosophy*

A.B., 1925, M.A., 1927, Ph.D., 1929, Washington

Richman, Robert June, 1961, *Associate Professor in Philosophy*

A.M., 1950, Ph.D., 1953, Harvard

Smullyan, Arthur Francis, 1946 (1956), *Professor of Philosophy;*

Executive Officer of the Department of Philosophy

A.B., 1937, City College of New York; M.A., 1940, Ph.D., 1941, Harvard

Stern, Laurent, 1961, *Assistant Professor of Philosophy*

Ph.D., 1952, Zurich

DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

Buckley, Robert William, 1942 (1960), *Assistant Professor of Physical Education*

B.A., 1950, Washington

Cutler, Russell Kelsey, 1946 (1948), *Associate Professor of Physical Education; Executive Officer of the Department of Physical Education for Men*

B.Ed., 1930, California (Los Angeles); M.S., 1934, Oregon; D.Ed., 1958, Stanford

Gilberts, Richard A., 1961, *Acting Instructor in Physical Education*

B.S., 1959, Idaho

Grayson, John A., 1959, *Lecturer in Physical Education; Head Basketball Coach*

B.S., 1938, Oklahoma; M.A., 1953, Wayne

Hendershott, Robert Wheeler, 1955 (1960), *Lecturer in Physical Education*

B.S., 1941, M.S., 1951, Oregon

Hiserman, Stanley J., *Lecturer in Men's Physical Education; Track Coach*

B.A., 1939, Stanford; M.S., 1954, Idaho

Huey, Richard N., 1957, *Acting Instructor in Physical Education*

Hughes, Eric Lester, 1951 (1956), *Assistant Professor of Physical Education*

B.S., 1947, M.S., 1948, Illinois; D.Ed., 1956, Washington

Kunde, Norman Frederick, 1931 (1949), *Associate Professor of Physical Education*

B.S., 1928, M.S., 1932, Washington; D.Ed., 1946, New York

Mauro, Carmen Louis, 1961, *Lecturer in Physical Education; Head Baseball Coach*

- Mills, Caswell Albert, 1942 (1961), *Associate Professor of Physical Education*
B.A., 1935, North Dakota State Teachers College; M.A., 1943, Ph.D., 1959, Washington
- Owens, James, 1957, *Lecturer in Men's Physical Education; Head Football Coach; Director of Athletics*
B.S., 1950, Oklahoma
- Peek, Clifford L., 1938, *Assistant Professor of Physical Education*
B.S., 1929, Washington; M.A., 1931, Columbia
- Peterson, Robert A., 1958, *Lecturer in Physical Education; Athletic Trainer*
- Reeves, George Spencer, 1935 (1948), *Associate Professor of Physical Education*
B.S., 1933, Oregon State College; M.S., 1937, Oregon; M.P.H., 1951, California
- Steilberg, Peter, Jr., 1961, *Acting Instructor in Physical Education*
B.A., 1960, Washington
- Stevens, Leonard Woodbury, 1937 (1961), *Associate Professor of Physical Education*
B.S., 1933, M.S., 1941, Washington
- Tipps, Thomas O., 1961, *Lecturer in Physical Education; Football Coach*
B.S., 1958, M.S., 1951, Sul Ross State
- Torney, John Alfred, Jr., 1930 (1948), *Associate Professor of Physical Education*
B.S., 1928, Washington; M.A., 1930, Columbia

DEPARTMENT OF PHYSICAL EDUCATION FOR WOMEN

- Broer, Marion Ruth, 1947 (1960), *Professor of Physical Education*
B.S., 1933, M.S., 1936, Wisconsin; Ph.D., 1954, New York
- Culver, Elizabeth Jean, 1958, *Instructor in Physical Education*
B.S., 1955, Skidmore College (New York); M.S., 1958, Washington
- de Vries, Mary Aid, 1921 (1939), *Associate Professor of Physical Education*
B.A., 1920, Wisconsin
- Fox, Katharine Shirley, 1945 (1948), *Assistant Professor of Physical Education*
B.S., 1938, Washington; M.S., 1943, Oregon; Ph.D., 1955, Iowa
- Garland, Iris, 1961, *Instructor in Physical Education*
B.S., 1957, Illinois; M.S., 1960, California
- Green, Catherine, 1960, *Instructor in Physical Education*
B.S., 1954, Skidmore College (New York); M.S., 1959, University of Colorado
- Horne, Dorthalee Belle, 1944, *Assistant Professor of Physical Education*
B.S., 1930, Missouri; M.S., 1939, Oregon
- Kidwell, M. Kathro, 1939 (1950), *Associate Professor of Physical Education*
B.S., 1927, Nebraska; M.S., 1928, Wisconsin; Ed.D., 1954, Columbia
- MacLean, Dorothy G., 1936 (1943), *Assistant Professor of Physical Education*
B.S., 1933, Oregon; M.S., 1938, Washington
- McConky, Margaret, 1961, *Instructor in Physical Education*
B.A., 1952, Washington
- Rulifson, Leone Helmich, 1926 (1943), *Associate Professor of Physical Education*
B.S., 1922, M.A., 1936, Washington
- Stallings, Irma, 1954, *Instructor in Physical Education*
B.S., 1952, Maryland; M.S., 1954, Wisconsin
- Wilson, Ruth Marian, 1936 (1945), *Associate Professor of Physical Education; Executive Officer of the Department of Physical Education for Women*
B.S., 1931, Utah; M.S., 1936, Wisconsin

DEPARTMENT OF PHYSICS

- Blair, John Sanborn, 1952 (1961), *Professor of Physics*
B.S., 1943, Yale; M.S., 1949, Ph.D., 1951, Illinois
- Bodansky, David, 1954 (1958), *Associate Professor of Physics*
B.S., 1943, M.A., 1948, Ph.D., 1950, Harvard
- Brakel, Henry Louis, 1905 (1947), *Professor Emeritus of Physics; Major Adviser*
B.A., 1902, Olivet College; M.A., 1905, Washington; Ph.D., 1912, Cornell
- Clark, Kenneth Courtright, 1948 (1960), *Professor of Physics*
B.A., 1940, Texas; M.A., 1941, Ph.D., 1947, Harvard

- Dash, Jay Gregory, 1960, *Associate Professor of Physics*
B.S., 1944, City College of New York; M.A., Ph.D., 1951, Columbia University
- Davis, Howard Fred, 1961, *Assistant Professor of Physics*
S.B., S.M., 1954, Massachusetts Institute of Technology; Ph.D., 1960, Rochester
- Dehmelt, Hans Georg, 1955 (1961), *Professor of Physics*
B.S., 1946, M.S., 1949, Ph.D., 1950, University of Goettingen (Germany)
- Fairhall, Arthur William, 1954 (1958), *Associate Professor of Physics*
B.Sc., 1946, Queens (Kingston, Ontario); Ph.D., 1952, Massachusetts Institute of Technology
- Farwell, George Wells, 1948 (1959), *Professor of Physics; Associate Dean of the Graduate School*
B.S., 1941, Harvard; Ph.D., 1948, Chicago
- Geballe, Ronald, 1946 (1959), *Professor of Physics; Executive Officer of the Department of Physics*
B.S., 1938, M.S., 1940, Ph.D., 1943, California
- Gerhart, James Basil, 1956 (1961), *Associate Professor of Physics*
B.S., 1950, California Institute of Technology; M.A., 1952, Ph.D., 1954, Princeton
- Halpern, Isaac, 1953 (1960), *Professor of Physics*
B.S., 1943, City College of New York; Ph.D., 1948, Massachusetts Institute of Technology
- Henderson, Joseph Edmonds, 1929 (1942), *Professor of Physics; Director of the Applied Physics Laboratory*
B.S., 1922, College of Wooster; Ph.D., 1928, Yale
- Henley, Ernest M., 1954 (1961), *Professor of Physics*
B.E.E., 1944, City College of New York; Ph.D., 1951, California
- Higgs, Paul McClellan, 1926 (1959), *Associate Professor of Physics*
B.S., 1919, Washington
- Jacobsohn, Boris Abbott, 1948 (1959), *Professor of Physics*
A.B., 1938, A.M., 1939, Columbia; Ph.D., 1947, Chicago
- Kenworthy, Ray William, 1929 (1950), *Associate Professor of Physics*
B.A., 1924, M.S., 1925, Iowa; Ph.D., 1938, Washington
- Kim, Young Bae, 1955 (1957), *Assistant Professor of Physics*
B.S., 1950, Washington; Ph.D., 1954, Princeton
- Lord, Jere Johns, 1952 (1957), *Associate Professor of Physics*
A.B., 1943, Reed College; M.A., 1948, Ph.D., 1950, Chicago
- Masek, George Edward, 1957 (1961), *Associate Professor of Physics*
B.S., 1950, M.S., 1951, Ph.D., 1955, Stanford
- Neddermeyer, Seth Henry, 1946 (1952), *Professor of Physics*
B.A., 1929, Stanford; Ph.D., 1935, California Institute of Technology
- Sanderman, Llewellyn Arthur, 1928 (1952), *Associate Professor of Physics; Executive Secretary of the Department of Physics*
B.S., 1923, Linfield College; M.S., 1931, Ph.D., 1943, Washington
- Scarf, Frederick Leonard, 1956 (1961), *Associate Professor of Physics*
A.B., 1951, Temple; Ph.D., 1955, Massachusetts Institute of Technology
- Schmidt, Fred Henry, 1947 (1956), *Professor of Physics*
B.S.E., 1937, Michigan; M.A., 1940, Buffalo; Ph.D., 1945, California
- Silsbee, Henry Briggs, 1958, *Acting Associate Professor of Physics*
B.S., 1943, M.A., 1948, Ph.D., 1951, Harvard
- Streib, John Frederick, Jr., 1947 (1960), *Associate Professor of Physics*
B.S., 1936, Ph.D., 1942, California Institute of Technology
- Uehling, Edwin Albrecht, 1936 (1947), *Professor of Physics*
B.A., 1925, Wisconsin; M.A., 1930, Ph.D., 1932, Michigan
- Utterback, Clinton Louis, 1918 (1955), *Professor Emeritus of Physics*
B.S., 1908, Purdue; M.S., 1918, Washington; Ph.D., 1926, Wisconsin
- Wilets, Lawrence, 1958 (1959), *Associate Professor of Physics*
B.S., 1948, Wisconsin; M.A., 1950, Ph.D., 1952, Princeton
- Williams, Robert W., 1959 (1960), *Professor of Physics*
A.B., 1941, Stanford; M.A., 1943, Princeton; Ph.D., 1948, Massachusetts Institute of Technology

DEPARTMENT OF POLITICAL SCIENCE

- Bone, Hugh Alvin, 1948, *Professor of Political Science; Executive Officer of the Department of Political Science*
B.A., 1931, North Central College; M.A., 1935, Wisconsin; Ph.D., 1937, Northwestern
- Campbell, Ernest Howard, 1946 (1960), *Research Associate Professor of Political Science; Associate Director of the Bureau of Governmental Research and Services*
B.A., 1932, LL.B., 1935, M.A., 1936, Washington; M.A., 1942, Ph.D., 1945, Harvard
- Cassinelli, Charles W., 1960, *Assistant Professor of Political Science*
A.B., 1948, M.A., 1950, California; Ph.D., 1953, Harvard
- Cole, Kenneth Carey, 1924 (1936), *Professor of Political Science*
B.Litt. in Law, 1924, Oxford (England); Ph.D., 1930, Harvard
- Danelski, David, 1961, *Assistant Professor of Political Science*
B.A., 1955, Seattle University; M.A., 1957, Ph.D., 1961, Chicago
- Gottfried, Alex, 1950 (1961), *Associate Professor of Political Science*
B.Ed., 1941, Chicago Teachers College; A.M., 1948, Ph.D., 1952, Chicago
- Harbold, William Henry, 1949 (1955), *Assistant Professor of Political Science*
A.B., 1947, Pennsylvania State; M.A., 1949, Ph.D., 1953, Harvard
- Hitchner, Dell Gillette, 1947 (1951), *Associate Professor of Political Science*
B.A., 1936, Wichita; M.A., 1937, Missouri; Ph.D., 1940, Wisconsin
- Kessel, John Howard, 1961, *Assistant Professor of Political Science*
B.A., 1950, Ohio; Ph.D., 1958, Columbia
- Kroll, Morton, 1958 (1960), *Assistant Professor of Political Science; Director of Correspondence Study*
B.A., 1946, Ph.D., 1952, California (Los Angeles)
- Mander, Linden Alfred, 1928 (1937), *Professor of Political Science*
B.A., 1917, M.A., 1920, Adelaide (Australia)
- Martin, Charles Emanuel, 1924, *Professor of Political Science; Director of the Institute of International Affairs*
B.L., 1914, A.M., 1915, California; Ph.D., 1918, Columbia; LL.D., 1942, Southern California
- McCamant, John, 1961, *Lecturer in Political Science*
B.A., 1955, Carleton; M.A., 1957, Columbia
- Reshetar, John Stephen, Jr., 1957 (1958), *Associate Professor of Political Science*
B.A., 1945, Williams; M.A., 1946, Ph.D., 1950, Harvard
- Riley, Walter Lee, 1946 (1951) *Assistant Professor of Political Science; Assistant Dean of the College of Arts and Sciences*
B.A., 1933, Adams State College; M.A., 1935, Stanford; Ph.D., 1957, Washington
- Shipman, George Anderson, 1946, *Professor of Political Science; Director of the Institute of Public Affairs*
B.A., 1925, M.A., 1926, Wesleyan (Connecticut); Ph.D., 1931, Cornell
- Warren, Robert, 1960, *Acting Assistant Professor of Political Science*
B.A., 1954, M.A., 1957, California (Los Angeles)
- Webster, Donald Hopkins, 1939 (1948), *Professor of Political Science; Director of the Bureau of Governmental Research and Services*
B.A., 1929, LL.B., 1931, Ph.D., 1933, Washington

DEPARTMENT OF PSYCHOLOGY

- Baer, Donald M., 1957 (1961), *Associate Professor of Psychology*
A.B., 1950, Ph.D., 1957, Chicago
- Bijou, Sidney William, 1948 (1951), *Professor of Psychology; Director of the Bailey and Babette Gatzert Institute of Child Development*
B.S., 1933, Florida; M.A., 1936, Columbia; Ph.D., 1941, Iowa
- Birnbrauer, Jay Spencer, 1960, *Acting Assistant Professor of Psychology*
B.S., 1954, College of William and Mary
- Culbert, Sidney Spence, 1947 (1961), *Associate Professor of Psychology*
B.A., 1943, Ph.D., 1950, Washington
- Edwards, Allen L., 1944 (1948), *Professor of Psychology*
B.A., 1937, Central College (Chicago); M.A., 1938, Ohio State; Ph.D., 1940, Northwestern

- Esper, Erwin Allen, 1927 (1960), *Professor Emeritus of Psychology*
B.A., 1917, M.A., 1920, Ph.D., 1923, Ohio State
- Fields, Paul Eldon, 1955, *Professor of Psychology*
A.B., 1926, A.M., 1927, Ohio Wesleyan; Ph.D., 1930, Ohio State
- Forrin, Bert, 1961, *Assistant Professor of Psychology*
B.A., 1952, Toronto; M.A., 1953, Ph.D., 1958, Michigan
- Heathers, Louise Bussard, 1945, *Assistant Professor of Psychology; Senior Clinical Psychologist in the Counseling Center*
B.A., 1933, Washington; Ph.D., 1940, Yale
- Hermans, Thomas Gerald, 1929 (1940), *Assistant Professor of Psychology*
B.S., 1923, M.A., 1927, Washington
- Horst, A. Paul, 1947, *Professor of Psychology*
A.B., 1927, California; Ph.D., 1931, Chicago
- Horton, George Plant, 1934 (1946), *Associate Professor of Psychology; Acting Executive Officer of the Department of Psychology*
B.S., 1926, M.A., 1930, Ph.D., 1932, Princeton
- Loucks, Roger Brown, 1936 (1948), *Professor of Psychology*
B.S. in C.E., 1927, Ph.D., 1930, Minnesota
- McKeever, Benjamin Butler, 1949, *Associate Professor of Psychology*
A.B., 1930, M.A., 1931, Harvard; Ph.D., 1940, Iowa
- Sarason, Irwin Gerald, 1956 (1959), *Associate Professor of Psychology*
B.A., 1951, Rutgers; M.A., 1953, Iowa; Ph.D., 1955, Indiana
- Smith, Moncrieff Hynson, Jr., 1949 (1959), *Professor of Psychology*
A.B., 1940, M.A., 1941, Missouri; Ph.D., 1947, Stanford
- Stotland, Ezra, 1957 (1961), *Associate Professor of Psychology*
B.S. in Soc. Sci., 1948, City College of New York; M.A., 1949, Ph.D., 1953, Michigan
- Strother, Charles Riddell, 1947, *Professor of Psychology; Professor of Clinical Psychology in the School of Medicine*
B.A., 1929, M.A., 1932, Washington; Ph.D., 1935, Iowa
- Wilson, William Ronald, 1929, *Professor of Psychology*
B.A., 1917, M.S., 1920, Ph.D., 1925, Washington
- Woodburne, Lloyd Stuart, 1950, *Professor of Psychology*
A.B., 1929, M.A., 1930, Ph.D., 1932, Michigan

PSYCHOLOGY—BAILEY AND BABETTE GATZERT INSTITUTE OF CHILD DEVELOPMENT

- Bijou, Sidney William, 1948 (1951), *Professor of Psychology; Director of the Bailey and Babette Gatzert Institute of Child Development*
B.S., 1933, Florida; M.A., 1936, Columbia; Ph.D., 1941, Iowa
- Evans, Eleanor, 1944 (1946), *Assistant Professor and Director of the Nursery School*
B.S., 1934, Illinois; M.E., 1940, Winnetka Teachers College
- Harris, Florence R., 1950 (1951), *Lecturer in the Nursery School*
B.A., 1931, M.A. in Education, 1958, Washington

DEPARTMENT OF ROMANCE LANGUAGES AND LITERATURE

- Alborg, Juan Luis, 1961, *Visiting Associate Professor of Romance Languages and Literature*
B.A., 1936, Institute "Luis Vives"; M.A., 1940, University of Valencia; Ph.D., 1960, University of Madrid
- Alcalá, Hugo R., 1958 (1961), *Professor of Romance Languages and Literature*
Bachiller, 1936, LL.D., 1943, Asunción (Paraguay); M.F.L., 1950, Washington State; Ph.D., 1953, Wisconsin
- Ayllón Cándido, 1956 (1957), *Assistant Professor of Spanish*
B.A., 1951, Brooklyn College; M.A., 1952, Ph.D., 1956, Wisconsin
- Budel, Oscar, 1956 (1961), *Associate Professor of Italian Language and Literature*
Abitur, 1942, Dr. Phil., 1950, University of Würzburg (Germany)
- Chessex, Jean-Charles, 1928 (1948), *Professor of French*
B.A., 1920, Gymnase Classique (Lausanne, Switzerland); B.D., 1922, M.A., 1925, Lausanne (Switzerland)

Creore, Alvin Emerson, 1940 (1953), *Associate Professor of Romance Languages and Literature*

A.B., 1934, M.A., 1936, Rochester; Ph.D., 1939, Johns Hopkins

David, Jean Ferdinand, 1936 (1957), *Associate Professor of Romance Languages and Literature*

Bacc., 1923, Collège Grandchamp (Versailles, France); A.B., 1929, M.A., 1932, Saskatchewan; Ph.D., 1936, Johns Hopkins

Dorfman, Eugene, 1955, *Assistant Professor of Romance Linguistics*

A.B., 1938, New Jersey State Teachers College; A.M., 1947, Ph.D., 1950, Columbia

Friedman, Lionel J., 1961, *Visiting Associate Professor of Romance Languages and Literature*

B.A., 1943, Harvard College; M.A., 1946, Ph.D., 1950, Harvard

Garcia-Prada, Carlos, 1925 (1957), *Professor Emeritus of Spanish*

Ph.B., 1918, Colegio Del Rosario (Bogota, Columbia); M.A., 1924, Michigan; Ph.D., 1929, Universidad Nacional (Bogota, Colombia)

Hanzeli, Victor Egon, 1957 (1961), *Assistant Professor of Romance Languages and Literature*

LL.B., 1947, Pazmany Peter University (Budapest); M.A., 1955, Ph.D., 1961, Indiana

Keller, Abraham C., 1948 (1952), *Associate Professor of Romance Languages and Literature*

B.A., 1936, M.A., 1937, Ohio State; Ph.D., 1946, California

Nostrand, Howard Lee, 1939, *Professor of Romance Languages and Literature; Executive Officer of the Department of Romance Languages and Literature*

B.A., 1932, Amherst College; M.A., 1933, Harvard; Docteur, 1934, Université de Paris

Saporta, Sol, 1960 (1961), *Associate Professor of Romance Linguistics*

B.A., 1944, Brooklyn; M.A., 1952, Ph.D., 1955, Illinois

Simpson, Lurline Violet, 1924 (1944), *Associate Professor of Romance Languages and Literature*

B.A., 1920, M.A., 1924, Ph.D., 1928, Washington

Snyder, Emile, 1961, *Acting Assistant Professor of Romance Languages and Literature*

B.A., 1949, Adelphi; M.A., 1952, Harvard

Sousa, Thomas Frederic, Jr., 1957, *Instructor in Spanish*

B.A., 1950; M.A., 1951, Wisconsin

Vargas-Baron, Anibal, 1949, *Associate Professor of Spanish*

B.A., 1926, Asbury College; M.A., 1929, Ph.D., 1943, Washington

Weiner, Seymour S., 1953 (1959), *Associate Professor of Romance Languages and Literature*

B.A., 1940, City College of New York; M.A., 1941, California; M.S. in L.S., Ph.D., 1952, Columbia

Wilson, Clotilde Marconnier, 1929 (1961), *Associate Professor of Romance Languages*

B.A., 1926, M.A., 1927, Ph.D., 1931, Washington

Wilson, William Charles Eade, 1926 (1947), *Professor of Romance Languages*

A.B., 1922, Montana; M.A., 1925, Ph.D., 1928, Washington

DEPARTMENT OF SCANDINAVIAN LANGUAGES AND LITERATURE

Arestad, Sverre, 1937 (1958), *Professor of Scandinavian Languages; Executive Officer of the Department of Scandinavian Languages and Literature*

B.A., 1929, Ph.D., 1938, Washington

Johnson, Walter Gilbert, 1948 (1956), *Professor of Scandinavian Languages*

B.A., 1927, Augsburg College; M.A., 1929, Minnesota; Ph.D., 1935, Illinois

DEPARTMENT OF SOCIOLOGY

Andersen, Holger Mueller, 1959 (1961), *Acting Instructor in Sociology*

B.S., 1949, Washington

Barth, Ernest A. T., 1955 (1959), *Assistant Professor of Sociology*

A.B., Rochester, 1950; M.A., 1953, Ph.D., 1956, North Carolina

- Catton, William Robert, Jr., 1957, *Assistant Professor of Sociology*
A.B., 1950, Oberlin College; M.A., 1952, Ph.D., 1954, Washington
- Cohen, Joseph, 1932 (1941), *Assistant Professor of Sociology*
B.A., 1925, M.A., 1927, Washington; Ph.D., 1935, Michigan
- Costner, Herbert Lee, 1959 (1960), *Assistant Professor of Sociology*
A.B., 1953, Oklahoma; M.A., 1956, Ph.D., 1960, Indiana
- Dodd, Stuart Carter, 1947, *Professor of Sociology*
B.S., 1922, M.A., 1924, Ph.D., 1926, Princeton
- Dynes, Wallace Arthur, 1958 (1960), *Acting Instructor in Sociology*
A.B., 1952, M.A., 1954, Florida State
- Faris, Robert E. Lee, 1948, *Professor of Sociology; Executive Officer of the Department of Sociology*
Ph.B., 1928, M.A., 1930, Ph.D., 1931, Chicago
- Hayes, Donald Pearce, 1956 (1958), *Instructor in Sociology*
A.B., 1952, Pomona; M.A., 1956, Ph.D., 1959, Washington
- Hayner, Norman Sylvester, 1925 (1937), *Professor of Sociology*
B.A., 1920, Washington; M.A., 1921, Ph.D., 1923, Chicago
- Jackson, Joan Katherine, 1958, *Lecturer in Sociology; Research Assistant Professor of Psychiatry*
A.B., 1945, M.A., 1947, McGill; Ph.D., 1955, Washington
- Larsen, Otto Nyholm, 1949 (1958), *Associate Professor of Sociology; Director of the Washington Institute for Sociological Research*
B.A., 1947, M.A., 1949, Ph.D., 1955, Washington
- Leik, Robert Kendric, 1959, *Assistant Professor of Sociology*
B.S., 1953, Oregon; M.S., 1957, Ph.D., 1959, Wisconsin
- Lundberg, George Andrew, 1945 (1961), *Professor Emeritus of Sociology*
B.A., 1920, North Dakota; M.A., 1923, Wisconsin; Ph.D., 1925, Minnesota
- Miyamoto, Shotaro Frank, 1945 (1956), *Associate Professor of Sociology*
B.A., 1936, M.A., 1938, Washington; Ph.D., 1950, Chicago
- Noel, Donald Leroy, 1961, *Acting Assistant Professor of Sociology*
B.S., 1954, Wisconsin
- Øyen, Ørjar, 1960, *Acting Instructor of Sociology*
M.A., 1953, Washington
- Rothbart, George Sherman, 1959 (1961), *Acting Instructor in Sociology*
A.B., 1947, Chicago
- Schmid, Calvin Fisher, 1937 (1941), *Professor of Sociology; Director of the Office of Population Research*
B.A., 1925, Washington; Ph.D., 1930, Pittsburgh
- Schrag, Clarence Clyde, 1944 (1960), *Professor of Sociology*
B.A., 1930, Washington State; M.A., 1945, Ph.D., 1950, Washington
- Wager, Leonard Wesley, 1954 (1959), *Assistant Professor of Sociology*
B.A., 1949, M.A., 1952, Washington; Ph.D., 1959, Chicago
- Watson, Walter Bingham, 1958, *Assistant Professor of Sociology*
A.B., 1953, Southern Methodist; M.S., 1954, Ph.D., 1959, Wisconsin

DEPARTMENT OF SPEECH

- Baker, Margaret, 1955 (1961), *Lecturer in Speech*
B.R.E., 1929, Boston University; M.A., 1935, Washington
- Baskerville, Barnet, 1948 (1960), *Professor of Speech; Director of Honors in the College of Arts and Sciences*
B.A., 1940, M.A., 1944, Washington; Ph.D., 1948, Northwestern
- Bird, Winfred Wylam, 1928 (1946), *Associate Professor of Speech*
A.B., 1926, Lawrence College (Wisconsin); Ph.D., 1938, Iowa
- Carney, John, 1959, *Lecturer in Speech*
B.A., 1935, North Dakota; M.D., 1937, Rush Medical College
- Carrell, James Aubrey, 1939 (1947), *Professor of Speech*
A.B., 1927, Nebraska Wesleyan; M.A., 1929, Ph.D., 1936, Northwestern

- Crowell, Laura Irene, 1949 (1955), *Associate Professor of Speech*
B.A., 1929, South Dakota; M.A., 1940, Ph.D., 1948, Iowa
- Franzke, Albert Leonard, 1936 (1939), *Associate Professor of Speech*
B.A., 1916, M.A., 1923, Lawrence College (Wisconsin)
- Grimes, Wilma Horrell, 1953 (1961), *Associate Professor of Speech*
B.A., 1928, Wisconsin; M.A., 1947, Northwestern; Ph.D., 1953, Illinois
- Hanley, Clair Norton, 1952 (1956), *Associate Professor of Speech*
B.A., 1947, M.A., 1950, Ph.D., 1952, Iowa
- Hogan, Michael, 1949 (1957), *Lecturer in Speech*
B.A., 1938, M.A., 1950, Washington
- Kunze, LuVern, 1961, *Acting Assistant Professor of Speech*
B.A., 1950, Dakota Wesleyan; M.A., 1954, Colorado State
- LaRusso, Dominic Anthony, 1951 (1956), *Assistant Professor of Speech*
B.A., 1950, M.A., 1952, Washington; Ph.D., 1956, Northwestern
- Miller, Gerald, 1961, *Assistant Professor of Speech*
B.A., 1957, M.A., 1958, Iowa
- Nelson, Oliver Wendell, 1945 (1952), *Associate Professor of Speech*
B.A., 1933, M.A., 1939, Ph.D., 1949, Washington
- Nilsen, Thomas Robert, 1946 (1954), *Assistant Professor of Speech*
B.A., 1940, M.A., 1948, Washington; Ph.D., 1953, Northwestern
- Orr, Frederick Wesley, 1925 (1948), *Professor Emeritus of Speech; Research Consultant*
B.L., 1901, Drury College; G.C.D., 1905, Boston School of Expression; M.A., 1925, Lawrence College (Wisconsin)
- Palmer, John Milton, 1952 (1954), *Assistant Professor of Speech*
B.A., 1946, M.A., 1950, Washington; Ph.D., 1952, Michigan
- Pence, Orville Leon, 1941 (1954), *Associate Professor of Speech*
B.A., 1935, M.A., 1939, Washington; Ph.D., 1946, Iowa
- Post, Robert, 1960, *Instructor in Speech*
A.B., 1956, W. Virginia Wesleyan; M.A., 1958, Ph.D., 1961, Ohio
- Rahskopf, Horace G., 1928 (1944), *Professor of Speech; Executive Officer of the Department of Speech*
A.B., 1920, Willamette; M.A., 1927, Ph.D., 1935, Iowa
- Smith, Robert, 1961, *Instructor in Speech*
B.A., 1951, Augsburg College (Minneapolis); M.A., 1953, Washington University (St. Louis)
- Shapley, James, 1960, *Clinical Associate Professor of Speech*
B.A., 1947, M.A., 1952, Washington; Ph.D., 1954, Iowa
- Stevens, Walter W., 1959, *Assistant Professor of Speech*
B.A., 1951, M.A., 1953, Wayne; Ph.D., 1959, Michigan
- Strother, David Boyd, 1958, *Assistant Professor of Speech*
A.B., 1950, Georgetown College; M.A., 1951, Northwestern; Ph.D., 1958, Illinois
- Sugarman, Alfred, 1957, *Instructor in Speech*
B.A., 1949, M.A., 1951, Washington
- Tiffany, William Robert, 1947 (1956), *Associate Professor of Speech*
B.A., 1946, M.A., 1947, Washington; Ph.D., 1951, Iowa
- Waszkiewicz, Maureen, 1961, *Lecturer in Speech*
B.S. Ed., 1956, M. Ed., 1958, Wayne State University
- Wingate, Marcel E., 1957, *Assistant Professor of Speech*
B.A., 1948, Grinnell; M.S., 1952, Ph.D., 1956, Washington

DEPARTMENT OF ZOOLOGY

- Edmondson, Walles Thomas, 1949 (1957), *Professor of Zoology*
B.S., 1938, Ph.D., 1942, Yale
- Fernald, Robert Leslie, 1946 (1959), *Associate Professor of Zoology; Director of Friday Harbor Laboratories*
A.B., 1937, Monmouth College; Ph.D., 1941, California
- Florey, Ernst, 1956 (1960), *Associate Professor of Zoology*
Ph.D., 1950, University of Graz (Austria)

- Haggis, Alex John, 1960, *Assistant Professor of Zoology*
A.B., 1949, M.S., 1951, Wayne State; Ph.D., 1955, Rochester
- Hatch, Melville Harrison, 1927 (1941), *Professor of Zoology*
B.A., 1919, M.A., 1921, Ph.D., 1925, Michigan
- Hsu, Wellington Siang, 1944 (1960), *Professor of Zoology*
B.S., 1922, Illinois; M.S., 1924, D.Sc., 1928, Harvard
- Illg, Paul Louis, 1952 (1959), *Professor of Zoology*
A.B., 1936, M.A., 1941, California; Ph.D., 1952, George Washington
- Kincaid, Trevor, 1899 (1947), *Professor Emeritus of Zoology; Research Consultant*
B.S., 1899, Washington; D.Sc., 1940, College of Puget Sound
- Kohn, Alan Jacobs, 1961, *Assistant Professor of Zoology*
A.B., 1953, Princeton; Ph.D., 1957, Yale
- Martin, Arthur Wesley, Jr., 1937 (1950), *Professor of Physiology; Executive Officer of the Department of Zoology*
B.S., 1931, College of Puget Sound; Ph.D., 1936, Stanford
- Orians, Gordon Howell, 1960, *Assistant Professor of Zoology*
B.S., 1954, Wisconsin; Ph.D., 1960, California
- Osterud, Kenneth Leland, 1949, *Assistant Professor of Zoology*
B.A., 1935, Randolph-Macon College; Ph.D., 1941, New York
- Ray, Dixy Lee, 1945 (1957), *Associate Professor of Zoology*
B.A., 1937, M.A., 1938, Mills College; Ph.D., 1945, Stanford
- Richardson, Frank, 1956 (1959), *Associate Professor of Zoology; Curator in Zoology, Washington State Museum*
B.A., 1934, Pomona; Ph.D., 1939, California
- Snyder, Richard Craine, 1949 (1957), *Associate Professor of Zoology*
A.B., 1940, Bucknell; A.M., 1941, Ph.D., 1948, Cornell
- Svihla, Arthur, 1938 (1959), *Professor Emeritus of Zoology*
A.B., 1925, Illinois; M.S., 1928, Ph.D., 1931, Michigan
- Whiteley, Arthur Henry, 1947 (1959), *Professor of Zoology*
B.A., 1938, Kalamazoo College; M.A., 1939, Wisconsin; Ph.D., 1945, Princeton

COOPERATING FACULTY

(Health Sciences Faculty Members who teach courses leading to Bachelor's Degrees in Medical Technology, Microbiology, and Preventive Medicine)

- Alexander, E. Russell, 1961, *Assistant Professor of Preventive Medicine*
Ph.B., 1948, S.B., 1950, M.D., 1953, Chicago
- Bennett, Blair Miller, 1950 (1953), *Assistant Professor of Preventive Medicine*
A.B., 1938, Georgetown; M.A., 1940, Columbia; Ph.D., 1950, California
- Breyse, Peter A., 1957, *Acting Director, Environmental Research Laboratory; Research Instructor in Preventive Medicine*
B.S., 1952, Idaho; M.S., 1954, Washington State; M.P.H., 1957, Pittsburgh
- Bucove, Bernard, 1957, *Clinical Assistant Professor of Preventive Medicine*
M.D., 1937, D.P.H., 1946, Toronto (Canada)
- Douglas, Howard Clark, 1941 (1958), *Professor of Microbiology*
A.B., 1936, Ph.D., 1949, California
- Duchow, Esther Alwine, 1940 (1954), *Instructor in Microbiology*
B.S., 1934, M.S., 1952, Washington
- Ellerbrook, Lester D., 1946 (1949), *Associate Professor of Pathology*
A.B., 1932, Hope College; Ph.D., 1936, New York
- Evans, Charles Albert, 1946, *Professor of Microbiology; Executive Officer of the Department of Microbiology*
B.S., 1935, B.M., 1936, M.D., 1937, Ph.D., 1942, Minnesota
- Grayston, J. Thomas, 1960, *Professor of Preventive Medicine; Executive Officer of the Department of Preventive Medicine*
B.S., 1947, M.D., 1948, M.S., 1952, Chicago

- Groman, Neal Benjamin, 1950 (1958), *Associate Professor of Microbiology*
S.B., 1947, Ph.D., 1950, Chicago
- Hain, Raymond F., 1951 (1959), *Associate Professor of Pathology*
B.S., 1942, Albright; M.D., 1945, Jefferson Medical College
- Hatlen, Jack Bernard, 1952 (1958), *Instructor in Preventive Medicine*
B.S., 1949, M.S., 1958, Washington
- Henry, Bernard Stauffer, 1931 (1941), *Professor of Microbiology*
B.S., 1925, M.A., 1926, Ph.D., 1931, California
- Holland, John Joseph, 1960, *Assistant Professor of Microbiology*
B.S., 1953, Loyola; Ph.D., 1957, California (Los Angeles)
- Hougie, Cecil, 1960, *Associate Professor of Pathology*
M.R.C.S. (England), L.R.C.P. (London), 1945; M.B., B.S., 1946, University of London
- Mills, Caswell Albert, 1942 (1961), *Associate Professor of Physical Education and Preventive Medicine*
B.A., 1935, North Dakota State Teachers College; M.A., 1943, Ph.D., 1959, Washington
- Mottet, N. Karle, 1959 (1961), *Associate Professor of Pathology*
B.S., 1947, State College of Washington; M.D., 1952, Yale
- Ordal, Erling J., 1937 (1957), *Professor of Microbiology*
A.B., 1927, Luther College; Ph.D., 1936, Minnesota
- Reeves, George Spencer, 1935 (1948), *Associate Professor of Physical Education and Preventive Medicine*
B.S., 1933, Oregon State; M.S., 1937, Oregon; M.P.H., 1951, California (Berkeley)
- Ricker, Walter A., 1946 (1954), *Clinical Associate Professor of Pathology*
M.D., 1939, Marquette
- Sherris, John Charles, 1959, *Associate Professor of Microbiology*
M.B., B.S., 1948, M.D., 1950, University of London
- Smuckler, Edward A., 1961, *Instructor in Pathology*
A.B., 1952, Dartmouth College; M.D., 1956, Tufts University
- Standish, Seymour Myles, Jr., 1956, *Lecturer in Preventive Medicine*
B.A., 1942, Washington
- Vavra, Catherine Elizabeth, 1950 (1956), *Lecturer in Preventive Medicine*
R.N., 1930, St. Mary's Hospital, Minneapolis; B.S., 1935, M.P.H., 1946, Minnesota
- Weiser, Russell Shivley, 1934 (1949), *Professor of Microbiology*
B.S., 1930, M.S., 1931, North Dakota State; Ph.D., 1934, Washington
- Wilkey, John R., 1949 (1958), *Clinical Associate Professor of Preventive Medicine*
B.A., 1926, Western Ontario (Canada); M.D., C.M., 1931, McGill (Canada);
D.P.H., 1940, Toronto (Canada)

APPENDIX

APPENDIX

UNDERGRADUATE ADMISSION, EXCEPTIONAL CASES

An applicant whose preparation and previous scholarship do not clearly qualify him for admission may submit additional evidence in support of his application. This may include scores on nationally recognized tests of scholastic aptitude or achievement; letters from school administrators, teachers, or counselors; and other information which may assist the Board of Admissions in evaluating his probability of success in the University.

Students admitted by special action of the Board of Admissions will be expected to achieve and maintain a satisfactory scholastic average in their University work and to fulfill any conditions specified by the Board at the time of their admission.

A student thus admitted on probation will be subject to scholarship rules given on page 25.

Furthermore, he or she may not (1) be pledged 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 regulations of the University Intercollegiate Athletics Committee.

ADVANCED STANDING AND TRANSFER OF CREDIT

1. The advanced standing for which an applicant's training appears to fit him is granted tentatively on admission. Definite advanced standing is not determined before the end of the student's first quarter in the University. The maximum that may be accepted from other colleges and universities is 135 quarter credits or senior standing. Transfer credit will not be allowed in the senior year.

2. Transfer credits will be accepted for upper-division credit *only* when earned at an accredited four-year degree-granting institution.

3. Transfer credits from institutions accredited for less than four years will not be accepted in excess of the accreditation of the school concerned.

4. Transfer of junior college credit shall apply on the 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 to completion of the first two years in the University. In no case shall the transfer of junior college credit to the University exceed 90 quarter credits exclusive of physical education activity credits.

5. The maximum number of credits obtainable by acceptance of Armed Forces training schools credits will be 30. All such credits will be counted as extension credits and will be included in the 90-credit maximum allowed toward the bachelor's degree, but none will apply toward the work of the senior year.

6. A maximum of 45 credits earned in extension and correspondence courses at other institutions may be transferred, but none of the credits can apply in the senior year. Extension and correspondence credits from schools that are not members of the National University Extension Association are accepted only after examination.

7. Credits earned in evening and extension classes or correspondence courses at this University are accepted after the student has satisfactorily completed 35 credits of work in residence (that is, registered in regular University classes). A maximum of 90 extension and/or correspondence credits is acceptable; the 90 credits may include the 45 extension and/or correspondence credits allowable from other institutions or may consist entirely of courses taken in this University's Division of Evening Classes or Division of Correspondence Study. All credits earned in advanced-credit examinations and all acceptable Armed Forces training schools credits must be counted in the 90 extension credit maximum. Up to 10 evening class or correspondence course credits from this University can apply toward the work of the senior year.

8. For work done in unaccredited institutions, extended secondary programs in institutions whose standing is unknown, and for work with private teachers, University credit is granted only after examination. Applications for advanced credit examinations must be filed during the first quarter in residence.

9. No credit will be granted 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. The prescribed written permission is effective only if obtained before registration. Nothing in this rule makes mandatory the granting of any credit by the University.

KOREAN VETERANS INFORMATION

Korean Certificate

Application for this certificate should be made at least four weeks prior to the beginning of University instruction. If the veteran is eligible, the Veterans Administration will issue him a Certificate for Education and Training which must be presented, along with his Program of Studies, to the Veterans Division, Safety Division Building, as soon as registration is completed. A Korean veteran should be prepared to meet all his own expenses as well as the cost of tuition, fees, and supplies for at least two months, because allowances are not made until after a full month's attendance has been established.

Quarter Credit Requirements (Public Law 550)

14 credits.....	Full subsistence
10 to 13 credits.....	Three-fourths subsistence
7 to 9 credits.....	One-half subsistence
6 credits or less.....	Established tuition and fees
or credits ÷ 14 × \$110.00, whichever is the lesser.	

Graduate Credit Requirements (Public Law 550) 500-level Courses or Above

9 credits.....	Full subsistence
7 to 8 credits.....	Three-fourths subsistence
5 to 6 credits.....	One-half subsistence
4 credits or less.....	Established tuition and fees
	or credits $\div 14 \times \$110.00$, whichever is the lesser.

If a graduate is combining 400-level courses with 500-level courses, he should consult with the Veterans Division, Safety Division Building, to determine the scale of pay.

Termination of Training

A veteran *eligible* under Public Law 550 must complete his training by *eight years* after his release from active service, or by January 31, 1965, whichever is earlier.

WITHDRAWALS**WITHDRAWAL FROM A COURSE**

Official withdrawal from a course is made only under the following conditions: (1) during the first fifteen calendar days of a quarter, with the consent of the withdrawing student's adviser; (2) after the first fifteen calendar days of a quarter and before the end of the first six calendar weeks of a quarter, with the approval of the student's adviser, the instructor of the course from which withdrawal is sought, and of the dean of the college in which the withdrawing student is enrolled; and (3) after the first six calendar weeks of a quarter and before final examination week, only upon certification in writing to the Registrar by the dean of the college in which the withdrawing student is enrolled that, in the judgment of the dean, withdrawal is necessitated by the student's hardship. Withdrawals from courses accomplished by any other method are unofficial withdrawals which are entered on a student's record as EW, and are assigned the value of E in the computation of the student's grade-point average. No official withdrawal may be made during final examination week.

Official withdrawals are entered on a student's record as follows: (1) a withdrawal within the first fifteen calendar days of a quarter, as W; (2) a withdrawal after the first fifteen calendar days of a quarter and before final examination week, as PW, if the student's work has been satisfactory, and as E, if the student's work has been unsatisfactory. Grades of PW and W are assigned no value in the computation of grade-point averages.

WITHDRAWAL FROM THE UNIVERSITY

The student should obtain at the office of the Dean, 121 Miller Hall, the Request for Withdrawal From the University form.

MILITARY TRAINING

The two-year basic programs offered by the Departments of Air Science and Military Science and the four-year program offered by the Department of Naval Science, satisfy this requirement. For a complete list of courses offered by these Departments, see the *Yearly Time Schedule*. In addition to the basic programs, the Department of Air Science and the Department of Military Science each offers for selected students an advanced program which leads to commissioning in the Air Force or the Army. The four-year program of the Department of Naval Science, also for selected students, leads to commissioning in the Navy or Marine Corps.

Students enrolling in Naval ROTC, and those who take the advanced program of Air Force or Army ROTC must agree in writing to complete the course of training and accept a commission in the service for which they are trained. *The honoring of this commitment is a condition of graduation from the University.*

The basic program of the Department of Air Science consists of three quarters of military classroom instruction on the Foundations of Air Power. These are offered in the Spring Quarter of the first year and the Autumn and Winter Quarters of the second year. During each of the other three quarters, the student must substitute an approved University course in lieu of Air Science. Leadership laboratory is required each of the six quarters of the basic program and is conducted one hour each week. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*.

The basic program (freshmen and sophomores) of the Department of Military Science requires drill one hour each week. Classroom military studies for freshmen are not required in the Autumn Quarter. One hour per week is required in the Winter Quarter, and two hours of classroom work are required in Spring Quarter. As a substitute for these classroom hours in Autumn Quarter of the freshman year, registration is required in a selected three-credit or five-credit course in another department. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*. Sophomores are required to attend two hours per week of classroom military studies throughout the academic year.

Information concerning the Naval Science ROTC program can be found on pages 206-208.

Exemptions from the military requirement are granted to:

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

2. Students who enter as juniors or seniors.

3. Special students.

4. Students registered for 6 credits or less.

5. Students who are not citizens of the United States.

6. Students who, because of physical condition, are exempted by the University Health Officer.

7. Students who have equivalent military service. Complete or partial exemptions, depending on length of service, are granted for previous active service in the Armed Forces or Coast Guard.

8. Students who are active members or reserve officers of the Armed Forces or Coast Guard, or commissioned officers of the National Guard.

9. Students who are active enlisted members of the National Guard or of the Organized Reserve of the Armed Forces or Coast Guard.

10. Transfer students who present acceptable credit for military training taken in other colleges. The amount of exemption depends on the amount of previous training. Transfer students are required to take military training only for the number of quarters they need to achieve junior standing by a normal schedule.

11. Students who seek exemption on grounds other than 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 after consultation with the appropriate ROTC commander.

Those who are exempted under paragraph 5 or 11 must arrange at the time of initial entrance to substitute equivalent extra credits in other University courses to equal the number of credits they would have been required to earn in military training courses.

PHYSICAL EDUCATION ACTIVITIES

Men students may use credits earned in freshman or varsity sports to satisfy the activity course requirement.

Women students, in fulfilling the three-quarter requirement, may take a maximum of two credits in any of the following: (1) swim area; (2) dance area; (3) tennis and badminton; (4) any other specific individual, dual, or team activity.

The following students are exempt from the requirement of activity courses:

1. Students who have attained the age of twenty-five. A student who attains the age of twenty-five during a quarter in which he is registered for a required physical education activity course shall be held for the completion of that course. This rule shall not be retroactive in its application to students who entered prior to Spring Quarter, 1951, and were exempted from required physical education courses under previous rules.
2. Students who enter as sophomores, juniors, or seniors.
3. Special students.
4. Students registered for 6 credits or less.
5. Students who, because of physical condition, are exempted by the Graduation Committee upon the recommendation of the Dean of the College. Such action will be taken only when the Dean has received a joint recommendation for exemption from the University Health Officer and the Executive Officer of the Department of Physical Education for Men or for Women, whichever is appropriate. All other students who are reported by the University Health Officer as physically unfit to join regular classes will be assigned by the Executive Officer of the Department of Physical Education for Men or for Women to special programs adapted to their needs.
6. Students who are veterans of military service. Complete exemption is granted for one year or more of active duty. This exemption does not grant credit. Veterans with less than one year of service receive no exemption.
7. Transfer students who present acceptable credit for physical education activity courses taken in other colleges. The amount of exemption depends on the number of quarters for which credit is transferred.

FEES, EXTRA SERVICE CHARGES, AND RENTALS

All fees, extra service charges, and rentals are payable in United States dollars at the time of registration. The University reserves the right to change any of its fees and charges without notice.

The fee schedules for resident and nonresident students, following, apply to the academic year (Autumn, Winter, and Spring Quarters). Summer fees are listed in the *Summer Quarter Bulletin*.

EXEMPTIONS

Veterans of World Wars I or II

Exemption from tuition charges is granted resident students who either (1) served in the United States Armed Forces during World War I and received honorable discharges; or (2) served in the United States Armed Forces during World War II at any time after December 6, 1941, and before January 1, 1947, and received honorable discharges, but are no longer entitled to federal educational benefits; or (3) are United States citizens who served in the armed forces of governments associated with the United States during World Wars I or II and received honorable discharges. Nonresident students who meet one of these requirements pay one-half of the nonresident tuition. This exemption is not granted to Summer Quarter students.

Proof of eligibility should be met as follows:

- (1) World War I veterans should present copy of discharge papers to Comptroller's Office, 203 Administration Building.
- (2) World War II veterans with Korean service or who have suffered disability should present a letter from the Veterans Administration Regional Office to the Veterans Division, Safety Division Building, stating they are no longer eligible for any federal educational benefits. (Excepted are those veterans who have had both World War II benefits and Korean benefits and have expired those benefits at the University of Washington.)
- (3) World War II veterans who have not suffered any disability or served in the Korean Conflict should present an 8½-inch x 11-inch photostat of discharge papers to the Veterans Division, Safety Division Building.

Exemption must be cleared prior to student's appointment day for registration in order to prevent personal payment.

EXTRA SERVICE CHARGES

A registration service charge of \$15.00 is assessed those students: (1) eligible for Advance (mail) Registration who fail to participate; or (2) who, after the established application deadline, are granted Appointments or Permits to register by In-Person Registration by action of the Registration Appeal Board. A late registration charge of \$15.00 is assessed any student granted permission to register after the last registration day before the opening of Autumn, Winter, or Spring Quarters by action of the Registration Appeal Board. A charge of \$5.00 is made Autumn, Winter, and Spring Quarters 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.

<i>Special Examination</i>	\$1.00
<i>Removal of an Incomplete</i>	2.00
<i>Washington Pre-College Differential Guidance (Grade Prediction) Test</i>	5.00
<i>Athletic Admission Ticket (optional for ASUW members)</i>	3.50-6.50
Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.	

FEES FOR RESIDENT STUDENTS

A resident is one who has been domiciled in Washington for at least a year immediately prior to registration.

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

Type of Registration	Tuition Fee	Incidental Fee	ASUW Fee* Autumn, Winter, and Spring Quarters	Total Fees Autumn, Winter, and Spring Quarters
Full-time students** (undergraduate and graduate) except in Medical and Dental Schools	\$35.00	\$56.50	\$8.50	\$100.00
Auditors		39.00	†	39.00
Part-time (max. 6 credits exclusive of ROTC)§	35.00	39.00	†	74.00
Ex-service personnel of World Wars I and II† (Chapter 46, Laws of 1945)				
Full-time		56.50	8.50	65.00
Part-time (max. 6 credits)§		39.00	†	39.00
Students registered for thesis only (for credit or final)||		56.50	†	56.50
Students registered for degree final only (nonthesis)||		56.50	†	56.50

* Athletic admission ticket is optional for ASUW members. Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.

** A \$25.00 uniform rental is paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.

† 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 to determine eligibility.

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

|| Must be approved by the Graduate School.

Military Uniform Rental	25.00
Paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.	
Breakage Ticket	3.00
Required in some laboratory courses; ticket is returnable for full or partial refund.	
Locker Rental, per quarter	2.00
Required of men students taking physical education activities.	
Quarterly Grade Report	.50
One grade report is issued at the close of each quarter without charge; the charge, payable in advance, is made for each additional copy.	
Transcripts	1.00
One transcript is furnished without charge; the charge, payable in advance, is made for each additional copy.	
Graduation Exercises Diploma	10.00
MUSIC PRACTICE ROOM, per quarter: piano practice, \$3.00, one hour a day; \$5.00, two hours a day; \$6.00, three hours a day. Organ practice, \$6.00, one hour	

FEES FOR NONRESIDENT STUDENTS

Prospective students are classified as nonresidents when their credentials come from schools outside Washington. If they believe they are residents, they may petition the Residence Classification Office, 205A Administration Building, for a change of classification.

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

Type of Registration	Tuition Fee	Incidental Fee	ASUW Fee* Autumn, Winter, and Spring Quarters	Total Fees Autumn, Winter, and Spring Quarters
Full-time students** (undergraduate and graduate) except in Medical and Dental Schools	\$105.00	\$86.50	\$8.50	\$200.00
Auditors		39.00	†	39.00
Part-time (max. 6 credits exclusive of ROTC)§	105.00	69.00	†	174.00
Ex-service personnel of World Wars I and II‡ (Chapter 46, Laws of 1945)				
Full-time	52.50	86.50	8.50	147.50
Part-time (max. 6 credits)§	52.50	69.00	†	121.50
Students registered for thesis only (for credit or final)||		56.50	†	56.50
Students registered for degree final only (nonthesis)||		56.50	†	56.50

* Athletic admission ticket is optional for ASUW members. Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.

** A \$25.00 rental is paid by students in Army and Air Force ROTC, refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.

† 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 to determine eligibility.

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

|| Must be approved by the Graduate School.

a day; \$10.00, two hours a day; \$12.00, three hours a day. Practice rooms are available only to students taking music courses.

PHYSICAL EDUCATION ACTIVITIES, per quarter: bowling, \$5.00; canoeing, \$3.00; golf instruction, \$1.50.

REFUND OF FEES, CHARGES, AND RENTALS

All fees will be refunded in full if complete withdrawal is made during the first three calendar days of the quarter; one-half the amount will be refunded if withdrawal is made during the first thirty calendar days. Refunds are not made to students withdrawing under discipline.

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

At least two weeks must elapse between payment and refund, if payment was made by check.

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CALENDAR

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

AUTUMN QUARTER, 1961

REGISTRATION PERIOD

MAY 1-26	Advance Registration only for students in residence Spring Quarter, 1961. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 5-22	In-Person Registration for students in residence Spring Quarter, 1961, who did not complete Autumn Quarter, 1961, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
SEPT. 5-22	In-Person Registration for former students not in residence Spring Quarter, 1961. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is September 15.</i>
AUG. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 7-22	In-Person Registration for ALL new students.
SEPT. 22	Last day to register for Autumn Quarter, 1961. Note application deadlines.
SEPT. 25-29	Change of registration by appointment only.

ACADEMIC PERIOD

SEPT. 25—MONDAY	Instruction begins
SEPT. 29—FRIDAY	Last day to add a course
NOV. 1—WEDNESDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1962, due at Registrar's Office
NOV. 11—SATURDAY	State Admission Day holiday
NOV. 17—FRIDAY	Last day to submit applications for advanced credit examinations
NOV. 22-27	Thanksgiving recess (6:30 p.m. to 7:30 a.m.)
DEC. 2—SATURDAY	Advanced credit examinations
DEC. 6-12	Final examinations
DEC. 12—TUESDAY	Quarter ends

WINTER QUARTER, 1962**REGISTRATION PERIOD**

OCT. 23-Nov. 17	Advance Registration only for students in residence Autumn Quarter, 1961. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
DEC. 26-28	In-Person Registration for students in residence Autumn Quarter, 1961, who did not complete Winter Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
DEC. 26-28	In-Person Registration for former students not in residence Autumn Quarter, 1961. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 8.</i>
DEC. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
DEC. 20	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
DEC. 26-28	In-Person Registration for ALL new students.
DEC. 28	Last day to register for Winter Quarter, 1962. Note application deadlines above.
JAN. 2-8	Change of registration by appointment only.

ACADEMIC PERIOD

JAN. 2—TUESDAY	Instruction begins
JAN. 8—MONDAY	Last day to add a course
FEB. 16—FRIDAY	Last day to submit applications for advanced credit examinations
FEB. 22—THURSDAY	Washington's Birthday and Founder's Day holiday
MAR. 3—SATURDAY	Advanced credit examinations
MAR. 9-15	Final examinations
MAR. 15—THURSDAY	Quarter ends

SPRING QUARTER, 1962**REGISTRATION PERIOD**

JAN. 22-FEB. 16	Advance Registration only for students in residence Winter Quarter, 1962. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
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MAR. 20-22	In-Person Registration for students in residence Winter Quarter, 1962, who did not complete Spring Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
MAR. 20-22	In-Person Registration for former students not in residence Winter Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is March 9.</i>
MAR. 1	Deadline for ALL new students to submit Applications for admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
MAR. 15	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
MAR. 20-22	In-Person Registration for ALL new students.
MAR. 22	Last day to register for Spring Quarter, 1962. Note application deadlines above.
MAR. 26-30	Change of registration by appointment only.

ACADEMIC PERIOD

MAR. 26—MONDAY	Instruction begins
MAR. 30—FRIDAY	Last day to add a course
MAY 11—FRIDAY	Last day to submit applications for advanced credit examinations
MAY 26—SATURDAY	Advanced credit examinations
MAY 30—WEDNESDAY	Memorial Day holiday
JUNE 3—SUNDAY	Baccalaureate Sunday
JUNE 1-7	Final examinations
JUNE 7—THURSDAY	Quarter ends
JUNE 9—SATURDAY	Commencement

SUMMER QUARTER, 1962

REGISTRATION PERIOD

General In-Person Registration for ALL students (*by appointment only*):

May 31, June 1, 4

June 11-15

Registration may be delayed if new student Applications for Admission or former student Applications for Appointment or Permit to register are received after May 15.

Students in the Schools of Law, Dentistry, Medicine, and the Hospital Division of the School of Nursing must file an Application for Registration Permit, although no appointment date is necessary.

Registration Appointments or Permits will be issued as follows:

Students in residence Spring Quarter, 1961:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates	Monday, April 16, 8 a.m. to 5 p.m.
Juniors	Tuesday, April 17, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 18, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 19, 8 a.m. to 5 p.m.

Former Students not in residence Spring Quarter, 1962, may obtain an Application for Appointment or Permit by writing to, or calling in person at the Registrar's Office, Room 109, Administration Building, or telephoning LAkeview 4-6000, Extension 2551, beginning April 17 and preferably *no later than May 15*. Application for Registration Appointment must be received before registration materials can be processed. *New (entering) Students* will be mailed Registration Appointments with their Official Notice of Admission.

ACADEMIC PERIOD

JUNE 18—MONDAY	Instruction begins
JUNE 19—TUESDAY	Last day to add a course for the first term
JUNE 22—FRIDAY	Last day to add a course for the full quarter
JUNE 29—FRIDAY	Last day to submit applications for advanced credit examinations for first term
JULY 4—WEDNESDAY	Independence Day holiday
JULY 14—SATURDAY	Advanced credit examinations
JULY 18—WEDNESDAY	Final examinations and first term end
JULY 19—THURSDAY	Second term begins
JULY 20—FRIDAY	Last day to add a course for the second term
JULY 27—FRIDAY	Last day to submit applications for advanced credit examinations for second term
AUG. 11—SATURDAY	Advanced credit examinations
AUG. 17—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1962

REGISTRATION PERIOD

APR. 30-MAY 25	Advanced Registration only for students in residence Spring Quarter, 1962. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 10-28	In-Person Registration for students in residence Spring Quarter, 1962, who did not complete Autumn Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

SEPT. 10-28	In-Person Registration for former students not in residence Spring Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is September 1.</i>
JULY 15	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointments will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 12-28	In-Person Registration for ALL new students.
SEPT. 28	Last day to register for Autumn Quarter, 1962. Note application deadlines.
OCT. 1-5	Change of registration by appointment only.

ACADEMIC PERIOD

OCT. 1—MONDAY	Instruction begins
OCT. 5—FRIDAY	Last day to add a course
NOV. 1—THURSDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1963, due at Registrar's Office
NOV. 12—MONDAY	State Admission Day holiday
NOV. 21—WEDNESDAY	Last day to submit applications for advanced credit examinations
NOV. 21-16	Thanksgiving recess (6:30 p.m. to 7:30 a.m.)
DEC. 8—SATURDAY	Advanced credit examinations
DEC. 12-18	Final examinations
DEC. 18—TUESDAY	Quarter ends

WINTER QUARTER, 1963

REGISTRATION PERIOD

OCT. 29-Nov. 27	Advance Registration only for students in residence Autumn Quarter, 1962. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
JAN. 2-4	In-Person Registration for students in residence Autumn Quarter, 1962, who did not complete Winter Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
JAN. 2-4	In-Person Registration for former students not in residence Autumn Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 1.</i>
DEC. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.

DEC. 20	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
JAN. 2-4	In-Person Registration for ALL new students.
JAN. 4	Last day to register for Winter Quarter, 1963. Note application deadlines.
JAN. 7-11	Change of registration by appointment only.

ACADEMIC PERIOD

JAN. 7—MONDAY	Instruction begins
JAN. 11—FRIDAY	Last day to add a course
FEB. 21—THURSDAY	Last day to submit applications for advanced credit examinations
FEB. 22—FRIDAY	Washington's Birthday and Founder's Day holiday
MAR. 9—SATURDAY	Advanced credit examinations
MAR. 15-21	Final examinations
MAR. 21—THURSDAY	Quarter ends

SPRING QUARTER, 1963**REGISTRATION PERIOD**

JAN. 28-FEB. 21	Advance Registration only for students in residence Winter Quarter, 1963. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
MAR. 26-28	In-Person Registration for students in residence Winter Quarter, 1963, who did not complete Spring Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
MAR. 26-28	In-Person Registration for former students not in residence Winter Quarter, 1963. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is March 1.</i>
MAR. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
MAR. 15	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

MAR. 26-28	In-Person Registration for ALL new students.
MAR. 28	Last day to register for Spring Quarter, 1963. Note application deadlines above.
APRIL 1-5	Change of registration by appointment only.

ACADEMIC PERIOD

APRIL 1—MONDAY	Instruction begins
APRIL 5—FRIDAY	Last day to add a course
MAY 10—FRIDAY	Last day to submit applications for advanced credit examinations
MAY 25—SATURDAY	Advanced credit examinations
MAY 30—THURSDAY	Memorial Day holiday
JUNE 7-13	Final examinations
JUNE 9—SUNDAY	Baccalaureate Sunday
JUNE 13—THURSDAY	Quarter ends
JUNE 15—SATURDAY	Commencement

SUMMER QUARTER, 1963**REGISTRATION PERIOD**

General In-Person Registration for ALL students (*by appointment only*):

June 6-10

June 17-21

Registration may be delayed if new student Applications for Admission or former student Applications for Appointment or Permit to register are received after May 15.

Students in the Schools of Law, Dentistry, Medicine, and the Hospital Division of the School of Nursing must file an Application for Registration Permit, although no appointment date is necessary.

Registration Appointments or Permits will be issued as follows:

Students in residence Spring Quarter, 1963:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates	Monday, April 22, 8 a.m. to 5 p.m.
Juniors	Tuesday, April 23, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 24, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 25, 8 a.m. to 5 p.m.

Former Students not in residence Spring Quarter 1963, may obtain an Application for Appointment or Permit by writing to, or calling in person, at the Registrar's Office, Room 109, Administration Building, or telephoning LAkeview 4-6000, Extension 2551, beginning April 22 and preferably *no later than May 15*. Application for Registration Appointment must be received before registration materials can be processed. *New (entering) Students* will be mailed Registration Appointments with their Official Notice of Admission.

ACADEMIC PERIOD

JUNE 24—MONDAY	Instruction begins
JUNE 25—TUESDAY	Last day to add a course for the first term

JUNE 28—FRIDAY	Last day to add a course for the full quarter
JULY 3—WEDNESDAY	Last day to submit applications for advanced credit examinations for first term
JULY 4—THURSDAY	Independence Day holiday
JULY 20—SATURDAY	Advanced credit examinations
JULY 24—WEDNESDAY	Final examinations and first term end
JULY 25—THURSDAY	Second term begins
JULY 26—FRIDAY	Last day to add a course for the second term
AUG. 2—FRIDAY	Last day to submit applications for advanced credit examinations for second term
AUG. 17—SATURDAY	Advanced credit examinations
AUG. 23—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1963

REGISTRATION PERIOD

MAY 6-29	Advance Registration only for students in residence Spring Quarter, 1963. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 3-27	In-Person Registration for students in residence Spring Quarter, 1963, who did not complete Autumn Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
SEPT. 3-27	In-Person Registration for former students not in residence Spring Quarter, 1963. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is September 1.</i>
JULY 15	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 5-27	In-Person Registration for ALL new students.
SEPT. 27	Last day to register for Autumn Quarter, 1963. Note application deadlines.
SEPT. 30-OCT. 4	Change of Registration by appointment only.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

ACADEMIC PERIOD

SEPT. 30—MONDAY	Instruction begins
OCT. 4—FRIDAY	Last day to add a course
NOV. 1—FRIDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1964, due at Registrar's Office
NOV. 11—MONDAY	State Admission Day holiday
NOV. 22—FRIDAY	Last day to submit applications for advanced credit examinations
NOV. 27—DEC. 2	Thanksgiving recess (6:30 p.m. to 7:30 a.m.)
DEC. 7—SATURDAY	Advanced credit examinations
DEC. 11-17	Final examinations
DEC. 17—TUESDAY	Quarter ends

For further information concerning subsequent quarters inquire at the Registrar's Office.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.

ADMINISTRATION

BOARD OF REGENTS

JOSEPH DRUMHELLER, <i>President</i>	Spokane
MRS. A. SCOTT BULLITT, <i>Vice-President</i>	Seattle
JOHN L. KING	Seattle
HERBERT S. LITTLE	Seattle
ALBERT B. MURPHY	Everett
HAROLD S. SHEFELMAN	Seattle
ROBERT J. WILLIS	Yakima
HELEN E. HOAGLAND, <i>Secretary</i>	
DON H. WAGEMAN, <i>Treasurer</i>	

OFFICERS OF ADMINISTRATION

CHARLES E. ODEGAARD, Ph.D.	<i>President of the University</i>
FREDERICK P. THIEME, Ph.D.	<i>Provost of the University</i>
GLENN H. LEGGETT, Ph.D.	<i>Vice-Provost of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
HAROLD A. ADAMS, M.S.	<i>Director of Admissions</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>
AUSTIN GRIMSHAW, D.C.S.	<i>Dean of the College of Business Administration</i>
KERMIT O. HANSON, Ph.D.	<i>Associate Dean of the College of Business Administration</i>
WARREN W. ETCHESON, Ph.D.	<i>Assistant Dean of the College of Business Administration</i>
HENRY P. KNOWLES, Ph.D.	<i>Acting Director, Undergraduate Student Affairs</i>

FACULTY OF THE COLLEGE OF BUSINESS ADMINISTRATION

(As of July, 1961)

A single date following the name indicates the beginning of service in the University. When two dates are given, the second, in parentheses, is the date of promotion to present academic rank.

DEPARTMENT OF ACCOUNTING, FINANCE, AND STATISTICS

- Archer, Stephen H., 1956 (1960), *Associate Professor of Finance*
B.A., 1949, M.A., 1953, Ph.D., 1958, Minnesota
- Berg, Kenneth B., 1950 (1957), *Professor of Accounting*
B.S., 1939, North Dakota; M.S., 1941, Ph.D., 1952, Illinois; C.P.A., 1954, State of Washington
- Borgerson, Evelyn T., 1960, *Acting Part-time Instructor in Accounting*
B.A., 1936, M.B.A., 1958, Washington; C.P.A., 1937, State of Washington
- Brabb, George J., 1956 (1960), *Associate Professor of Statistics*
B.S., 1950, M.S., 1954, Idaho; Ph.D., 1958, Illinois
- Brosky, John J., 1961, *Acting Assistant Professor of Finance*
B.S., 1956, B.S., 1957, M.B.A., 1958, Lehigh; Ph.D., 1961, Texas
- Chiu, John S. Y., 1960, *Assistant Professor of Statistics*
B.A., 1952, National Taiwan (Formosa); M.S., 1955, Kentucky; Ph.D., 1960, Illinois
- Cox, William E., 1919 (1923), *Professor Emeritus of Accounting and General Business*
B.A., 1909, M.A., 1910, Texas

- D'Ambrosio, Charles A., 1960, *Acting Assistant Professor of Finance*
B.S.C., 1955, Loyola; M.S., 1958, Illinois
- De Coster, Don T., 1961, *Assistant Professor of Accounting*
B.B.A., 1954, West Texas State; M.B.A., 1958, Ph.D., 1961, Texas; C.P.A., 1957, State of Texas
- Delano, Myles S., 1958 (1960), *Associate Professor of Finance and Statistics*
A.B., 1943, Bates; M.A., 1947, Boston; Ph.D., 1959, Brown
- Flowers, William B., 1958 (1960), *Associate Professor of Accounting*
B.S., 1943, M.S., 1949, Alabama; Ph.D., 1959, Texas; C.P.A., 1954, State of Texas
- Hamack, Frank H., 1921 (1942), *Lecturer in Accounting*
LL.B., 1916, Georgetown
- Hanson, Kermit O., 1948 (1954), *Professor of Accounting, Finance, and Statistics; Associate Dean of the College of Business Administration*
A.B., 1938, Luther College (Iowa); M.S., 1940, Ph.D., 1950, Iowa State
- Henning, Charles N., 1948 (1955), *Professor of Finance; Director, Faculty Research and Publications*
B.A., 1938, M.A., 1940, Ph.D., 1952, California (Los Angeles)
- Hill, Walter A., 1960, *Acting Part-time Instructor in Accounting*
B.S., 1954, St. Mary's (Minnesota); M.B.A., 1958, Indiana
- Hubbard, Ernest D., 1960, *Acting Part-time Instructor in Accounting*
B.S., 1952, Utah State; M.B.A., 1959, Utah
- Johnson, Dudley W., 1960, *Associate Professor of Finance*
B.A., 1950, Pacific University; M.A., 1953, Ph.D., 1957, Northwestern
- Johnson, Fletcher O., 1950, *Lecturer in Accounting*
B.B.A., 1924, Washington; C.P.A., 1925, State of Washington (Pennsylvania, California, Illinois)
- Jolivet, Vincent M., 1956 (1959), *Associate Professor of Finance*
B.S., 1952, McGill; M.B.A., 1954, D.B.A., 1957, Harvard
- Lorig, Arthur N., 1934 (1949), *Professor of Accounting*
B.A., 1922, Wisconsin; M.A., 1932, Stanford; Ph.D., 1936, Chicago; C.P.A., 1927, State of California (Washington)
- Mueller, Fred J., 1956 (1959), *Associate Professor of Accounting and Finance*
B.A., 1953, M.A., 1954, Washington; Ph.D., 1956, Ohio State; C.P.A., 1960, State of Washington
- Mueller, Gerhard G., 1960 (1961), *Assistant Professor of Accounting*
B.S., 1956, M.B.A., 1957, Ph.D., 1961, California (Berkeley)
- North, Charles C., 1955, *Part-time Lecturer in Accounting*
B.B.A., 1940, Texas
- Olson, Bruce H., 1961, *Acting Assistant Professor of Finance*
B.A., 1957, Wabash; M.B.A., 1959, D.B.A., 1961, Indiana
- Pigott, William III, 1957 (1960), *Associate Professor of Finance*
B.S.S., 1949, Seattle University; M.A., 1955, Ph.D., 1957, Washington
- Roller, Julius A., 1945 (1960), *Professor of Accounting; Executive Officer of the Department of Accounting, Finance, and Statistics*
B.B.A., 1934, Washington; M.A., 1960, Michigan
- Sharpe, William F., 1961, *Assistant Professor of Finance*
A.B., 1955, California; M.A., 1956, Ph.D., 1961, UCLA
- Simpson, Robert M., 1957, *Part-time Lecturer in Accounting*
B.A., 1925, Pennsylvania State; C.P.A., State of Michigan (Washington, Illinois, California, Texas)
- Storey, Reed K., 1956 (1960), *Associate Professor of Accounting*
B.S., 1952, Utah; Ph.D., 1958, California; C.P.A., 1952, State of Utah
- Walker, Lauren M., 1946 (1957), *Professor of Accounting*
B.A., 1939, M.B.A., 1943, Washington; C.P.A., 1943, State of Washington
- White, Arthur L., 1961, *Acting Part-time Instructor in Accounting*
B.S., 1956, Walla Walla; M.B.A., 1957, Washington

DEPARTMENT OF GENERAL BUSINESS

- Austin, Alan F., 1958, *Part-time Lecturer in Business Law*
B.A., 1952, LL.B., 1954, Washington
- Bourque, Philip J., 1957, *Associate Professor of Business Fluctuations*
A.B., 1949, Massachusetts; M.A., 1950, Ph.D., 1956, Pennsylvania
- Briggs, Robert, 1952 (1955), *Associate Professor of Secretarial Studies*
A.B., 1935, M.A., 1950, Washington; D.Ed., 1954, Stanford
- Brown, Frances A., 1953 (1956), *Assistant Professor of Secretarial Studies*
B.Sc.Ed., 1940, Nebraska; M.A., 1950, Columbia
- Brown, S. Darden, 1930 (1937), *Associate Professor of Business Law*
LL.B., 1925, B.A., 1932, Washington; LL.M., 1938, Stanford
- Callow, Keith M., 1956, *Part-time Lecturer in Business Law*
B.A., 1949, LL.B., 1952, Washington
- Carr, Allen Lane, 1959, *Part-time Lecturer in Business Law*
A.B., 1955, Whitman; LL.B., 1958, Washington
- Chambers, Edward J., 1960, *Associate Professor of Business Fluctuations*
B.Comm., 1945, B.A., 1946, M.A., 1947, British Columbia; Ph.D., 1953, Nebraska
- Demmery, Joseph, 1928 (1934), *Professor of Real Estate*
Ph.B., 1920, M.A., 1924, Chicago
- Frerichs, Alberta J., 1955 (1956), *Lecturer in Secretarial Studies*
B.Sc., 1940, Nebraska State Teachers College; M.Ed., 1951, Nebraska
- Gillam, Cornelius W., 1954 (1956), *Associate Professor of Business Law*
B.A., 1945, Carleton College; M.A., 1946, Minnesota; J.D., 1950, Ph.D., 1954, Chicago
- Goldberg, Leonard D., 1947 (1956), *Associate Professor of Business and Its Environment*
B.A., 1943, J.D., 1945, Chicago
- Greiner, William R., 1960 (1961), *Assistant Professor of Business Law*
B.A., 1956, Wesleyan; M.A., 1959, LL.B., 1960, Yale
- Hall, Charles P., 1961, *Assistant Professor of Risk and Insurance*
B.B.A., 1954, Wisconsin; Ph.D., 1961, Pennsylvania
- Hay, John L., 1956, *Part-time Lecturer in Business Law*
B.A., 1951, LL.B., 1953, Washington
- Hunter, David C., 1954, *Lecturer in Business Law*
A.B., 1942, Michigan; LL.B., 1949, Washington
- Marcus, Sumner, 1955 (1961), *Professor of Business Law; Executive Officer of the Department of General Business*
A.B., 1931, M.B.A., 1933, LL.B., 1936, Harvard; D.B.A., 1958, Washington
- McGuire, Joseph W., 1950 (1961), *Professor of Business and Its Environment*
Ph.B., 1948, Marquette; M.B.A., 1950, Ph.D., 1956, Columbia
- Robinson, Dwight E., 1950 (1956), *Professor of Business and Its Environment*
B.A., 1936, Yale; M.A., 1938, Oxford; Ph.D., 1948, Columbia
- Scott, Robert H., 1961, *Assistant Professor of Business Fluctuations*
A.B., 1949, M.A., 1950, Kansas; M.A., 1956, Ph.D., 1961, Harvard
- Secrest, Thomas W., 1955, *Part-time Lecturer in Business Law*
B.S., 1943, M.S., 1946, Washington; LL.B., 1951, Georgetown
- Seyfried, Warren R., 1956 (1958), *Associate Professor of Real Estate*
B.S. (M.E.), 1943, Vanderbilt; M.B.A., 1954, D.B.A., 1956, Indiana
- Stewart, Walter E., 1961, *Acting Assistant Professor in Business Law*
B.A., 1961, Illinois; M.A., 1954, New York; LL.B., 1956, LL.M., 1958, London School of Economics and Political Science; Graduate Certificate d'Assidue, 1953, The Hague Academy of International Law
- Thompson, Anne Marie, 1959, *Part-time Lecturer in Business Law*
B.A., 1934, LL.B., 1937, Washington
- Wheeler, Bayard O., 1948 (1953), *Professor of Real Estate*
A.B., 1928, California; M.A., 1930, Washington; Ph.D., 1942, California
- Wickman, James A., 1956, *Lecturer in Risk and Insurance*
B.S., 1953, M.B.A., 1954, D.B.A., 1961, Washington
- Wilsing, Weston C., 1953 (1960), *Associate Professor of Secretarial Studies*
B.Ed., 1943, Wisconsin State Teachers College; M.A., 1946, Columbia; D.B.A., 1959, Washington

DEPARTMENT OF MARKETING, TRANSPORTATION, AND INTERNATIONAL BUSINESS

- Bessom, Richard M., 1960, *Part-time Lecturer in Marketing*
B.A., 1941, Cornell; M.B.A., 1959, Stanford
- Brewer, Stanley H., 1946 (1956), *Professor of Transportation*
B.A., 1942, M.B.A., 1943, Washington; I.C.C. Practitioner, 1948; F.M.B. Practitioner, 1950
- Burd, Henry A., 1924 (1927), *Professor Emeritus of Marketing*
B.S., 1910, Illinois Wesleyan; M.A., 1911, Ph.D., 1915, Illinois
- Chawner, Lowell J., 1960, *Visiting Professor of International Business*
A.B., 1921, Occidental; C.E., 1931, Cornell; A.M., 1951, Ph.D., 1954, Harvard
- Denman, Frederick L., 1961, *Acting Assistant Professor of Marketing*
B.S., 1951, U.S. Military Academy
- Engle, Nathanael H., 1941, *Professor of Marketing*
B.A., 1925, M.A., 1926, Washington; Ph.D., 1929, Michigan
- Etcheson, Warren W., 1954 (1960), *Professor of Marketing; Assistant Dean, College of Business Administration*
B.S., 1942, Indiana; M.A., 1951, Ph.D., 1956, Iowa
- George, Thomas W., 1960, *Part-time Lecturer in Marketing*
B.S., 1948, M.E., 1950, Texas Technological College
- Gordon, Guy C., 1949 (1957), *Associate Professor of Marketing*
B.A., 1949, M.B.A., 1950, Washington; Ph.D., 1957, California
- Grathwohl, Harrison L., 1958 (1960), *Associate Professor of Marketing*
B.S., 1951, M.B.A., 1952, D.B.A., 1957, Indiana
- Harder, Virgil E., 1955 (1959), *Associate Professor of Business Communications*
B.S.C., 1950, M.A., 1950, Iowa; Ph.D., 1958, Illinois
- Kolde, Endel J., 1951 (1959), *Professor of International Business and Marketing*
B.S., 1940, National Military Academy (Estonia); D.H.S., 1947, Stockholm (Sweden); M.A., 1951, D.B.A., 1954, Washington
- Lenberg, Robert A., 1961, *Acting Assistant Professor of Marketing*
B.A., 1955, Brigham Young; M.S., 1959, Minnesota
- Little, Robert W., 1961, *Assistant Professor of Marketing*
B.S., 1953, M.B.A., 1956, D.B.A., 1961, Indiana
- Little, Wallace I., 1954 (1956), *Associate Professor of Transportation*
B.S., 1943, M.S., 1947, Illinois; Ph.D., 1952, Wisconsin
- Miller, Charles J., 1927 (1945), *Professor of Marketing; Executive Officer of the Department of Marketing, Transportation, and International Business*
B.B.A., 1922, M.B.A., 1927, Washington
- Murphy, Herta A., 1946 (1961), *Associate Professor of Business Communications*
E.B.A., 1930, M.A., 1942, Washington
- Nelson, Robert A., 1955 (1956), *Associate Professor of Transportation*
A.B., 1941, Clark; M.B.A., 1947, Boston; Ph.D., 1954, Clark
- Peck, Charles E., 1951 (1955), *Associate Professor of Business Communications*
B.A., 1935, Wichita; M.A., 1947, Ph.D., 1950, Iowa
- Thompson, John R., 1960, *Acting Part-time Instructor in Marketing*
B.A., 1957, M.B.A., 1958, Washington
- Wagner, Louis C., 1947 (1955), *Professor of Marketing*
E.B.A., 1938, Washington; M.A., 1940, Minnesota
- Wheatley, John J., 1960, *Assistant Professor of Marketing*
S.B., 1947, Harvard; M.B.A., 1954, Ph.D., 1959, Buffalo

DEPARTMENT OF POLICY, PERSONNEL RELATIONS, AND PRODUCTION

- Barnowe, Theodore J., 1947 (1955), *Professor of Human Relations and Administration*
B.A., 1939, Morningside College (Iowa); M.A., 1940, Ph.D., 1946, Washington
- Brown, Edward G., 1948 (1949), *Professor of Business Policy*
A.B., 1929, Washington; M.B.A., 1932, Harvard
- Bunin, Sanford M., 1957 (1960), *Assistant Professor of Human Relations and Personnel*
B.S., 1949, Western Reserve; M.A., 1951, Kent State; Ph.D., 1960, Texas

- Fenn, Margaret P., 1953, *Acting Instructor in Human Relations*
B.S., 1942, LaCrosse State Teachers; M.B.A., 1950, Washington
- Fischer, Henry C., 1961, *Acting Assistant Professor of Production*
B.S., 1950, Michigan; M.B.A., 1958, Detroit
- French, Wendell L., 1958, *Associate Professor of Personnel and Industrial Relations*
B.A., 1948, M.P.S., 1949, Colorado; D.Ed., 1956, Harvard
- Grimshaw, Austin, 1949, *Professor of Policy and Administration; Dean of the College of Business Administration*
S.B. in C.E., 1927, M.B.A., 1934, D.C.S., 1938, Harvard
- Henning, Dale A., 1955 (1956), *Associate Professor of Policy and Administration and Production*
B.S., 1948, M.B.A., 1949, Pennsylvania; Ph.D., 1954, Illinois
- Johnson, Richard A., 1955 (1959), *Associate Professor of Policy and Administration and Production*
B.B.A., 1949, M.B.A., 1952, Minnesota; D.B.A., 1958, Washington
- Kast, Fremont E., 1951 (1961), *Professor of Policy and Administration and Production*
A.B., 1946, San Jose State; M.B.A., 1949, Stanford; D.B.A., 1956, Washington
- Knowles, Henry P., Jr., 1957 (1961), *Assistant Professor of Policy and Administration; Acting Director, Undergraduate Student Affairs*
B.S., 1935, U.S. Naval Academy; M.B.A., 1947, Harvard; Ph.D., 1961, California
- Knudson, Harry R., Jr., 1958 (1961), *Associate Professor of Personnel and Human Relations*
B.S., 1952, M.B.A., 1953, Indiana; D.B.A., 1958, Harvard
- LeBreton, Preston P., 1960, *Professor of Business Policy; Executive Officer of the Department of Policy, Personnel Relations, and Production*
B.S., 1947, M.B.A., 1949, Louisiana State; Ph.D., 1953, Illinois
- Meier, Robert C., 1957 (1961), *Assistant Professor of Production*
B.S., 1952, Indiana; M.A., 1955, Ph.D., 1961, Minnesota
- Newell, William T., 1960, *Acting Assistant Professor of Production*
B.S., 1952, Colorado; M.B.A., 1955, Denver
- Rosenzweig, Jim, 1956 (1959), *Associate Professor of Policy and Administration and Operations Research*
B.A., 1951, M.B.A., 1954, Washington; Ph.D., 1956, Illinois
- Saxberg, Borje O., 1957 (1960), *Associate Professor of Policy and Administration and Production*
B.S., 1952, Oregon State; M.S., 1953, Ph.D., 1958, Illinois
- Schrieber, Albert N., 1948 (1956), *Professor of Policy and Administration and Production*
B.S. (M.E.), 1938, Illinois Institute of Technology; M.B.A., 1947, Harvard
- Sherrard, William R., 1960, *Part-time Lecturer in Production*
B.B.A., 1957, M.B.A., 1958, Washington
- Sutermeister, Robert A., 1949 (1952), *Professor of Personnel and Human Relations*
A.B., 1934, Harvard; M.A., 1942, Washington
- Woodworth, Robert T., 1961, *Acting Assistant Professor of Personnel and Industrial Relations*
B.S., 1952, Indiana; M.B.A., 1956, Northwestern



GENERAL INFORMATION

GENERAL INFORMATION

THE COLLEGE OF BUSINESS ADMINISTRATION was established in 1917, and its growth has been as rapid as that of the Northwest. Since 1921, the College has been a member of the American Association of Collegiate Schools of Business. Today it has a senior faculty of 90 members, an undergraduate enrollment of 2,000 students, and a graduate enrollment of 250.

The curriculum receives continuing, critical review by the faculty, and departmental programs reflect the major revisions in undergraduate curricula approved in 1961. Major requirements have been geared to the philosophy and objectives set forth below.

PHILOSOPHY AND OBJECTIVES

The major mission of the College's undergraduate programs is to provide students with a substantial background in the underlying fields of knowledge basic to responsible citizenship and essential to an understanding of business as an integral part of today's society. Education for business is perceived as a life-long, not a four-year, process, and the curriculum is therefore designed to equip the student with the sound foundation needed to continue his learning experience after graduation.

The student learns, within this setting where major emphasis is on business—its specialized or functional areas—to view business as a segment of the whole of knowledge, with roots in the liberal arts and sciences. Approximately half his undergraduate work is in the communication arts and the quantitative, physical, and social sciences.

The College seeks to create and maintain an intellectual atmosphere conducive to the pursuit of knowledge for its own sake. It strives to encourage both faculty and students to push forward the frontiers of knowledge and to lead in the development of business thought.

COLLEGE FACILITIES

The College's activities are centered in a new classroom building, and the faculty and administration offices are located in an adjoining staff building. In

addition to regular classrooms there are accounting laboratories, a library, and seminar rooms arranged to fit the needs of particular types of instruction.

THE LIBRARY

The Business Administration Library is situated on the main floor of the Business Administration Classroom Building. It has seating for more than three hundred readers. The library has current materials on all phases of business, including books, newspapers, periodicals, pamphlets, government publications, annual reports, indexes, bibliographies, and loose-leaf services in finance, trade regulation, accountancy, transportation, real estate, corporate taxation, insurance, and labor and personnel. Conference study rooms are provided for students. Research offices are available for faculty.

BUREAU OF BUSINESS RESEARCH

The College maintains a Bureau of Business Research which is a member of the Associated University Bureaus of Business and Economic Research. The Bureau was established in 1941 to centralize the University's research in business and to serve business, industry, labor, government, and the professions. Publications include studies of Pacific Northwest, Washington, and Alaskan industries, communities, and general aspects of business administration.

UNIVERSITY OF WASHINGTON BUSINESS REVIEW

The *University of Washington BUSINESS REVIEW* is a journal published bi-monthly during the academic year (February, April, June, October, and December) by the College of Business Administration. The magazine serves as a means of disseminating information of wide interest to students of business, to the business community, and to other universities. Articles present significant results of business research; describe and evaluate trends and techniques in business administration and the business environment; and (in some cases) present regional business analyses. The magazine is distributed on a paid subscription basis to bureaus of business research and libraries of other universities. Current subscription rates are \$3.50 for one year, \$8.00 for three years.

PRODUCTION LABORATORY

The Production Laboratory provides demonstration facilities for use in production courses. In addition, the Laboratory is equipped to enable students to carry on individual research projects at graduate and undergraduate levels. Equipment, including primary machine and hand tools, is available for studies in motion and time, layout, and experimental testing.

COOPERATIVE WORK IN INDUSTRY

The College encourages students to supplement classroom training by obtaining experience in actual business situations. Selected students in accounting and marketing have an opportunity to work in industry while earning college credit.

Accounting majors, by special arrangement, spend one quarter with a certified public accounting firm, industrial organization, or government agency. At the completion of the work period, students submit written reports on their employment experiences.

The Marketing Department administers scholarship programs which are, in effect, cooperative training. These programs provide part-time work and training, enabling students to study policies, methods, and techniques. The programs give college credit to qualified students for reports on work experience.

ADMISSION TO THE UNIVERSITY

PRELIMINARY STATEMENTS

The Board of Admissions, which is appointed by the President, is responsible for the interpretation and administration of the regulations governing admission to the University.

The University recognizes high school diplomas, college credits presented for advanced standing, and college degrees earned in the following institutions: (1) high schools accredited by the Washington State Department of Public Instruction; (2) out-of-state high schools accredited by their state university and state department of public instruction, or by the regional accrediting association of the area; (3) colleges and universities accredited by their regional accrediting association.

Resident. Defined for purposes of admission and/or assessment of fees as an individual who has been domiciled in the state of Washington for one year immediately prior to his registration. The domicile of a minor is that of his parents or his legal guardian.

Nonresident. An applicant whose credentials are received from a school or college located outside the state of Washington. An applicant who believes himself eligible for resident status may apply for reclassification through the Office of Residence Classification which has final authority in determining such status.

Qualified Student. One whose scholastic standing and preparation meet the standards for admission to the University.

Regular Student. One who fulfills the following requirements: (1) has been granted unqualified admission to a college or school of the University; (2) whose current program of studies is satisfactory to the dean of his college or school; (3) has received medical clearance from the Student Health Service and has completed all of the required steps for registration, including the payment of tuition and fees, the filing of class cards, and the depositing of registration materials at Sections.

Grade-point averages. These are based on a four-point system in which A = 4, B = 3, C = 2, D = 1, E = 0. An adjustment to this system is made as necessary in the computation of grade-point averages earned at other institutions.

ELIGIBILITY FOR ADMISSION WITH FRESHMAN STANDING

(Applicable to Residents of the State of Washington)

Undergraduate programs offered by the University lead to the baccalaureate degree; students, therefore, are admitted when, in the judgment of the University, they appear qualified to pursue a degree program with a reasonable probability of success. In making this judgment, the University's Board of Admissions considers the applicant's total record, including such factors as scholastic achievement in a college preparatory program, recommendations of the high school principal or counselor, rank in class, and scores on any nationally administered tests associated with college entrance.

Scholastic achievement is measured largely in terms of the criteria listed below. All students entering the University are expected to meet these criteria. Non-residents and students who enter with advanced standing will find additional admission criteria in subsequent sections.

SCHOLASTIC CRITERIA

1. Graduation with diploma from an accredited high school.
2. Achievement of an over-all high school grade-point average of at least 2.50 in courses completed after September, 1960, and a grade-point average of at least 2.00 in courses completed prior to September, 1960.
3. Completion of a college preparatory program of at least 16 units to include the following:

a. English	at least 3 units
b. One foreign language	at least 2 units
c. College preparatory mathematics	at least 2 units
d. One laboratory science	at least 1 unit
e. Social science	at least 2 units
f. Electives from the above subjects	at least 2 units

Additional electives may be chosen from any subjects acceptable for high school graduation.

Students who plan to enter this college should complete intermediate algebra in addition to the elementary algebra and plane geometry which normally are the two units of college preparatory mathematics.

Because an appropriate choice of high school electives serves to strengthen a student's preparation, the University will give this part of his record the same careful attention it gives to other aspects of his qualifications.

ELIGIBILITY FOR ADMISSION WITH ADVANCED STANDING

(Applicable to Residents of the State of Washington)

A qualified student in good standing at an accredited institution may apply for admission with advanced standing. Such an applicant is expected to have the same high school preparation as the student who enters as a freshman, and to have a college grade-point average which meets the standards herein specified.

With fewer than 45 acceptable credits, an applicant must present a grade-point average of 2.50 in high school work completed after September, 1960; a 2.00 grade-point average in such work completed prior to this date; and a 2.00 cumulative average in all college work.

With 45 or more acceptable credits an applicant is expected to present a cumulative and last-term grade-point average of at least 2.00. See also section on transfer of advanced credit, page 25.

ADMISSION OF NONRESIDENTS TO UNDERGRADUATE STANDING

Applications from nonresidents will be considered, but first preference is given legal residents of the state of Washington, and sons and daughters of University of Washington alumni residing outside the state.

Nonresident applicants are selected on the basis of their preparation and scholastic standing. In general, a freshman applicant must be eligible to enter the university of his own state, and satisfy the foregoing scholastic criteria with a 3.00 (B) grade-point average or place in the upper 25 per cent of his graduating class.

An applicant for admission with advanced standing with fewer than 45 college credits must have a cumulative grade-point average of at least 3.00 in standard college courses as well as a high school grade-point average of at least 3.00 or have been in the upper fourth of his class. An applicant presenting more than 45 credits for advanced standing must present a 2.70 grade-point average in standard college courses.

Sons and daughters of University of Washington alumni are admitted according to resident standards but are required to pay the regular nonresident tuition fees. Applicants for admission to curricula in which the University serves on a regional basis will be accorded special consideration by the Board of Admissions.

ADMISSION OF SPECIAL STUDENTS AND AUDITORS

Non-high school graduates who are 21 or older and legal residents of Washington may apply to the Board of Admissions for admission with special standing. With their application they must submit all available records of secondary school and college study. Special students may register in and take for credit whatever courses the dean of the college permits, but may not participate in student activities or receive degrees. By fulfilling conditions specified by the Board of Admissions, special students may change their status to that of regular students and may receive degrees.

Persons 21 or older may register as auditors in nonlaboratory courses or the lecture sessions of laboratory courses by obtaining the consent of the dean of the college and the instructors of the courses. Auditors do not participate in class discussion or laboratory work. They may receive credit for audited courses only by enrolling in them as regular students in a subsequent quarter.

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Applicants for admission with graduate or advanced undergraduate standing are expected to meet the same general requirements as nonresidents of Washington

educated in American schools. However, they must file their credentials before March 1 to be considered for admission Autumn Quarter or six months before the opening of another quarter in which they may wish to enroll. In addition, they must demonstrate a satisfactory command of the English language.

The official record of the Canadian student is the matriculation certificate or university admission certificate of his province. Canadian and foreign students who have been in university attendance must have official transcripts forwarded as required of all students. High school graduates and university transfer students must meet the scholarship requirements for nonresident students.

ADMISSION OF VETERANS

Veterans and children of deceased veterans should meet the general admission criteria and follow the general procedures outlined for all applicants. Applications for and questions about government aid should be addressed to the Veterans Division Regional Office. See page 28.

ADMISSION OF UNDERGRADUATE STUDENTS WHO DO NOT MEET THE ADMISSION STANDARDS

An applicant whose preparation and previous scholarship do not clearly qualify him for admission may submit additional evidence in support of his application. This may include scores on nationally recognized tests of scholastic aptitude or achievement; letters from school administrators, teachers, or counselors; and other information which may assist the Board of Admissions in evaluating his probability of success in the University.

Students admitted by special action of the Board of Admissions will be expected to achieve and maintain a satisfactory scholastic average in their University work and to fulfill any conditions specified by the Board at the time of their admission.

A student thus admitted on probation will be subject to scholarship rules. Furthermore, he may not (1) be pledged 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 regulations of the University Intercollegiate Athletics Committee.

ADMISSION TO THE GRADUATE SCHOOL

Basic requirements for admission to the Graduate School are a bachelor's degree from an institution of recognized standing, a grade-point average of 3.00 in the junior and senior years of college work, approval of the Graduate School, and approval of the department in which the work is to be taken. For complete information, see the *Graduate School Bulletin*.

TRANSFER OF ADVANCED CREDIT FROM OTHER INSTITUTIONS

The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted.

1. The advanced standing for which an applicant's training appears to fit him is granted tentatively on admission. Definite advanced standing is not determined before the end of the student's first quarter in the University. The maximum that may be accepted from other colleges and universities is 135 quarter credits or senior standing. Transfer credit will not be allowed in the senior year.

2. Transfer credits will be accepted for upper-division credit *only* when earned at an accredited four-year degree-granting institution.

3. Transfer credits from institutions accredited for less than four years will not be accepted in excess of the accreditation of the school concerned.

4. Transfer of junior college credit shall apply on the 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 to completion of the first two years in the

University. In no case shall the transfer of junior college credit to the University exceed 90 quarter credits, exclusive of physical education activity credits.

5. The maximum number of credits obtainable by acceptance of Armed Forces training schools credits will be 30. All such credits will be counted as extension credits and will be included in the 90-credit maximum allowed toward the bachelor's degree, but none will apply toward the work of the senior year.

6. A maximum of 45 credits earned in extension and correspondence courses at other institutions may be transferred, but none of these credits can apply in the senior year. Extension and correspondence credits from schools that are not members of the National University Extension Association are accepted only after examination.

7. Credits earned in evening and extension classes or correspondence courses at this University are accepted after the student has satisfactorily completed 35 credits of work in residence (that is, registered in regular University classes). A maximum of 90 extension and/or correspondence credits is acceptable; the 90 credits may include the 45 extension and/or correspondence credits allowable from other institutions or may consist entirely of courses taken in this University's Division of Evening Classes and Division of Correspondence Study. All credits earned by advanced-credit examination and all acceptable Armed Forces training schools credits must be counted in the 90 extension credit maximum. Up to 10 evening class or correspondence course credits from this University can apply toward the work of the senior year.

8. For work done in unaccredited institutions, extended secondary programs in institutions whose standing is unknown, and for work with private teachers, University credit is granted only after examination. Applications for advanced-credit examinations must be filed during the first quarter in residence.

9. No credit will be granted 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. The prescribed written permission is effective only if obtained before registration. Nothing in this rule makes mandatory the granting of any credit by the University.

ADMISSIONS PROCEDURE

Requests for Application for Admission forms and correspondence regarding admission to any college or school of the University should be addressed to the Office of Admissions, University of Washington, Seattle 5, Washington. Graduates of high schools in the state of Washington may obtain this form from their principals.

Applications and required transcripts must be filed with the Office of Admissions prior to the following dates in order to be assured of consideration for admission to the quarter for which application is being made: August 1 for Autumn Quarter, 1961, July 15 for subsequent Autumn Quarters, December 1 for Winter Quarter, March 1 for Spring Quarter, May 15 for Summer Quarter.

All records become a part of the official file and can neither be returned nor duplicated for any purpose. Failure to submit complete credentials will be considered a serious breach of honor, and may result in permanent dismissal from the University.

A leaflet giving general information and instructions for registration is mailed with the Notice of Admission. In the event of a discrepancy, instructions in the leaflet supersede those found in earlier publications. *The University assumes no responsibility for applicants who come to the campus before they have been officially notified of their admission.*

The admissions credentials of applicants who do not register for the quarter to which they have been admitted are normally retained in the Office of Admissions

for a period of one year from the date of application. At the end of this period, credentials on file are discarded unless the applicant has notified the Office of his continued interest in attending the University or of his enrollment in the Evening Classes program. Should a student wish to renew his application after the one-year lapse, he must submit new credentials in advance of the date given above for the quarter desired.

FOR FRESHMAN STANDING

An application form, obtained from the University's Office of Admissions or from a Washington high school, should be completed according to instructions appearing on the form and returned to the Office of Admissions.

Students may apply through their high schools on completion of the first semester of the senior year. Those who are qualified will be issued notices of early or conditional admission which become valid on graduation with a grade-point average of no less than 2.50 for the final semester. Others also will be notified of their admission status.

Scores on a nationally administered college aptitude test are not required. However, they may be helpful in evaluating a borderline student's probability of success.

FOR ADVANCED UNDERGRADUATE STANDING

An application form, obtained from the University's Office of Admissions or from a Washington junior college should be completed according to instructions appearing on the form and sent to the Office of Admissions. In addition, the applicant should request the principal of his high school and the registrar of each college he has attended to forward an official transcript of his record to the University's Office of Admissions. When these credentials have been evaluated, the applicant will be notified of his admission status.

FOR GRADUATE STANDING

An application form, obtained from the University's Office of Admissions, should be completed according to instructions appearing on the form and returned to the Office of Admissions. In addition, an applicant should request the registrar of each college or university in which he has been enrolled as an undergraduate or graduate student to forward *two* official transcripts to the University's Office of Admissions. When these credentials have been evaluated, the applicant will be notified of his admission status. The student will find it convenient to have an additional copy of the record for reference.

WORLD WAR I OR II VETERANS

Under certain conditions a veteran of World War I or II who is not eligible for Veterans Administration benefits is fully or partly exempt from tuition charges (see page 35).

KOREAN VETERANS

A Korean veteran under Public Law 550 should obtain admittance to the University prior to making application for a Certificate for Education and Training, thus eliminating the chance of obtaining a certificate valid for an incorrect degree. If the veteran has any questions regarding application for a certificate, he should consult the Veterans Division, Safety Division Building. Educational allowance payments are made directly to the veteran by the Veterans Administration after the veteran and institution submit a monthly attendance certification.

Korean Certificate

Application for this certificate should be made at least four weeks prior to the beginning of University instruction. If the veteran is eligible, the Veterans Administration will issue him a Certificate for Education and Training which must be presented, along with his Program of Studies, to the Veterans Division, Safety

Division Building, as soon as registration is completed. A Korean veteran should be prepared to meet all his own expenses as well as the cost of tuition, fees, and supplies for at least two months, because allowances are not made until after a full month's attendance has been established.

Quarter Credit Requirements (Public Law 550)

14 credits	Full subsistence
10 to 13 credits	Three-fourths subsistence
7 to 9 credits	One-half subsistence
6 credits or less	Established tuition and fees
or credits \div 14 \times \$110.00, whichever is the lesser	

Graduate Credit Requirements (Public Law 550) 500-level Courses or Above

9 credits	Full subsistence
7 to 8 credits	Three-fourths subsistence
5 to 6 credits	One-half subsistence
4 credits or less	Established tuition and fees
or credits \div 14 \times \$110.00, whichever is the lesser	

If a graduate is combining 400-level courses with 500-level courses, he should consult with the Veterans Division, Safety Division Building, to determine the scale of pay.

Termination of Training

A veteran *eligible* under Public Law 550 must complete his training by *eight* years after his release from active service, or by January 31, 1965, whichever is earlier.

DISABLED VETERANS

A veteran with a disability under Public Law 894 should contact a training officer in the nearest Veterans Administration Office approximately four weeks prior to registration.

CHILDREN OF DECEASED VETERANS

Public Law 634 grants federal benefits to children of deceased veterans of World War I, World War II, or the Korean Conflict who died as a result of injury or disease incurred or aggravated while in the service. Information regarding eligibility under this law should be requested from a Veterans Administration Regional Office.

The Certificate for Education and Training issued to those eligible persons by the Veterans Administration is to be presented along with the Program of Studies to the Veterans Division, Safety Division Building, as soon as registration is completed.

Credit requirements for monthly subsistence for Public Law 634 students are the same as those listed for Public Law 550 students. Public Law 634 students may not be authorized for less than half-time subsistence.

REQUIRED TESTS AND EXAMINATIONS

Washington Pre-College Differential Guidance Test

This grade prediction test is required of all entering freshmen, including those transferring to the University with fewer than 45 credits. It is also required of transfer students who have not completed courses which are equivalent to English 101 (English composition) or Humanistics-Social Studies 265 (Techniques of Communication). High school seniors are advised to arrange through their high schools to take this test in the spring when it is offered throughout the state of Washington. Nonresidents of Washington may take the test at the time of their registration according to instructions mailed with the notice of admission. Sample copies are not available. Special, foreign, blind students, and auditors are exempted.

The several parts of this test have been selected because of their proven value

for the prediction of grades most likely to be earned by a student. The result of the test is used by departmental advisers as an aid in assigning students to appropriate sections in English composition and other subjects; therefore it is advisable that the student bring a copy of the results with him when he comes for his first conference with his counselor or adviser.

Mathematics Placement Tests

One section of the Pre-College Differential Guidance Test evaluates a student's mastery of intermediate algebra and plane geometry. A satisfactory score on this section qualifies a student to enroll in Mathematics 104 (Plane Trigonometry) or Mathematics 105 (College Algebra). Those who fail to qualify and wish to proceed to the study of more advanced mathematics courses may choose one of the following alternative plans:

1. Pass Mathematics 101 and then take 104 or 105, or both. No credit is given for Mathematics 101 to students who have completed the third semester of high school algebra.
2. Pass Mathematics 103, in which the first four weeks are devoted to a review of intermediate algebra and the last six weeks to the study of plane trigonometry equivalent to Mathematics 104. The satisfactory completion of this course qualifies the student to enroll in Mathematics 105 (College Algebra).

Students who have studied trigonometry, fourth semester algebra, mathematical analysis, or similar subjects in high school, will be placed in the next appropriate course at the University according to their scores in additional placement tests given by the Department of Mathematics. It is advisable to review before taking these examinations. This generally applies to students entering such fields as engineering, architecture and urban planning, fisheries, forestry, pharmacy, mathematics, and the physical and marine sciences.

MEDICAL EXAMINATION

A student entering the University for the first time, or returning to the University after an absence of more than one calendar year, or who has previously attended Summer Quarter classes but is entering regular University classes for the first time, is required to submit to the Student Health Service (Hall Health Center) a form containing his health history and a report of a physical examination by a physician. The form will be sent to new students by the Office of Admissions, and to returning former students by the Registrar. This examination, which is required before a student may register, is taken at the student's expense. A chest X ray, also required of the above students, is given at the Student Health Service without charge.

With the exception of Canadian students, who will follow the above instructions, foreign students must take the required physical examination at the Student Health Center when they arrive on the campus.

MISCELLANEOUS INFORMATION

Junior High School Courses. The University recognizes college preparatory courses given in the junior high school and assigns them the same value as equivalent courses offered by the high school. Students who elect these subjects in the junior high may subsequently achieve a superior degree of competence in related subject areas in high school.

Accelerated, Honors, and Advanced Placement Courses. The University encourages qualified students to extend themselves academically by taking advantage of advanced, accelerated, and honors courses offered by their schools. The degree of achievement attained by students in selected areas may be measured by their performance in College Entrance Examination Board Advanced Placement Examinations and by other means which are described briefly in the following paragraph.

The University of Washington endorses the Advanced Placement Program of

the College Entrance Examination Board and grants placement and/or credit at the discretion of the University department concerned on the basis of scores earned in College Entrance Examination Board Advanced Placement Examinations. Successful participation in such challenging opportunities assures superior academic preparation and serves to identify those students more likely to profit from University-level honors courses.

REGISTRATION

REGULAR STUDENTS

(See page 23.)

PROCEDURE

ALL students, currently in school, who plan to register for a succeeding quarter (Summer Quarter excepted) must register by Advance Registration and pay fees by the stated deadline. Students are held responsible for knowing and observing registration procedures, dates, and deadlines which appear in the bulletins, in "Official Notices" in the *Daily*, and on campus bulletin boards.

New students are given appointments when they are notified of admission, and they receive complete directions for registering at the time of registration.

Students expecting to return to the University after an absence of a quarter or more (excluding Summer Quarter) must register by In-Person Registration. The required registration appointment may be obtained by writing to, calling at, or telephoning the Registrar's Office at the time specified in the Calendar.

ADVISING

After notification of admission, and before registration, new students should visit or write to the College for assistance in planning their course programs. The College of Business Administration maintains an advisory office. Curriculum advisers are available at all times to help students plan their programs of study both for college requirements and for the major sequence.

FACULTY ADVISERS

The College has recently initiated a new faculty-student advising program. Its objective is to provide the student with a means of establishing personal contact with a designated member of the teaching staff with whom he may discuss questions concerning his academic program. Except for an initial meeting when he first enters the College, or when he changes his major field of study, contacts with faculty advisers will be entirely voluntary on the student's part. The faculty adviser cannot, of course, replace other agencies on the campus or in the College which specialize in various kinds of technical services (see *Student Handbook of University Rules and Regulations*). He can, however, be a source of information and counsel on such questions as the content and purpose of courses, the practical values of a particular course of study, the rationale of requirements, study habits and practices, and other matters which relate to a University education. A student may make an appointment with his faculty adviser through the Advisory Office of the College located in the Business Administration Staff Building.

REGISTERED CREDITS ALLOWED EACH QUARTER

Except with the consent of his dean, no student may be registered for less than 12 credits (or the equivalent) or more than 16 credits (or the equivalent) or the number called for in the prescribed curricula, exclusive of physical education activity courses and lower-division military, naval, or air science courses. In no case may a student be registered for, or receive credit for more than 20 credits (or the equivalent) of work, exclusive of physical education activity courses and lower-division military, naval, or air science courses. Work taken in noncredit courses or to remove deficiencies, or concurrently in extension classes, by correspondence study, or in another collegiate institution, must be included in the computation of the total registered credits allowed.

CHANGES OF REGISTRATION

After a student has registered, he cannot change his schedule except with permission of the dean or associate dean of his college. No student is permitted to make a registration change that involves entering a new course after the first calendar week of the quarter. After that time no student may register without the consent of the dean or associate dean and the instructor whose class the student wishes to enter.

WITHDRAWAL FROM A COURSE

Official withdrawal from a course is made only under the following conditions: (1) during the first fifteen calendar days of a quarter, with the consent of the withdrawing student's adviser; (2) after the first fifteen calendar days of a quarter and before the end of the first six calendar weeks of a quarter, with the approval of the student's adviser, of the instructor of the course from which withdrawal is sought, and of the dean of the college in which the withdrawing student is enrolled; and (3) after the first six calendar weeks of a quarter and before final examination week, only upon certification in writing to the Registrar by the dean of the college in which the withdrawing student is enrolled that, in the judgment of the dean, withdrawal is necessitated by the student's hardship. Withdrawals from courses accomplished by any other method are unofficial withdrawals which are entered on a student's record as EW, and are assigned the value of E in the computation of a student's grade-point average. No official withdrawal may be made during final examination week.

A student in any course in the College of Business Administration who withdraws after the first 15 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.

Official withdrawals are entered on a student's record as follows: (1) a withdrawal within the first fifteen calendar days of a quarter, as W; (2) a withdrawal after the first fifteen calendar days of a quarter and before final examination week, as PW, if the student's work has been satisfactory, and as E, if the student's work has been unsatisfactory. Grades of PW and W are assigned no value in the computation of grade-point averages.

WITHDRAWAL FROM THE UNIVERSITY

The student should obtain at the office of the dean of his school or college the Request for Withdrawal From the University form. The same system of grading applies as that prescribed under Withdrawal From a Course.

QUALIFICATIONS FOR GRADUATION**MINIMUM SUBJECT REQUIREMENTS**

For graduation, a total of 180 academic credits with a cumulative grade-point average of 2.00 is required. Of these credits, 60 must be in upper-division courses.

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 ROTC subjects may be applied toward graduation, except in the case of students in the Supply Corps.

SENIOR-YEAR RESIDENCE

Senior standing is attained when 135 credits and the required credits in ROTC and 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 may be earned either in residence or in this University's extension or correspondence courses.

Any student transferring into the College of Business Administration with 135 or more earned credits will be required to accumulate a minimum of 45 additional

credits subsequent to his admission into the College. Of these 45 credits, at least 35 must be earned in a minimum of three quarters in residence. The remaining 10 must be earned either in residence at the University or through the University's Division of Evening Classes or Division of Correspondence Study.

SCHOLARSHIP

The University scholarship requirement is the maintenance of a 2.00 cumulative grade-point average. Grade points per credit are awarded on the following basis: a grade of A earns 4 points; B, 3 points; C, 2 points; and D, 1 point. A grade of E signifies failure and the grade point is 0. The grade-point average is computed by multiplying the grade point received in a course by the total number of credits the course carries, totaling these values for all courses, and dividing by the total number of credits for which the student registered.

Continuation in the College of Business Administration will depend upon compliance with the following scholarship regulations which became effective January 1, 1961:

Academic Probation. Any undergraduate student who has completed three or more quarters in the University and whose cumulative grade-point average is below 2.00 shall be placed on academic probation. Any undergraduate student who has completed not more than two quarters at the University shall be placed on probation when his cumulative grade-point average is below 1.80. The dean of the college shall notify the student as soon as possible that he is on probation. Such action will be noted permanently on the student's official academic record.

Effect of Academic Probation. Academic probation is essentially a warning to the student that he must show improvement if he is to remain in the University. University regulations regarding scholastic eligibility for participation in intercollegiate athletics and other student activities shall be recommended to the Senate by the Faculty Committee on Intercollegiate Athletics and the Faculty Committee on Student Welfare, respectively.

Removal From Academic Probation. An undergraduate student on academic probation will be removed from probation at the end of any quarter in which his cumulative grade-point average reaches 2.00 or better.

Dismissal for Low Scholarship. Any undergraduate student on academic probation will be dropped: (1) if he fails to attain at least a 2.00 for the following quarter's work; or (2) if he fails to attain a 2.00 cumulative average at the end of the two subsequent quarters. Any student dropped under this rule will be notified in writing of this action by the Dean of the College.

Reinstatement. Only under exceptional circumstances will a student dropped under low scholarship rules be readmitted to the University. Such a student will be readmitted only at the discretion of the Dean of the College. A student readmitted after being dropped under these rules will enter on academic probation. Such a student will be dropped: (1) if he fails to attain a 2.00 for the following quarter's work; or (2) if he fails to attain a 2.00 cumulative average at the end of two quarters. He will be removed from probation at the end of the quarter in which his cumulative grade-point average reaches 2.00 or better.

Seniors in Final Quarter. A senior who has completed the required number of credits for graduation but whose work in what would normally be his final quarter places him on probation will not receive a degree until he has been removed from probation. A senior who has completed the required number of credits for graduation but whose work in his last quarter results in his being dropped for low scholarship shall not receive a degree until he has been readmitted and removed from probation.

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.

MILITARY TRAINING

The Departments of Air Science, Military Science, and Naval Science conduct the ROTC programs under agreements between the University and the United States Air Force, Army, and Navy. At the University, these programs are coordinated by the Dean of the College of Engineering.

The University requires male students who enter the University as freshmen or sophomores to complete six quarters of military training. (For exemptions, see below). The two-year basic programs offered by the Departments of Air Science and Military Science and the four-year program offered by the Department of Naval Science, satisfy this requirement. For a complete list of courses offered by these Departments, see the *Yearly Time Schedule*. In addition to the basic programs, the Department of Air Science and the Department of Military Science each offers for selected students an advanced program which leads to commissioning in the Air Force or the Army. The four-year program of the Department of Naval Science, also for selected students, leads to commissioning in the Navy or Marine Corps.

Students enrolling in Naval ROTC, and those who take the advanced program of Air Force or Army ROTC must agree in writing to complete the course of training and accept a commission in the service for which they are trained. *The honoring of this commitment is a condition of graduation from the University.*

The basic program of the Department of Air Science consists of three quarters of military classroom instruction on the Foundations of Air Power. These are offered in the Spring Quarter of the first year and the Autumn and Winter Quarters of the second year. During each of the other three quarters, the student must substitute an approved University course in lieu of Air Science. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*. Leadership Laboratory is required each of the six quarters of the basic program and is conducted one hour each week.

The basic program (freshmen and sophomores) of the Department of Military Science requires drill one hour each week. Classroom military studies for freshmen are not required in the Autumn Quarter. One hour per week is required in the Winter Quarter, and two hours of classroom work are required in Spring Quarter. As a substitute for these classroom hours in Autumn Quarter of the freshman year, registration is required in a selected 3-credit or 5-credit course in another department. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*. Sophomores are required to attend two hours per week of classroom military studies throughout the academic year.

Information concerning the Naval Science ROTC program can be found on page 76.

Exemptions from the military requirement are granted to:

1. Students who are twenty-three years of age or over at the time of original entry into the University.
2. Students who enter as juniors or seniors.
3. Special students.
4. Students registered for 6 credits or less.
5. Students who are not citizens of the United States.
6. Students who, because of physical condition, are exempted by the University Health Officer.
7. Students who have equivalent military service. Complete or partial exemptions, depending on length of service, are granted for previous active service in the Armed Forces or Coast Guard.
8. Students who are active members or reserve officers of the Armed Forces or Coast Guard, or commissioned officers of the National Guard.
9. Students who are active enlisted members of the National Guard or of the Organized Reserve of the Armed Forces or Coast Guard.

10. Transfer students who present acceptable credit for military training taken in other colleges. The amount of exemption depends on the amount of previous training. Transfer students are required to take military training only for the number of quarters they need to achieve junior standing by a normal schedule.

11. Students who seek exemption on grounds other than 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 after consultation with the appropriate ROTC commander.

Those who are exempted under paragraph 5. or 11. must arrange at the time of initial entrance to substitute equivalent extra credits in other University courses to equal the number of credits they would have been required to earn in military training courses.

PHYSICAL AND HEALTH EDUCATION

Activity Courses. Students who enter the University as freshmen are required to complete one physical education activity course each quarter for the first three quarters of residence. In fulfilling the foregoing requirement, *all* students must pass a swimming test or satisfactorily complete one quarter of swimming. In fulfilling the three-quarter requirement, no activity course may be repeated for credit.

Men students may use credits earned in freshman or varsity sports to satisfy the activity course requirement.

Women students, in fulfilling the three-quarter requirement, may take a maximum of two credits in any of the following: (1) swim area; (2) dance area; (3) tennis and badminton; (4) any other specific individual, dual, or team activity.

The following students are exempt from the requirement of activity courses:

1. Students who have attained the age of twenty-five. A student who attains the age of twenty-five during a quarter in which he is registered for a required physical education activity course shall be held for the completion of that course. This rule shall not be retroactive in its application to students who entered prior to Spring Quarter, 1951, and were exempted from required physical education courses under previous rules.

2. Students who enter as sophomores, juniors, or seniors.

3. Special students.

4. Students registered for 6 credits or less.

5. Students who, because of physical condition, are exempted by the Graduation Committee upon the recommendation of the Dean of the College. Such action will be taken only when the Dean has received a joint recommendation for exemption from the University Health Officer and the Executive Officer of the Department of Physical Education for Men or for Women, whichever is appropriate. All other students who are reported by the University Health Officer as physically unfit to join regular classes will be assigned by the Executive Officer of the Department of Physical Education for Men or for Women to special programs adapted to their needs.

6. Students who are veterans of military service. Complete exemption is granted for one year or more of active duty. This exemption does not grant credit. Veterans with less than one year of service receive no exemption.

7. Transfer students who present acceptable credit for physical education activity courses taken in other colleges. The amount of exemption depends on the number of quarters for which credit is transferred.

Health Courses. All men students who enter the University as freshmen are required to take Health Education 175, a course in personal health, within the first three quarters of residence. The health education course requirement may be satisfied by passing a health-knowledge examination. Successfully passing this test exempts the student from the requirement but does not grant credit for Health

Education 175. Veterans with one year or more of active service are exempt from this requirement. This exemption also does not grant credit.

Women students who enter the University as freshmen are required to take Health Education 110 within the first three quarters of residence. Women entering the University for the first time may satisfy this requirement by passing a health-knowledge examination given during the Autumn Quarter registration period. Successfully passing this test exempts the student from the requirement, but does not grant credit for Health Education 110.

FEES, EXTRA SERVICE CHARGES, AND RENTALS

All fees, extra service charges, and rentals are payable in United States dollars at the time of registration. The University reserves the right to change any of its fees and charges without notice.

The fee schedules for resident and nonresident students, appearing at the bottom of pages 36, and 37, apply to the academic year (Autumn, Winter, and Spring Quarters). Summer fees are listed in the *Summer Quarter Bulletin*.

EXEMPTIONS

Exemption from tuition charges is granted resident students who either (1) served in the United States Armed Forces during World War I and received honorable discharges; or (2) served in the United States Armed Forces during World War II at any time after December 6, 1941, and before January 1, 1947, and received honorable discharges, but are no longer entitled to federal educational benefits; or (3) are United States citizens who served in the armed forces of governments associated with the United States during World Wars I or II and received honorable discharges. Nonresident students who meet one of these requirements pay one-half of the nonresident tuition. This exemption is not granted to Summer Quarter students.

Proof of eligibility should be met as follows:

- (1) World War I veterans should present copy of discharge papers to Comptroller's Office, 203 Administration Building.
- (2) World War II veterans with Korean service or who have suffered disability should present a letter from the Veterans Administration Regional Office to the Veterans Division, Safety Division Building, stating they are no longer eligible for any federal educational benefits. (Excepted are those veterans who have had both World War II benefits and Korean benefits and have expired those benefits at the University of Washington.)
- (3) World War II veterans who have not suffered any disability or served in the Korean Conflict should present an 8½-inch x 11-inch photostat of discharge papers to the Veterans Division, Safety Division Building.

Exemption must be cleared prior to student's appointment day for registration in order to prevent personal payment.

EXTRA SERVICE CHARGES

A registration service charge of \$15.00 is assessed those students: (1) eligible for Advance (mail) Registration who fail to participate; or (2) who, after the established application deadline, are granted Appointments or Permits to register by In-Person Registration by action of the Registration Appeal Board. A late registration charge of \$15.00 is assessed any student granted permission to register after the last registration day before the opening of Autumn, Winter, or Spring Quarters by action of the Registration Appeal Board. A charge of \$5.00 is made Autumn, Winter, and Spring Quarters 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.

<i>Special Examination</i>	\$1.00
<i>Removal of an Incomplete</i>	2.00
<i>Washington Pre-College Differential Guidance (Grade Prediction) Test</i>	5.00
<i>Athletic Admission Ticket (optional for ASUW members)</i>	3.50-6.50
Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.	
<i>Military Uniform Rental</i>	25.00

Paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.

Breakage Ticket	3.00
Required in some laboratory courses; ticket is returnable for full or partial refund.	
Locker Rental, per quarter	2.00
Required of men students taking physical education activities.	
Quarterly Grade Report	.50
One grade report is issued at the close of each quarter without charge; the charge, payable in advance, is made for each additional copy.	
Transcripts	1.00
One transcript is furnished without charge; the charge, payable in advance, is made for each additional copy.	
Graduation Exercises Diploma	10.00

MUSIC PRACTICE ROOM, per quarter: piano practice, \$3.00, one hour a day; \$5.00, two hours a day; \$6.00, three hours a day. Organ practice, \$6.00, one hour a day; \$10.00, two hours a day; \$12.00, three hours a day. Practice rooms are available only to students taking music courses.

PHYSICAL EDUCATION ACTIVITIES, per quarter: bowling, \$5.00; canoeing, \$3.00; golf instruction, \$1.50.

REFUND OF FEES, CHARGES, AND RENTALS

All fees will be refunded in full if complete withdrawal is made during the first three calendar days of the quarter; one-half the amount will be refunded if with-

FEES FOR RESIDENT STUDENTS

A resident is one who has been domiciled in Washington for at least a year immediately prior to registration.

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

Type of Registration	Tuition Fee	Incidental Fee	ASUW Fee*	Total
			Autumn, Winter, and Spring Quarters	Autumn, Winter, and Spring Quarters
Full-time students** (undergraduate and graduate) except in Medical and Dental Schools	\$35.00	\$56.50	\$8.50	\$100.00
Auditors		39.00	†	39.00
Part-time (max. 6 credits exclusive of ROTC)§	35.00	39.00	†	74.00
Ex-service personnel of World Wars I and II†† (Chapter 46, Laws of 1945)				
Full-time		56.50	8.50	65.00
Part-time (max. 6 credits)§		39.00	†	39.00
Students registered for thesis only (for credit or final)||		56.50	†	56.50
Students registered for degree final only (nonthesis)||		56.50	†	56.50

* Athletic admission ticket is optional for ASUW members. Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.

** A \$25.00 uniform rental is paid by students in Army and Air Force ROTC; refundable if uniform is returned in good condition. Limitation on refund will be explained during registration.

† 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 35) to determine eligibility.

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

|| Must be approved by the Graduate School.

drawal is made during the first thirty calendar days. Refunds are not made to students withdrawing under discipline.

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

At least two weeks must elapse between payment and refund, if payment was made by check.

ESTIMATE OF YEARLY EXPENSES

The figures given below are minimum estimates for an academic year, which includes Autumn, Winter, and Spring Quarters. Living costs and personal expenses vary widely with the needs of the individual student.

Tuition, Incidental, and ASUW Membership

Full-time resident student	\$300.00
Full-time nonresident student	600.00
<i>Athletic Admission Ticket</i> (optional)	6.50
<i>Health and Accident Insurance</i> (optional)	16.50
<i>Extra Service Charges and Rentals</i>	38.50
Military uniform, breakage ticket, and locker charges.	

FEEES FOR NONRESIDENT STUDENTS

Prospective students are classified as nonresidents when their credentials come from schools outside Washington. If they believe they are residents, they may petition the Residence Classification Office, 205A Administration Building, for a change of classification.

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

Type of Registration	Tuition Fee	Incidental Fee	ASUW Fee* Autumn, Winter, and Spring Quarters	Total Autumn, Winter, and Spring Quarters
Full-time students** (undergraduate and graduate) except in Medical and Dental Schools	\$105.00	\$86.50	\$8.50	\$200.00
Auditors		39.00	†	39.00
Part-time (max. 6 credits exclusive of ROTC)§	105.00	69.00	†	174.00
Ex-service personnel of World Wars I and II†† (Chapter 46, Laws of 1945)				
Full-time	52.50	86.50	8.50	147.50
Part-time (max. 6 credits)§	52.50	69.00	†	121.50
Students registered for thesis only (for credit or final)||		56.50	†	56.50
Students registered for degree final only (nonthesis)||		56.50	†	56.50

* Athletic admission ticket is optional for ASUW members. Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.

** A \$25.00 uniform rental is paid by students in Army and Air Force ROTC, refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.

† 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 35) to determine eligibility.

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

|| Must be approved by the Graduate School.

<i>Books and Supplies</i>	90.00
<i>Board and Room</i>	
Room and meals in Men's Residence Halls	675.00
Room and meals in Women's Residence Halls	615.00-720.00
Room and meals in fraternity or sorority house (Including dues and social assessments.)	670.00-760.00
Initial cost of joining is not included; this information may be obtained from the Interfraternity Council or Panhellenic Council.	
<i>Personal Expenses</i>	300.00

STUDENT ACTIVITIES AND SERVICES

ASSOCIATED STUDENTS

Membership in the Associated Students of the University of Washington, the central organization which conducts all student activities, is required of all regularly enrolled students. Through the ASUW Board of Control and its various committees and boards, students assume major responsibility in the government of student life. The ASUW helps to finance the programs of athletics, debates, concerts, lectures, and many other activities and facilities, including the University of Washington *Daily* and the Student Union Building.

SOCIETIES AND CLUBS

The clubs and fraternal organizations in the College were organized to further interest and promote higher standards in the various phases of business administration by acquainting members with their fellow students, their teachers, and with local businessmen and their problems.

Alpha Kappa Psi is a national commerce fraternity. Rho Chapter, at the University, is open to first-quarter sophomore business administration students who have an over-all grade-point average of 2.50 or better.

Beta Alpha Psi is an active national accounting fraternity dedicated to furthering the professional aspects of its membership and profession. Delta Chapter is composed of accounting majors with a minimum of 20 credits in accounting and a cumulative grade-point average of 3.00 in accounting and 2.50 in all subjects. Membership is limited to students who successfully pass a five-hour examination covering accounting law, theory, and problems.

Beta Gamma Sigma, national honorary fraternity, is made up of men and women with high scholarship and outstanding character in schools of commerce and business administration. Seniors with an over-all grade-point average of 3.30 and juniors with an over-all grade-point average of 3.50 are eligible for membership in Washington's Alpha Chapter.

The Insurance Society is an organization of students with a professional interest in insurance. Members must have had at least one insurance course.

Society for Advancement of Management is the recognized national professional organization of management in industry, commerce, government, and education and the pioneer in management philosophy. The University chapter is open to all students, regardless of academic major, who have a sincere interest in the art and science of management. Applicants must be above the freshman level and have a cumulative grade-point average of 2.00 or better.

Marketing Club, affiliated with the American Marketing Association, is open to all students interested in marketing.

Pan Xenia, a professional international foreign trade fraternity, is open to men with a satisfactory rating, majoring in foreign trade, political science, economics, or any international field.

The Propeller Club is composed of students interested in the field of transportation and its problems.

SCHOLARSHIPS AND LOANS

A considerable number of scholarships is awarded annually on a competitive basis. Applications are available through the Office of the Dean of Students during Winter Quarter, and awards are made late in the spring for the following academic year. Information concerning the list of current awards and loans may be obtained from the Office of the Dean of Students.

Short- and long-term loan funds, including the National Defense Student Loan fund, are administered by the Office of the Dean of Students. Full-time students who are making normal and satisfactory progress are eligible to apply.

Special awards for students in the College of Business Administration are available in the accounting, marketing, insurance, and production fields. Two loan funds may also be used by Business Administration students to help further their University work. Information may be obtained from the Scholarship Adviser.

The University of Washington awards 100 tuition scholarships each academic year to worthy students from other countries. There are no scholarships available for the Summer Quarter. These awards are made on the basis of the academic record of the student, recommendations from his professors, his need for such assistance, and the availability of such openings in his department at the University. These scholarships cover tuition only and are administered by the Foreign Exchange Scholarship Committee, Foreign Students Office, University of Washington, Seattle 5, Washington, U.S.A. Application for these scholarships must be made by March 1 for the following year.

OFFICE OF THE DEAN OF STUDENTS

The Office of the Dean of Students is concerned with the general welfare of students and welcomes correspondence and conferences with both parents and students. This Office works closely with the advisory system of the colleges and schools of the University; it directs students to faculty advisers, the Counseling Center, and other persons and agencies offering information and assistance with personal and social problems. The Dean of Students Office also has current information on Selective Service regulations.

The Foreign Students Office operates through the Office of the Dean of Students. The Foreign Student Adviser and his staff offer guidance on all nonacademic problems to students from other countries. Questions about immigration regulations, housing, social relationships, personal problems, finances, minimum course requirements, and employment should be referred to this Adviser. Students who are interested in study abroad may obtain from him information about schools in other countries and about Fulbright and other scholarships.

COUNSELING CENTER

The counseling Center in Lewis Hall Annex offers vocational and educational counseling to students who need help in their adjustments to college. The staff of the Center, which includes vocational counselors, and psychologists, works closely with other student services and supplements the academic advisory program.

HOUSING

Information and applications for residence in University-owned housing for single persons may be obtained by writing to the Manager, Men's Residence Halls, 1201 Campus Parkway, Seattle 5, or to the Manager, Women's Residence Halls, University of Washington, Seattle 5. Until August 1 preference in assignment to vacancies is given to students under twenty-one years of age; thereafter assignments are made in the order of application. Prospective students may apply for the residence halls prior to their acceptance by the University but not before April 15.

University regulations require that women students under twenty-one who do not live at home, must live in approved group residences such as the Women's Residence Halls, sororities, and church-sponsored living groups. Other types of living arrangements must be reported to the Dean of Women and be approved by the student's parents or guardian.

Information about fraternities or sororities may be obtained by writing to the

THE DEPARTMENTAL PROGRAMS

THE COLLEGE OF BUSINESS ADMINISTRATION offers courses leading to the degrees of Bachelor of Arts in Business Administration, Master of Business Administration, Master of Arts, and Doctor of Business Administration. The College also cooperates with other colleges and departments in a program leading to the degree of Master of Urban Planning.

BACHELOR'S DEGREES

Students working toward bachelor's degrees in business administration must meet certain general requirements of the University and the College as well as the particular course requirements of their major department. Course requirements are described in the announcements of the departments. General requirements for the bachelor's degree include military training, physical and health education, scholarship and minimum credits, course requirements, and senior-year residence.

Students should apply for bachelor's degrees during the first quarter of the senior year. If no more than ten years have elapsed since the date of a student's entry into the school or college in which he is to graduate, he may choose to graduate under the requirements set out in either the bulletin published by the appropriate school or college most recently prior to the date of his entry, or that published most recently prior to his anticipated date of graduation; provided that when, in the opinion of the faculty of the school or college or a departmental executive officer or a dean acting for such faculty, substantial changes have been made in the curriculum since the student's entry, the student's choice shall be subject to the approval of the appropriate faculty, executive officer, or dean. Disapproval of the student's choice shall be faculty action and subject to the procedure of the Faculty Code. All responsibility for fulfilling graduation requirements shall rest with the student concerned. No student whose standing is provisional because he has not removed his entrance deficiencies can have an application for degree accepted until the deficiency is cleared.

Students in other colleges of the University who wish simultaneously to receive a degree from the College of Business Administration must receive approval from the Dean of the College of Business Administration at least three quarters before completing the requirements for the degree from this College.

REQUIREMENTS

The lower- and upper-division requirements leading to the degree of Bachelor of Arts in Business Administration are outlined below.

Lower Division, Non-Business Administration		CREDITS
Engl. 101	Composition	3
Engl. 102	Composition	3
Engl. 103	Composition	3
Econ.		11
Hist.		5
Humanities Group		9-10
Math. 155, 156	College Algebra, plus one course to be selected	9
Phil. 100	Introduction to Philosophy <i>or</i>	
Phil. 120	Introduction to Logic	5
Pol. Sci. 201	Modern Government <i>or</i>	
202	American Government and Politics	5
Psych. <i>or</i>		
Soc. <i>or</i>		10
Anthro.		
Science Group		4-5

Lower-Division Business Administration		CREDITS
Acctg. 210	Fundamentals of Accounting	3
Acctg. 220	Fundamentals of Accounting	3
Acctg. 230	Basic Accounting Analysis	3
Bus. Law 201	Legal Factors in the Business Environment	3
Bus. Stat. 201	Statistical Analysis	3

Upper-Division Business Administration		CREDITS
Bus. Commun. 301	Written Business Communications	3
Bus. Law 301	Business Agreements	3
Bus. Stat. 301	Probability and Inference in Business Decision Making	3
Fin. 320	Money, Financial Institutions and Income	4
Fin. 350	Business Finance	4
Gen. Bus. 439	Analysis of Business Conditions	4
Gen. Bus. 444	Business and Society	4
Hum. Rel. 460	Human Relations in Business and Industry	4
Mktg. 301	Marketing, Transportation, and International Business:	
An Integrative Analysis		5
Mktg. 400	Marketing and Physical Distribution Management	3
Personnel 301	Industrial Relations	3
Pol. and Ad. 470	Business Policy	4
Production 301	Principles of Production	3
<i>Plus one additional course from:</i>		
Acctg. 475	Administrative Controls	3
Gen. Bus. 441	Managerial Economics	
Pol. and Ad. 440	Organization Theory	

Major

See major requirements. 18-25

Electives

*Electives must bring total credits to 180
and non-Business Administration credits to a minimum of 72.* 21-30

COLLEGE HONORS PROGRAM

The Honors Program of the College of Business Administration provides an opportunity for gifted undergraduate students in business administration to explore, through colloquia, reading, independent study, and consultations with faculty members, areas of academic interest that would not be possible in prescribed departmental degree programs and the usual elective offerings. The Honors Program is designed to help the honor student fill any great void in his academic program, to motivate the student to a higher quality of work in his field of specialization and to appreciate its relationship with other fields, to help him choose elective courses significantly—in short, to help him acquire as liberal an education in business administration as the College can supply and to emerge from undergraduate studies an enlightened personality.

Bulletin titles indicate only the general area in which a course will be conducted. The particular concepts to be considered and the material to be studied are determined by the instructor with the concurrence of the College Honors Committee.

Periodic announcements are made setting forth the eligibility requirements of the Honors Program. Information can be obtained from the Honors Committee.

ADVANCED DEGREES

The College of Business Administration offers courses leading to the degrees of Master of Business Administration, Master of Arts, and Doctor of Business Administration. Graduate training is given in these fields of specialization: accounting; business and its environment; business policy and business administration; finance and banking; international business; marketing; personnel and industrial relations; production; real estate; research and statistical control; and transportation. However, these areas shall not be held to exclude others which may be appropriate in special instances.

Students seeking advanced degrees in business administration must first file an application for admission to the Graduate School. The Graduate School passes upon the application and, if it is found to meet the requirements of the Graduate School, forwards it to the College of Business Administration for final approval. Before final approval is granted by the College, the applicant must have submitted to the College the result of the Admission Test for Graduate Study in Business. Inquiries concerning this test should be addressed to the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey, or 4640 Hollywood Boulevard, Los Angeles 27, California. Students whose previous work in business administration is limited, may be required to complete selected undergraduate courses before being admitted to graduate courses.

MASTER'S DEGREES

Full graduate standing is granted applicants who have the necessary prerequisites and a cumulative grade-point average of 3.00 (B) or higher. Students who do not meet this requirement may be admitted (1) if they have a grade-point average of 3.25 or higher during their senior year; (2) if they rank in the upper third of their collegiate graduating class; or (3) if they have achieved a high score on the Admission Test for Graduate Study in Business.

Up to 9 graduate credits taken while a student in the graduate school of another accredited institution may be applied toward the master's degree provided these credits were earned in courses open only to graduate students.

Two options are offered in the master's degree programs—the Master of Business Administration (M.B.A.) and the Master of Arts (M.A.) in the business field.

Master of Business Administration. The M.B.A. program is designed for students who are preparing for professional careers in business management. Graduate seminars in business policy, administration, and controls build upon a foundation of undergraduate courses in functional and tool subjects; only a modest amount of specialization in a single subject area is possible. The broad objective is to help the student develop the analytical tools and understanding of business administration which would be of continuing value throughout his career as a business manager.

A minimum of 36 credits at the 500 level is required for the M.B.A. degree. At least 27 credits must be in business administration courses. The following courses are required:

COURSE NUMBER	CREDITS
Accounting 592	3
General Business 570, 571-572	9
Policy and Administration 575, 576, or 586	3
Policy and Administration 593 or 594	3
Electives (The electives must include at least three areas of business administration with a <i>maximum</i> of 9 credits in <i>any</i> area. <i>All</i> of the elective credits shall be in 500-numbered courses.)	18
	<hr/> 36

In addition to the above course requirements, students will be required to pass a comprehensive written examination in their final quarter of course work.

Master of Arts. The M.A. program is designed for students who desire greater specialization than is possible under the M.B.A. program (except by exceeding the

minimum 36 quarter credits). Students electing the M.A. program usually have an objective other than preparation for a career as a professional manager; some are interested in becoming technical business specialists, some are interested in research careers, and others are interested in teaching careers in a limited subject area.

The student in this program must complete a minimum of 36 credits including a thesis, with a major in one of the fields of graduate study offered by the College of Business Administration. A minimum of 15 credits, exclusive of the thesis, must be earned in the major field. A minor may be taken in the College of Business Administration or elsewhere. A minimum of 9 credits is required in the minor field. If the minor is elected outside the College, requirements of the department offering the minor must be met.

A minimum of 18 credits must be earned in courses for graduates (500 and 600 series). Remaining course credits may be in approved upper-division courses for graduate credit. The student must have a reading knowledge of an acceptable foreign language, as determined by examination.

Minor in Business Administration. Candidates for a master's degree in other colleges who elect a minor in the College of Business Administration must have as a background 15 credits in acceptable courses in business administration. The student must earn a minimum of 15 credits in approved upper-division and graduate courses in one field of business administration.

DOCTOR OF BUSINESS ADMINISTRATION

A requirement for consideration for the D.B.A. program is a grade-point average of at least 3.25 during the preceding year of graduate study. Applications for admission to the D.B.A. program must be accompanied by three letters of recommendation, at least two of which must come from former instructors.

Requirements of Study. The D.B.A. program is designed to further advanced study in business administration for persons preparing for careers in teaching, business, and government; since the inception of the program, the majority of D.B.A. graduates have entered university teaching careers. Students enrolled in this program are expected to possess the professional administrative competency which is the objective of the M.B.A. program, and—in addition—they are required to demonstrate academic competence in four areas of study, at least three of which must be in the College of Business Administration. Hence, the objective of the D.B.A. program is to provide breadth of training in the integrative processes involved in administrative planning and control, concurrently with subject area specialization which will enable a graduate actively to participate in advancing the frontiers of knowledge both in teaching and research in his primary areas.

Students must select business and its environment, or economics, as one of their four areas of study. In addition, the candidate must show evidence of competency in business research and a knowledge of economics pertinent to his areas. The residence requirement for the doctor's degree is three years, two of which must be at the University. Since one of the two years must be spent in continuous full-time residence (three out of four consecutive quarters), the residence requirement for the doctor's degree cannot be met solely with summer study. There is no foreign language requirement for the D.B.A. degree.

Admission to Candidacy. At the end of the student's two years of graduate study as approved by his Supervisory Committee, the chairman of the committee may present to the Graduate School for approval a warrant permitting the student to take the General Examination for admission to candidacy. The General Examination consists of written and oral parts in all of the candidate's fields. All of these examinations are to be taken in one quarter, and they are scheduled by the Graduate Study Committee.

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 his admission to candidacy, the student ordinarily devotes his time to the completion of his research work to be embodied in the thesis and to preparation for his Final Examination.

Thesis and Final Examination. The candidate's thesis must represent original and independent investigation. It should reflect not only his mastery of research techniques but also 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 at the Graduate School Office.

The Final Examination is oral and will normally be taken not less than two quarters after the General Examination. It is primarily on the thesis and its field, and will not be given until after the thesis has been accepted.

COURSE-NUMBERING SYSTEM

Courses numbered from 100 through 299 are lower-division courses, for freshmen and sophomores; those numbered from 300 through 499 are upper-division, for juniors and seniors.

Courses numbered 500 and above are intended for and restricted to graduate students. Some courses numbered in the 300's and 400's are open both to graduates and to upper-division undergraduates. Such courses, when acceptable to the major department and the Graduate School, may be part of the graduate program. The Graduate School accepts credit in approved 300-level courses for the minor or supporting fields only; approved 400-level courses are accepted as part of the major. For a listing of approved 300- and 400-numbered courses, consult the *Graduate School Bulletin*.

The number in parenthesis following the course title indicates the amount of credit each course carries. In most lecture courses a credit is given for each class hour a week during a quarter; laboratory courses generally carry less credit than the work time required. An asterisk in place of a credit number means that the amount of credit is variable. Hyphens between course numbers mean that credit is not granted until the series of courses is completed.

Courses to which the letter J is appended are joint courses in two or more departments and as such grant credit in one of the departments.

Not all of these courses are offered every quarter. Final confirmation of courses to be offered, as well as a list of times and places of class meetings, is given in the *Yearly Time Schedule*.

A student within 6 credits of completing his undergraduate work, and who otherwise meets the requirements for admission with full standing to the Graduate School, may register the quarter just prior to admission to the Graduate School for as many as 6 credits in graduate courses, provided he first receives approval from both the class instructor and the Graduate School. Reclassification will not be made until the bachelor's degree has been granted and the student has been officially admitted to the Graduate School. Only under these circumstances may graduate work taken as an undergraduate be applied toward an advanced degree.

ACCOUNTING

Acting Executive Officer: JULIUS ROLLER

The accounting curriculum provides a rigorous educational experience centered around financial and operational communication for business and governmental units. The curriculum prepares students for careers in accounting (public accounting; industrial or private accounting; governmental and institutional accounting) or for a general business career. Accounting education provides an excellent basis for advancement to top-level management positions and is desirable background for certain nonbusiness professions such as law.

The requirements for a major are: Accounting 311, 321, 331, 411, 421, and 6

elective credits in 400-level accounting courses (except 444J and 499). Although 6 elective credits in accounting are required for the accounting major, students interested in a public accounting career should take additional accounting and business law courses.* Such additional courses might cause the student to accumulate more than the minimum 180 credits required for graduation.

*According to the Public Accounting Act of 1949 (State of Washington) a college graduate with 45 quarter credits earned in accounting and 15 in business law, economics, and finance will have the experience requirement for obtaining the certificate of "certified public accountant" reduced from two years to one year.

COURSES FOR UNDERGRADUATES

INTRODUCTORY ACCOUNTING

210 Fundamentals of Accounting (3)

Basic principles and procedures including recording of business transactions and preparation of financial statements. (Formerly 150.) Prerequisite, sophomore standing.

220 Fundamentals of Accounting (3)

Elements of manufacturing, partnership, and corporation accounting. (Formerly 151.) Prerequisite, 210.

MANAGERIAL ACCOUNTING

230 Basic Accounting Analysis (3)

Financial and cost analysis and interpretation. (Formerly 255.) Prerequisite, 220.

305 Office Management (5)

Office organization; supervision of office functions; office personnel problems. Prerequisite, 230.

311 Cost Accounting (3)

Theory of cost accounting; accumulation and allocation of costs; managerial control through cost data. (Formerly 330.) Prerequisite, 230.

460 Advanced Cost Accounting (3)

Advanced analysis of standard and other predetermined costs; special application of advanced cost accounting techniques; and the study of budget techniques, and principle of budgetary control. (Formerly 350.) Prerequisite, 311.

475 Administrative Controls (3)

Concept of control. The use of the budgetary, statistical, and accounting systems in planning operations and achieving planned objectives. Responsibility reporting. Elements of information systems. (Cannot be used to satisfy accounting major requirements if elected as a part of the core curriculum.) Prerequisites, 230 and Business Statistics 201.

FINANCIAL ACCOUNTING

321 Equity Accounting (3)

Theory and problems in accounting for ownership equity in corporations and partnerships. Quasi-reorganizations, business combinations, income tax allocation, investments. (Formerly 360.) Prerequisite, 230.

331 Income Determination Accounting (5)

Concepts and principles underlying accounting processes. Theory and problems of financial accounting, including financial statement analysis. (Formerly 310.) Prerequisite, 230.

485 Consolidated Financial Statements (3)

Accounting for parent-subsidiary and branch relationships, domestic and foreign; mergers. Prerequisites, 321, 331.

486 Fiduciary Accounting (2)

Accounting and reporting for estates, trusts, bankruptcies, inheritances, etc. Prerequisite, 321.

490 Advanced Problems (3)

Intensive study of accounting principles, procedures, and presentations, principally through consideration of C.P.A. problems. Prerequisites, 311, 421, 485.

495 Advanced Accounting Theory (3)

Theory of accounting related to income measurement, assets, and equities. Prerequisites, 321, 331, and senior standing.

INCOME TAX

421 Federal Income Tax (5)

Individual, partnership, and corporation income tax, including installment sales and inventory tax accounting. (Formerly 320.) Prerequisites, 321, 331 or permission.

450 Special Tax Problems (3)

Special problems in income tax, including estates and trusts; corporate reorganizations, gift taxes, etc. Prerequisite, 421.

AUDITING

371 Auditing or Industrial Internship (2)

One quarter's internship with a certified public accounting firm, industrial organization, or government agency. Prerequisite, prior departmental approval.

411 Auditing Standards and Principles (3)

Generally accepted auditing standards and principles; auditing objectives and their attainment through procedures. Prerequisites, 311, 321, 331.

470 Case Studies in Auditing (5)

Application of standards and principles to case studies in auditing, including practice case. Prerequisite, 411.

SYSTEMS AND DATA PROCESSING**341 Machine Accounting (2)**

Study of modern punch-card machines and their application to accounting procedures. Prerequisite, 230.

344 Introduction to Electronic Data Processing (3)

Current use of computers in business; impact of high-speed computation on decision making; the design of electronic data-processing systems. Prerequisites, 230 and Business Statistics 201.

440 Accounting Systems (3)

System design and installation, with emphasis on internal control. (Formerly 340.) Prerequisite, 331.

444J Applications of Digital Computers (3)

Analysis of flow of information in business operations; place of computers in quantitative management; case studies; actual programming for and operation of electronic equipment. Offered jointly with Business Statistics. Prerequisite, permission.

INSTITUTIONAL ACCOUNTING**480 Fund Accounting (3)**

Fund and budgetary accounting as applied to governments and to institutions such as hospitals and colleges. Prerequisites, 321, 331.

ACCOUNTING RESEARCH**499 Undergraduate Research (3, maximum 9)**

Prerequisite, permission.

COURSES FOR GRADUATES ONLY**200P Managerial Accounting (5)**

Principles of financial statements and the double entry system. Manufacturing, partnership, and corporation accounting. Financial and cost analysis and interpretation. An accelerated course, for graduate students only, to remove background deficiency in 210, 220, and 230. Prerequisites, postgraduate standing with a senior year grade-point average of 3.00 and permission.

520 Seminar in Financial Accounting (3)

A critical examination of accounting theories, concepts, and standards pertaining to current assets and liabilities and relevant income determination problems. Prerequisites, 321, 331, and permission.

521 Seminar in Financial Accounting (3)

A critical examination of accounting theories, concepts, and standards pertaining to non-current balance sheet items and relevant income determination problems. Prerequisites, 321, 331, and permission.

522 Seminar in Cost Accounting (3)

Critical examination of theories of managerial accounting. Differentiation of objectives of managerial and financial accounting; joint costs; absorption, direct, standard, and distribution costing; techniques of analysis of data, including differential cost analysis. Prerequisites, 311 and permission.

592 Seminar in Administrative Controls (3)

The use of accounting and statistics by management in the exercise of its planning and controlling functions; e.g., forecasting, budgets, standard costs, analysis of cost variations. Controllership as a function in the business enterprise. Prerequisites, 230 and permission.

604 Research (*, maximum 10)

Prerequisite, permission.

700 Thesis (*)**702 Degree Final (0)**

Limited to students completing a nonthesis degree program.

BUSINESS COMMUNICATIONS

Executive Officer: CHARLES J. MILLER

Good writing is a valuable asset to a business career. The Business Communications courses assist the student to write effectively, to solve business problems by letter, and to create effective business reports.

COURSES FOR UNDERGRADUATES

- 301 Written Business Communications (3)**
Principles of, and practice in, writing effective business letters, reports, and manuals. Prerequisite, junior standing.
- 410 Advanced Written Business Communications (5)**
Analysis of the functions, planning, and psychology of selected types of business letters and reports. Prerequisite, junior standing.

BUSINESS AND ITS ENVIRONMENT

Executive Officer: SUMNER MARCUS

The Business and Its Environment curriculum is intended primarily for graduate students and may constitute one of the four area requirements for the degree of Doctor of Business Administration. The central objective of this curriculum is the evaluation of social, economic, and governmental influences on business and the related contribution of business to society. To this end, it offers course work and supervised research in the external relationships, rather than the internal management of business.

COURSES FOR GRADUATES ONLY

- 552 Legal Aspects of Business Regulation (3)**
Examination, from the administrative point of view, of advanced legal problems bearing upon top management's basic operating policy. Prerequisite, permission.
- 562 Responsibilities of Business Leadership (3)**
Relationships between business and consumers, government, labor, and agriculture as affected by changing social forces. Problems of business ethics. Prerequisite, permission.
- 590 Business History (3)**
Evolution of business institutions with special emphasis upon changing administrative policy, business organization, and methods in America from the colonial period to the present. Prerequisite, permission.
- 593 Seminar in Business Fluctuations (3)**
Business problems arising from fluctuations in prices and demand; analysis of strategic causes and effects of business policy on fluctuations; methods of adjustment by the firm; appraisal of corrective measures internal and external to business. Prerequisite, permission.
- 594 Seminar in Business Forecasting (3)**
Problems of business forecasting and their setting; appraisal of forecasting methods in current use by corporations, advisory services, and governmental agencies; review of actual cases; techniques of preparing forecasts for the individual firm. Prerequisite, permission.
- 597 Behavioral Science of Business (3)**
Analysis of the business system in the light of the concepts and methods of the behavioral disciplines. Prerequisite, permission.
- 598 Analysis of Business Behavior (3)**
Current broad problems of business concerns in the American economy. The topics, one of which is usually discussed each quarter, emphasize practical price determination, cost analysis, firm behavior, motivation, or other similar subjects. Prerequisite, permission.
- 604 Research (*, maximum 10)**
Prerequisite, permission.
- 700 Thesis (*)**
- 702 Degree Final (0)**
Limited to students completing a nonthesis degree program.

BUSINESS EDUCATION

Executive Officer: SUMNER MARCUS

Students preparing to teach business subjects at the secondary level normally will enroll in the College of Education, major in business education, and graduate with the bachelor's degree. (See *College of Education Bulletin*). However, a business teacher trainee may prefer to enroll in the College of Business Administration. If so, he must (1) meet all requirements for graduation in the College of

Business Administration, including a major such as accounting or general business; (2) take the courses required for certification by the College of Education; and (3) take the basic 100-series courses. Such students, therefore, should plan on one or two quarters of work beyond the basic 180 quarter credits.

BUSINESS LAW

Executive Officer: SUMNER MARCUS

The Business Law curriculum provides an opportunity for students from all colleges to develop an understanding of the processes of law and justice in English-speaking societies, and to appreciate the significance of legal factors in the business environment.

COURSES FOR UNDERGRADUATES

- 201 Legal Factors in the Business Environment (3)**
Legal institutions and processes; law as a system of social thought and behavior, a frame of order and authority within which rival claims are resolved and compromised; legal reasoning; the interaction of law and business; the lawyer and the business firm. Prerequisite, English 102.
- 301 Business Agreements (3)**
The nature, development, and operation of those principles of contract law primarily affecting business agreements. Prerequisite, 201.
- 307 Business Law (3)**
A survey for non-Business Administration students who are unable to take more than 3 credits in business law. Not open for credit to Business Administration students. Prerequisite, permission.
- 403 Commercial Law (5)**
Principles of the law of agency, property, sales, negotiable instruments, and security transactions. (Formerly 302.) Prerequisite, permission.
- 420 Law in Accounting Practice (3)**
Advanced business law problems for C.P.A. candidates. Prerequisite, 403.

BUSINESS STATISTICS: QUANTITATIVE ANALYSIS

Acting Executive Officer: JULIUS ROLLER

The Business Statistics: Quantitative Analysis curriculum provides education in analysis of business problems. Among subjects of study are classical statistical inference, modern statistical decision theory, and the mathematical methods of operations research. The requirements for a major are: Business Statistics 401, 444J, 450; Accounting 311 (Cost Accounting), plus two courses elected from Business Statistics 330, 340, 451, 460.

COURSES FOR UNDERGRADUATES

- 201 Statistical Analysis (3)**
A nonmathematical survey of the basic elements of descriptive statistics; use of the library as a source of business data; measurements useful in analysis of data; methods of data presentation. Prerequisite, sophomore standing.
- 301 Probability and Inference in Business Decision Making (3)**
A survey of statistical techniques useful in guiding business decisions; modern and classical statistical inference; correlation and regression; introduction to techniques in operations research. (Formerly 341.) Prerequisite, 201.
- 330 Time Series Analysis and Index Number Theory (3)**
Development of concepts and techniques useful in the analysis of time series, and construction of index numbers; their application in business forecasting. Prerequisite, 301.
- 340 Survey Research Methods for Business (3)**
Concepts and techniques useful in survey research in business. Practical experience in their application through a class project. Prerequisite, 301.
- 350 Quantitative Analysis for Business (5)**
Introduction to mathematical tools utilized for analysis of business problems, and appreciation of the uses of these tools in business situations. Prerequisites, 301 and Mathematics 105, or permission.

401 Advanced Business Statistics (3)

Fundamental concepts necessary to the proper application of advanced descriptive and analytical statistical techniques in business. Frequency distribution analysis; chi-square and other nonparametric inference techniques; variance and covariance; regression and correlation. (Formerly 443.) Prerequisite, 301.

444J Applications of Digital Computers (3)

Analysis of flow of information in business operations; place of computers in quantitative management; case studies; actual programming for, and operation of, electronic equipment. Offered jointly with Accounting. Prerequisite, permission.

450 Analytical Techniques in Business I (3)

Quantitative formulation of business problems and application of the tools of operations research such as linear programming, simulation, and queuing theory to business problems. Prerequisites, 301, 350, or equivalent.

451 Analytical Techniques in Business II (3)

Extension of the survey of operations research tools used in business analysis including game theory, optimization techniques, and dynamic programming. Prerequisite, 450.

460 Multivariate Analysis for Business (3)

Functional analysis techniques for business research. Variance and covariance; multiple and partial regression; problems of serial correlation, interdependence, and identification in parameter estimation. Prerequisite, 401.

COURSES FOR GRADUATES ONLY**200P Statistical Analysis (3)**

A survey of descriptive statistics. An accelerated course, to remove background deficiency in 201. Prerequisites, postgraduate standing with senior year grade-point average of 3.00, and permission.

501 Quantitative Methods (3)

A survey of techniques in analytical and descriptive statistics and operations research useful in guiding business decisions. Prerequisite, graduate standing.

520 Seminar in Business Statistics (3, maximum 6)

Reading, discussion, and limited practice in application of selected statistical techniques. Areas: statistical decision processes; nonparametric statistics; advanced application of statistical techniques in administrative control; advanced multivariate analysis; theories and techniques of time series analysis and index number construction. Prerequisite, permission.

550 Seminar in Operations Research Techniques (3, maximum 6)

An intensive study into operations research tools useful in business analysis, such as linear and other programming techniques, queuing theory, and simulation. Prerequisite, permission.

604 Research (*, maximum 10)

Prerequisite, permission.

700 Thesis (*)**702 Degree Final (0)**

Limited to students completing a nonthesis degree program.

FINANCE

Acting Executive Officer: JULIUS ROLLER

Students majoring in finance prepare for careers in banks and other financial institutions; for careers in financial management, leading to positions as treasurers, controllers, credit managers, and financial administrators in business enterprises; and for careers leading to positions in investment management. The requirements for a major are: Finance 330, 420, 450; Accounting 331 (Income Determination Accounting), plus 6 credits from Finance 327, 423, 428, 436, 453. ;

COURSES FOR UNDERGRADUATES**320 Money, Financial Institutions, and Income (4)**

Nature and functions of money, debt and credit, and liquidity; financial institutions and the flow of funds in the economy; income and monetary theory; and introduction to money market analysis. (Formerly 201.) Prerequisites, Economics 200, Accounting 230.

327 International Finance (3)

Practices, institutional operations, and problems in international finance; the balance of international payments; financing international trade and other transactions; foreign departments of banks; the foreign exchange market and exchange rates; the impact of international financial problems on business. (Formerly 367.) Prerequisite, 320.

330 Investments (3)

Designed both for students who expect to enter financial work and for those who desire a knowledge of investment for personal use. Principles in the selection of investment media; determination of individual and institutional investment policies; analysis of industries and securities. (Formerly 344.) Prerequisite, 350.

335 Securities Markets (3)

Functions and operations of primary and secondary markets for securities. Emphasis is given to investment banking; direct placement of securities; organized securities exchanges; the over-the-counter market; and regulatory and supervisory functions of government, including the S.E.C. and state controls. (Formerly 340.) Prerequisite, 350.

350 Business Finance (4)

Sources, uses, cost, and control of funds in business enterprises; financial importance of the enterprise (especially the corporation) in the economy; internal management of working capital and income; sources and cost of long-term funds; financing of the growth and expansion of business enterprises; government regulation of the financial process. (Formerly 301.) Prerequisite, 320.

420 Money Markets (3)

Analysis of interrelationships of financial institutions in the short-term and long-term money markets. Attention to the effects on financial institutions and money markets of Treasury and Federal Reserve policies, and the manner in which legal requirements, portfolio policies, and sources of funds result in actions by financial institutions and affect money markets. (Formerly 426.) Prerequisite, 350.

423 Commercial Banking (3)

Internal organization and management of commercial banks, including portfolio analysis, departmental functions, and responsibilities of officers and directors. Banking as an industry, including branch banking, correspondent banking, and the relationship between banks and government agencies. Prerequisite, 320.

428 Credit Administration (3)

Analysis of selected loan and investment cases. Prerequisite, 423 or permission.

436 Investment Analysis (3)

An advanced course primarily for students preparing for investment banking or for professional investment work. Principles and techniques of the analysis of securities, both corporate and governmental, and workable criteria for selection or rejection of issues are emphasized. (Formerly 446.) Prerequisites, 330 and Accounting 331.

450 Problems in Corporation Finance (4)

Case study of private business corporations. Includes special problems in financing current operations, financing long-run needs, reserve and dividend policies, expansion and combination, and comprehensive financial problems, from the management point of view. Prerequisite, 350 or permission.

453 Capital Allocation (3)

Methods of measuring the merit of competing demands for corporate capital; factors relating to the investment decision. Problems and cases. Prerequisites, 350, Business Statistics 201, and Accounting 230.

499 Undergraduate Research (3, maximum 6)

Research in selected problems in credit administration, international finance, banking, corporation finance, and investments. Prerequisites, 350 and permission.

COURSES FOR GRADUATES ONLY**300P Business Finance (5)**

The role of financial institutions in meeting short-, intermediate-, and long-term credit needs. An accelerated course to remove background deficiency in 320 and 350. Prerequisites, postgraduate standing with senior year grade-point average of 3.00 and permission.

520 Seminar in Banking Problems (3)

Selected problems of contemporary and permanent significance in domestic and international banking and finance. Prerequisite, permission.

521 Seminar in Money Markets (3)

Supply and demand for funds in short-term and long-term money markets; the influence of money supply, bank reserves, legal restrictions, institutional portfolio policies, and changing needs and instruments of corporation finance. Objective is to develop ability to analyze and appraise current money market developments. Prerequisite, permission.

522 Seminar in Corporation Finance (3)

Contemporary methods, internal and external, used to solve corporate financial problems and to indicate financial trends. Extensive reading and discussion is required in designated areas. Prerequisite, permission.

604 Research (*, maximum 10)

Prerequisite, permission.

700 Thesis (*)**702 Degree Final (0)**

Limited to students completing a nonthesis degree program.

GENERAL BUSINESS

Executive Officer: SUMNER MARCUS

The General Business curriculum is designed for students who prefer educational breadth rather than specialization. The requirements for a major are 18 credits in upper-division courses, of which no more than two courses may be in any one field, and two courses must be numbered 400.

COURSES FOR UNDERGRADUATES

- 101 Business: An Introductory Analysis (5)**
The role of business in a modern economy: its growth, structure, organization, and relationship to environment. Business firms: their objectives, functions, and management. Problems of organization, decision making, controls, and related aspects. Opportunities in business.
- 361 Business History (3)**
Examination of changing policies, organization, and operations of the business firm in the United States.
- 439 Analysis of Business Conditions (4)**
Analysis of 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 320 and Business Statistics 201 and 301.
- 441 Managerial Economics (3)**
Analysis of factors affecting decisions within business firms. Motivation, inter-firm relationships, cost and pricing policies, are among subjects examined. Prerequisite, Business Statistics 301.
- 444 Business and Society (4)**
American business and its role in society; business leadership in different social contexts; the changing framework of responsibilities facing both the company and its leaders.
- 499 Undergraduate Research (3, maximum 9)**
Prerequisites, 439 and permission.

COURSES FOR GRADUATES ONLY

- 570 Seminar in Business Research (3)**
Business research methods and techniques. What business research is; how it is done, stressing the scientific method as a research procedure; and who does it. Sources of relevant information. Students will carry out the formulation of a research project, defining the problem, pinpointing sources of information, selecting a method of approach. Prerequisite, permission.
- 571-572 Business Studies (3-3)**
Independent study in business administration; critical evaluation of business analysis and research methods. Effective communication of ideas is emphasized. Methods and content of independent research studies being completed by the students are subjected to critical evaluation in seminar discussion. Prerequisites, 570 and approved research topic outline for 571-; 571- for 572; 571-572 open only to M.B.A. nonthesis students.
- 604 Research (*, maximum 10)**
Prerequisite, permission.
- 700 Thesis (*)**
- 702 Degree Final**
Limited to students completing a nonthesis degree program.

HUMAN RELATIONS IN BUSINESS AND INDUSTRY

Executive Officer: PRESTON P. LE BRETON

The purpose of this curriculum is to help students develop knowledge, skills, and attitudes about human behavior that will help them to become responsible members of the business world. Courses offered are useful to students in other colleges and schools of the University.

COURSES FOR UNDERGRADUATES

- 365 Human Behavior in Organizations (3)**
Contents and instructional approach similar to 460 with emphasis on human aspects of labor relations and on administrative behavior. Not open to Business Administration students.

460 Human Relations in Business and Industry (4)

Develops understanding of organizational behavior, with a clinical focus on basic processes and methods involved in diagnosing human situations and in taking action. Specifically concerns itself with personal, social, and organizational aspects. Case discussion and analysis of concepts and conceptual schemes. Prerequisite, senior standing.

COURSE FOR GRADUATES ONLY**400P Human Relations in Business and Industry (3)**

Cases are used to develop an understanding of human situations in business and industry. An accelerated course to remove background deficiencies in 460. Prerequisites, graduate standing with a senior year grade-point average of 3.00, and permission.

INTERNATIONAL BUSINESS

Executive Officer: CHARLES J. MILLER

The curriculum prepares students for careers in overseas operations of manufacturing, marketing, and financial establishments, import and export houses, international agencies, and international trade service organizations.

The requirements for a major are: International Business 301, 320, 370, and 470. Courses in foreign languages and literature are strongly recommended.

COURSES FOR UNDERGRADUATES**310 Principles of International Business (5)**

Institutions, principles, methods; effects of national differences on business practices; exporting, importing; marketing, manufacturing operations, administration of licensing agreements abroad; national policies and international relations.

320 International Business Environment (5)

Cultural and social factors affecting business behavior; national trade policies, trade agreements, and conventions; government and social controls; taxation; international cooperation; communist trade policies; adaptation of business organization to foreign conditions. Current developments are emphasized. Prerequisite, 301.

370 Foreign Area Analysis (5)

Objectives, methods, and practices; source reference and interpretation of foreign information; business problems in underdeveloped countries. Individual term projects provide practice experience in area studied. Prerequisite, 301.

420 Foreign Trade Practices (5)

International communications, contracts, and arbitration; product and market analysis, packaging; cost analysis and pricing; documentation and shipping; licenses, taxes, tariffs, and customs procedures. Prerequisite, 301.

470 Problems in Foreign Operations Management (5)

Analysis of problems and policies at management level. Prerequisite, 301.

COURSES FOR GRADUATES ONLY**520, 521 Seminar (3,3)**

Trends and contemporary problems in international operation management, business relations and services, foreign economic policies, and related subjects; research and sources of information useful for solving international business problems. Each quarter a different aspect is emphasized. Prerequisite, permission.

604 Research (*, maximum 10)

Prerequisite, permission.

700 Thesis (*)**702 Degree Final (0)**

Limited to students completing a nonthesis degree program.

LAW, PREPROFESSIONAL PROGRAM

Adviser: S. D. BROWN

Students at the University who plan to enter the School of Law may qualify for entrance by obtaining a bachelor's degree before entrance; or by taking a special three-year course of pre-legal training which leads to a bachelor's degree at the successful completion of the first year in the School of Law.

Students, who take the three-year course leading to a bachelor's degree after one year in the School of Law, have a choice of three curricula. The College of Arts and Sciences provides an arts-law and a science-law curriculum (see the *College of Arts and Sciences Bulletin*) and the College of Business Administration provides a business-law curriculum. In all these curricula, the three-year program must include 135 credits with a 2.50 grade-point average, and the required quarters in physical education activity and military training, if a degree is to be conferred at the end of a year in the School of Law.

These three-year curricula are open to students from other institutions who enter the University with advanced standing, provided they earn at least 45 approved credits in the University before entering the School of Law. 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.

Students in the College of Business Administration must satisfy all the specific requirements for a Bachelor of Arts in Business Administration degree, with the exception of Business Law 201 (Legal Aspects in the Business Environment) and 302 (Commercial Law), and must have accumulated a total of 135 credits before entering the School of Law.

In addition, the applicant must take the Law School Admission Test which is given in November, February, April, and August. If possible, applicants should take the February test.

MARKETING

Executive Officer: CHARLES J. MILLER

Students who major in Marketing study the principles, policies, concepts, spatial relationships, and consumer behavior governing the distribution and physical movement of goods in domestic and international trade. The program prepares students to enter industrial marketing organizations, manufacturing and wholesaling institutions, retail stores, advertising, and research agencies.

The requirements for a major are: Marketing 421, 491, plus two courses from Marketing 371, 381, 391, 401.

COURSES FOR UNDERGRADUATES

- 301 Marketing, Transportation, and International Business: An Integrative Analysis (5)**
Fundamentals of marketing concept and functions; consumer demand and behavior; spatial relationships, and physical distribution; domestic and foreign institutions, channels, and public policy.
- 371 Wholesaling (5)**
Major marketing problems. Focus on wholesaling, where primary producers manufacturers, wholesaling middlemen, and retailers compete. Course includes organization, operations, policies and management of the wholesaling firm. Prerequisite, 301.
- 381 Retailing (5)**
Profit planning and business control; buying, stock control, pricing, promotion; store location, layout, organization, policies, systems; coordination of store activities. Prerequisite, 301 (except for Pharmacy students).
- 391 Advertising (5)**
Planning the program; place of advertising in marketing; analysis of media and budget; research; utilization by business; advertising institutions; economic and social aspects. Prerequisite, 301.
- 400 Marketing and Physical Distribution Management (Domestic and Foreign) (3)**
Analytical integration of tools, factors, and concepts used by management in planning, establishing policies, and solving problems. Prerequisite, 301.
- 401 Sales Management (5)**
Sales and distribution planning, cost analyses, methods, policies, and problems; sales organization and training, and management of the sales force. Prerequisite, 301.
- 421 Marketing Research (5)**
Evaluation, uses, design, and methods. Current developments. A class research project provides practical application of methods studied. Prerequisite, 301.
- 441 Retail Sales Promotion (3)**
The plan and budget; evaluation and use of external and internal media; promotion methods; research; coordination of activities. Prerequisite, 381.

- 481 Retail Field Work (2, maximum 8)**
Open to scholarship students only. Prerequisite, permission.
- 491 Marketing Problems (5)**
Analysis of wholesale and industrial, retail, and advertising problems at management level. Prerequisite, 301.

COURSES FOR GRADUATES ONLY

- 300P Marketing, Transportation, and International Business: An Integrative Analysis (3)**
An accelerated course, to remove background deficiency in 301. Prerequisites, graduate standing with a senior year grade-point average of 3.00, and permission.
- 520 Marketing Trends and Developments (3)**
The current evolution of marketing is subjected to critical evaluation and reviewed analytically. Prerequisites, 301 and permission.
- 521 Marketing's Role in Contemporary America (3)**
The role of meeting the challenges of full employment and an expanding flow of goods and services through the American economy. Problem areas which may be examined include: marketing costs and efficiency, marketing and government, marketing and monopoly, pricing, and channels of distribution. Prerequisites, 301 and permission.
- 522 Advanced Marketing Concepts (3)**
The interdisciplinary exchange of ideas related to marketing is studied. The marketing theories and evolving concepts of marketing and management are critically appraised. Prerequisites, 520 or 521 and permission.
- 604 Research (*, maximum 10)**
Prerequisite, permission.
- 700 Thesis (*)**
- 702 Degree Final (0)**
Limited to students completing a nonthesis degree program.

PERSONNEL AND INDUSTRIAL RELATIONS

Executive Officer: PRESTON P. LE BRETON

This curriculum provides training in the policies and procedures used in developing and maintaining an efficient work force. The requirements for a major are: Personnel and Industrial Relations 345, 346, and 450, eight additional credits from labor economics, psychology, anthropology, and/or Mechanical Engineering 417 (Methods Analysis) and 418 (Work Simplification).

COURSES FOR UNDERGRADUATES

- 301 Industrial Relations (3)**
The nature, as well as the social and historical origins of industrial relations and union management relations; their impact on the total organization; the respective roles of all managers in industrial relations; and the application of behavioral science research to industrial relations policy.
- 310 Personnel Management (5)**
Philosophy and procedures in obtaining and maintaining an efficient work force, with emphasis on the methods of initiating and carrying out an effective personnel program. Not open to Business Administration students for credit.
- 345 Personnel Methods and Theory I (3)**
Job analysis, job evaluation, and wage surveys, wage and salary administration; performance standards, performance rating and review; employee services and fringe benefits. Prerequisite, 301.
- 346 Personnel Methods and Theory II (3)**
Employment interviewing and other types of interviews; recruiting selection, placement; testing, personnel research and statistics; training. Prerequisite, 301.
- 450 Industrial Relations Administration (5)**
A case course directed toward development of administrative skill in dealing with unions. Subjects covered are: nature of unions, institutional forces conditioning collective bargaining practices, and administrative practices in dealing with unions. Includes collective bargaining game.

COURSES FOR GRADUATES ONLY

- 520 Seminar in Personnel and Industrial Relations (3)**
By case discussion and brief written reports, analysis of the problems and policies in personnel administration in the following areas is covered: business philosophy, ethics, personnel policies, role of the personnel director, breadth of the personnel department's responsibilities, collective bargaining, supervision, job evaluation, and safety. Prerequisite, permission.

521 Current Problems in Personnel and Industrial Relations (3)

Selection, appraisal, performance review, and development of executives; executive salary administration; white-collar unionization; preparation for contract negotiations; problems surrounding strikes. Prerequisite, one course in personnel, industrial relations, or labor economics, or permission.

604 Research (*, maximum 10)

Prerequisite, permission.

700 Thesis (*)**702 Degree Final (0)**

Limited to students completing a nonthesis degree program.

POLICY AND ADMINISTRATION

Executive Officer: PRESTON P. LE BRETON

Courses are provided that integrate and supplement the work in other departments of the College. The courses are designed to add to the understanding of the fundamental principles of business from the viewpoint of management, particularly of those executives whose decisions shape important policies of business under private ownership. The administrative viewpoint and the general unit of business administration are emphasized, and the habit of thinking about business problems in an over-all context is encouraged.

COURSES FOR UNDERGRADUATES

440 Organization Theory (3)

A study of concepts of power, authority and influence; communications, delegation and decentralization, decision and planning theory; formal organization structures, group decision making, philosophy and values in business organizations, and considerations of organization as a social issue. Prerequisite, advanced junior standing.

441 Advanced Organization Theory (3)

Deals with current research, measuring organizational effectiveness, planning, leadership patterns, current problems, developments in related disciplines. Prerequisite, 440.

463 Administrative Behavior (4)

Practice and theory in formal organizations studied through selected readings and actual cases. Emphasizes the superior-subordinate relationship at all levels. Considers the administrator's frame of reference, communication in organizations, motivation, informal organization, situational and environmental aspects, and administrative controls. Prerequisite, Human Relations 460.

470 Business Policy (4)

Case study of policy-making and administration from a general management point of view. Emphasis is on problem analysis, the decision-making process, administration and control, and continuous reappraisal of policies and objectives. This course integrates and builds upon the work of the core curriculum.

471 Problems of the Independent Businessman (3)

The role of small business in the economy. Case studies of problems faced by owner-managers of small business enterprises. Prerequisites, Finance 350, Marketing 301, Production 301, and Industrial Relations 301, or permission.

480 Business Simulation (5)

Critical analysis of integrated business policy formulation in a complex and dynamic industrial environment by means of simulation (business gaming). Prerequisites, senior standing and permission.

COURSES FOR GRADUATES ONLY

565 Seminar in Comparative Administrative Theory (3)

An evaluation of the various approaches to the study of administration. A theoretical and historical point of view is taken. Each approach to the study is analyzed independently, and also related to a general theory. Prerequisite, permission.

575 Human Aspects of Administration (3)

Examines administration process with a primary focus on organizational behavior. Develops the basic contributions of social science and other sources in the formulation of administrative-organizational conceptual schemes. Critically evaluates administrative theory in relation to administrative practice. Prerequisite, permission.

576 Human Aspects of Administration (3)

Develops in depth some of the basic contributions to administrative theory and practice made by past and current research, thought, and experience. Typically examines several major research studies, drawing on findings from psychology, sociology, social and cultural anthropology, business administration, government, and other sources. Prerequisite, permission.

580 Planning and Decision Theory (3)

Development of a theory of planning, including foundation for theory, process of planning, role of participants in planning, the auxiliary functions, and integration into a general theory. Prerequisite, permission.

586 Seminar in Administrative Organization (3)

A reading, research, and discussion course in organization theory covering concepts of power, authority and influence, objectives and goals, decision and planning, communications, delegation and decentralization, and considerations of values, social issues, and future trends in organization. Research and theories in other fields, such as behavioral sciences and economics, will be related to business organization theory. Prerequisite, permission.

593, 594 Policy Determination and Administration (3,3)

Analysis of policy problems faced by chief administrative officers of business firms. Determination of objectives; development of policies to achieve objectives; organization of executive personnel to implement policies; coordination of the organization; appraisal and adjustments to changes in environment. The course is intended to give a clearer insight not only into how business decisions are reached, but into the motivation of businessmen in deciding what to do under varying circumstances. Case study seminars with simulation (business gaming) included in 594. (It is recommended that these courses be scheduled toward the end of the student's course work.) Prerequisites, Master of Business Administration candidacy and permission for 593; 593 for 594.

604 Research (*, maximum 10)

Prerequisite, permission.

700 Thesis (*)**702 Degree Final (0)**

Limited to students completing a nonthesis degree program.

PRODUCTION

Executive Officer: PRESTON P. LE BRETON

This curriculum is concerned with the proper use of materials, machines, manpower, methods, and standards in manufacturing, as well as the management function of all business enterprises. Training is provided in industrial organization and management, production planning and control, purchasing and materials management, manufacturing methods and operations analysis. The requirements for a major are: Production 341, 342, 343, 460; Accounting 311; and Mechanical Engineering 203. Suitable substitutes for Mechanical Engineering 203 may be arranged with faculty permission for those students who have had corresponding experience or who desire training in other technical specialties.

COURSES FOR UNDERGRADUATES

301 Principles of Production (3)

The production function in business and industry; organization and administration; research and product development; plant location, layout, and equipment; planning and control of production; materials and quality control; methods analysis and time standards; industrial budget control; the background of scientific management.

341 Production Management I (3)

Theory and analysis of product research and development, system design; methods study, time study, and application of computers to production problems. Prerequisite, 301.

342 Production Management II (3)

Purchasing and materials management, facilities planning and equipment replacement, and quality control. (Formerly 355.) Prerequisites, 301 and Business Statistics 301.

343 Production Management III (3)

Theory and analysis of production planning and control, and inventory control. (Formerly 351.) Prerequisite, 301.

455 Analytical Techniques in Production Management (3)

Advanced study of application of mathematical and statistical methods to solution of problems in production management, particularly in areas of production and inventory control. Prerequisite, Business Statistics 450.

460 Manufacturing Administration (5)

Administration of the production activities of a manufacturing enterprise. Particular attention given production decisions and other executive responsibilities at management level. Prerequisites, 341, 342, 343.

499 Undergraduate Research (3, maximum 9)

Individual study or special project in production field. Open only to qualified students majoring in production. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

300P Principles of Production (3)

The production function in business and industry. An accelerated course to remove background deficiency in 301. Prerequisites, graduate standing with senior year grade-point average of 3.00 and permission.

520 Seminar in Production (3)

Research, readings, and reports on current problems, using a topical approach with emphasis on such areas as product research and development, plant location, equipment policies, materials and quality controls, and production planning and control. Prerequisite, permission.

521 Seminar in Manufacturing (3)

Policy formulation and administration of manufacturing enterprises by analysis of case studies of selected industries, emphasizing integration of functions of production management with the major goals of the organization. Prerequisite, permission.

604 Research (*, maximum 10)

Prerequisite, permission.

700 Thesis (*)

702 Degree Final (0)

Limited to students completing a nonthesis degree program.

REAL ESTATE

Executive Officer: SUMNER MARCUS

Training provided that is useful in a general business career as well as for students planning to enter the field of real estate. The requirements for a major are: Real Estate 301, 410, 495, and Geography 477 (Urban Geography). The student also must take either Urban Planning 380 (Introduction to City Planning), or Civil Engineering 403 (Principles of Urban Planning).

COURSES FOR UNDERGRADUATES

301 Urban Land Economics and Real Estate Institutions (5)

Economic principles underlying utilization of land; real property rights, institutions, and land tenure; market allocation of urban land uses and public control; analysis of location and development of residential, commercial, industrial, and financial districts.

410 Real Estate Valuation and Administration (5)

Functions and objectives of the industry. Characteristics and management problems of construction, brokerage, property management, and financial firms; urban land services; theory and principles of urban land valuation including appraisal theory and techniques. Prerequisite, 301.

COURSES FOR GRADUATES ONLY

520 Seminar in Real Estate and Urban Land Economics (3)

Analysis and evaluation of land allocation systems, institutional aspects of the real estate industry, and problems arising from competition of spatial units within urban markets. Prerequisite, permission.

521 Seminar in Real Estate Administration (3)

The administrative approach to management problems in the real estate industry; analysis of the business functions of production, finance, and distribution of real estate services. Prerequisite, permission.

604 Research (*, maximum 10)

Prerequisite, permission.

700 Thesis (*)

702 Degree Final (0)

Limited to students completing a nonthesis degree program.

RISK AND INSURANCE

Executive Officer: SUMNER MARCUS

Students who major in Risk and Insurance may seek careers in various phases of the insurance industry or as business and corporate insurance buyers and risk managers.

The curriculum is designed to provide a conceptual framework for recognizing, analyzing, and evaluating risk exposures, and for making rational choices among the insurance and noninsurance alternatives. Means of reducing risks, including insurance theory and principles, receive careful attention.

The requirements for the major are: Risk and Insurance 310, 320, 330, 432 or 438, and 480. Each student should consult with his major adviser to arrange his schedule.

COURSES FOR UNDERGRADUATES

310 Fundamentals of Risk and Insurance (5)

Nature of risk and uncertainty; influence on business and personal activities; analysis, evaluation and reduction of risks; insurance as a unique means of risk cancellation. Prerequisites, previous or concurrent completion of required lower-division courses. ,

320 Insurance Theory (3)

Theory and principles, including place of insurance in economic theory, insurability, indemnity, pricing, underwriting, etc. Prerequisite, 310.

330 Risk Analysis (5)

Investigation and measurement of various risks affecting business and individuals, including risks of property destruction, liability exposures, threats of death and disability, etc. Prerequisite, 310.

432 Advanced Risk Problems I (3)

Analysis of property and liability risks. Consideration of insurance and alternative methods of reducing these risks. Prerequisites, 320 and 330, or permission.

438 Advanced Risk Problems II (3)

Analysis of personal income risks; impact of law and taxation on reduction of these risks; group insurance and pensions; alternative protective programs. Prerequisites, 320 and 330, or permission.

480 Risk Management (3)

A business function; analysis of case problems to develop integrated, balanced programs for dealing with major risks. Prerequisite, 432 or 438, or permission.

499 Undergraduate Research (3, maximum 6)

Open only to qualified students. Individual investigation of risk and insurance problems. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

520 Seminar (3)

Considers theoretical aspects of the insurance business rather than the public and sales factors. Examination is made of economic theory underlying insurance, and management problems facing the industry. Conducted on a discussion basis, with members of the class preparing and presenting reports on problems discussed. Prerequisite, permission.

604 Research (*, maximum 10)

Prerequisite, permission.

700 Thesis (*)

702 Degree Final (0)

Limited to students completing a nonthesis degree program.

SECRETARIAL STUDIES

Executive Officer: SUMNER MARCUS

Secretarial Studies curriculum is designed to meet the needs of students who are preparing for positions as secretaries to executives of business concerns and other institutions. Students taking a General Business major may take two upper-division courses in this field as part of the upper-division requirements in the General Business Program.

COURSES FOR UNDERGRADUATES

111, 112 Secretarial Studies (2,2)

Further development of typewriting speed and accuracy; emphasis on business letters and other business forms; personal typewriting problems. Prerequisites, one or two semesters of high school typewriting for 111; 111 for 112.

115 Office Machines (3)

Laboratory instruction and practice in the operation of selected office machines, exclusive of secretarial machines.

120-121 Gregg Shorthand (3-3)

Theory of Gregg shorthand, simplified. Students who present one or more units of shorthand as entrance credit may not receive credit for 120-. Students with one or more high school units in shorthand should consult department advisers for proper course placement.

122 Advanced Gregg Shorthand (3)

New matter dictation and introduction to transcription. Prerequisite, -121 or permission.

310, 311 Advanced Secretarial Studies (5,5)

Advanced shorthand dictation and transcription; general office practice and procedures. Prerequisites, 112 and 122, or permission for 310; 310 for 311.

320 Secretarial Practice (5)

Application of skills acquired in shorthand, typewriting, office machines, business letter writing; machine transcription, electric typewriting, duplicating processes, filing systems; office procedures. Prerequisites, 112 and 122.

TRANSPORTATION

Executive Officer: CHARLES J. MILLER

This curriculum is designed for students who plan careers in, or wish a working knowledge of, the many phases of the transportation industry. The requirements for a major are: Transportation 310, 372, 440, and two of the following: 471, 481, 491.

COURSES FOR UNDERGRADUATES

310 Principles of Transportation (5)

Survey of the economic organization and functioning of the transportation industries. Impact on industrial location, prices, and markets. The nature of public policy in transportation.

372 Physical Distribution Management (3)

Management's responsibility for the movement of raw materials and finished products, including traffic management, plant location, materials handling, distribution warehousing, inventory control, and production scheduling. Prerequisite, 310.

440 Transportation Pricing (3)

Conceptual framework and theoretical aspects of pricing services. Exercise of managerial discretion in price determination. Comparative evaluation of pricing among different modes. Problems in pricing. Prerequisite, 310.

471 Public Policy in Transportation (3)

Appraisal from the public point of view. Content and effect on decision making by carrier and shipper firms. Procedures of administrative agencies regulating transportation firms. Prerequisite, 310.

481 Cases in Transportation Carrier Management (3)

Deals with carrier problems such as financing, equipment purchase and utilization, labor relations, policy determination, purchasing controls, public relations, and rate negotiations. Prerequisite, 310.

491 Cases in Physical Distribution Management (3)

Transportation problems and decisions from the buyer's viewpoint. Cases deal with analysis and selection of mode, both public and private. Costs and service considerations in assembly and distribution. Plant and warehouse location. Evaluation of market potential in view of transportation problems.

COURSES FOR GRADUATES ONLY

520 Seminar (3)

Current transportation problems and practices. Relationship and effect of changing national policies and regulation on transportation businesses. Prerequisite, permission.

604 Research (*, maximum 10)

Prerequisite, permission.

700 Thesis (*)**702 Degree Final (0)**

Limited to students completing a nonthesis degree program.

CONJOINT (B.A.)

Adviser: Chairman of the Honors Committee

The Honors Program of the College of Business Administration provides an opportunity for a small number of gifted undergraduate students in business administration to explore, through colloquia, reading, independent study, and con-

sultations with faculty members, areas of academic interest that would not be possible in prescribed departmental degree programs and the usual elective offerings.

COURSE FOR UNDERGRADUATES

- 475 Conjoint Honors Colloquium (5, maximum 15)**
Investigation of selected topics relevant to business and its environment; their consideration from the viewpoint of all departments and cognate social science disciplines. By invitation.

OTHER COURSES IN BUSINESS ADMINISTRATION PROGRAMS

ANTHROPOLOGY

- 100 Introduction to the Study of Man (5)**
Survey of the fields of anthropology. Problems and principles in the study of man's racial, linguistic, and cultural variation. Physical anthropology, linguistics, cultural anthropology, archaeology. Not open to students who have taken 390.
- 201 Physical Anthropology: Man in Nature (5)**
An introduction to physical anthropology. The basic principles of human genetics, the evidence for human evolution, and the study of race. Prerequisite, 100 or sophomore standing.
- 202 Cultural Anthropology: Comparison and Analysis (5)**
Selected anthropological analyses and comparisons of human communities around the world which illustrate diversity and universality in human cultures. Prerequisite, 100 or sophomore standing.
- 203 Archaeology: The Dawn of Tradition (5)** **Greengo**
An introduction to the prehistory of man. The beginnings of human culture in the Old World to the early Iron Age in Western Europe. Prerequisite, 100 or sophomore standing.
- 210 North American Indians (3)**
Historic cultures and their modern representatives.
- 211 Oceania (3)**
Ethnographic analysis of the islands of the Pacific; the effects of modern contacts.
- 213 Africa (3)** **Ottenberg**
Discussion of basic African cultures.
- 214 Eurasia (3)** **Gearing**
The cultures of peoples of Europe and Asia.
- 215 Native Peoples of South America (3)** **Watson**
Indigenous cultures of Mexico and Central and South America. Indian elements in modern Latin America.
- 250 The Nature of Culture (2)**
Orientation to cultural anthropology; introduction to primitive and modern societies and their present day relationships. Not open to students who have had 100, 202, or 390.
- 272 Prehistoric Cultures of North America (3)** **Greengo**
Archaeology from the earliest evidence to the coming of Europeans.
- 274 Prehistoric Cultures of South America (3)** **Greengo**
From earliest evidence of man to the period of conquest by the Spanish. Adaptations in various environments in terms of Early Lithic, Archaic, Classic, and Post-Classic stages. (Offered 1961-62.)
- 280 Theories of Race (2)**
Survey of human heredity; racial history; race differences. Not open to students who have had 100, 201, or 390.
- 311 Indian Cultures of the Pacific Northwest (3)** **Garfield**
Comparative analysis of material culture and social, religious, and political institutions.
- 314J Peoples of Central and Northern Asia (3)**
An ethnological survey of Tibet, Mongolia, Turkestan, and Siberia. Offered jointly with the Far Eastern and Russian Institute. Prerequisite, major standing in anthropology or Far Eastern, or permission.
- 315 Peoples of the Far North (3)** **Garfield**
Arctic and sub-arctic peoples of Asia and North America; nonliterate peoples of Old and New World; cultural history of the Far North. (Offered 1962-63.)
- 332 The Religions of Primitive Peoples (3)**
A survey of religious beliefs and practices of primitive peoples designed to provide a world ethnographic sample of the materials. Prerequisite, upper-division standing.
- 350 Basis of Civilization (3)** **Watson**
Basic inventions, discoveries, and technological achievements of the ancient and primitive worlds; the beginnings of science; the impact of civilization.

ARCHITECTURE

- 100, 101 Architectural Appreciation (2,2)**
Survey of architectural design from a historical viewpoint.
- 105 The House (2)**
Analysis of domestic architecture.

ART

- 100 Introduction to Art (5)**
Lectures and studio work. For nonmajors.
- 105, 106, 107 Drawing (3,3,3)** **Herrman**
Perspective, light and shade, composition, pencil and charcoal. Prerequisites, 105 for 106, 106 for 107.
- 109, 110, 111 Design (3,3,3)** **Herrman**
Art structure as the basis for creative work. Problems in organization of line, space, and color. Lectures, discussion, and supplementary reading. Prerequisites, 109 for 110; 110 for 111.
- 129 Appreciation of Design (2)**
Lectures on design fundamentals, illustrated with slides and paintings, pottery, textiles, etc. Reading and reference work.
- 212, 213, 214 History of Western Art Through the Renaissance (2,2,2)** **Reed**
Survey of the main developments in painting and sculpture from prehistoric times through the Renaissance, illustrated with slides and colored reproductions. Prerequisite, sophomore standing.
- 261 Elementary Interior Design (2)** **W. Hill**
Fundamental problems, including floor and wall plans at scale, furnishings, and color schemes.
- 262 Essentials of Interior Design (2)** **Foote**
Illustrated lectures.
- 341J Greek Archaeology and Art (2)**
Offered jointly with the Department of Classics.
- 342J Roman Archaeology and Art (2)**
Offered jointly with the Department of Classics.
- 343J Greek Sculpture (2)**
Offered jointly with the Department of Classics.

ASTRONOMY

- 101 Astronomy (5)**
Celestial sphere, solar system, sidereal universe.

BIOLOGY

- 101J-102J General Biology (5-5)**
Principles 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.

BOTANY

- 112 Elementary Botany (5)**
Structure and relationships of the major plant groups. Prerequisites, 111, one year of high school botany, Biology 101J-102J, or Zoology 111 and 112.

CHEMISTRY

- 100 Chemical Science (5)**
Atoms, molecules, and chemical reactions. A survey of fundamental principles. No credit to those with high school credit in chemistry.
- 101 General Chemistry (5)**
Molecular theory, quantitative relationships in chemical processes, solutions, ionic equilibria, acids, bases, and salts. Chemistry of common metals and nonmetals. No credit to those with high school credit in chemistry. Prerequisite, 100 or 1 unit of high school chemistry.

CLASSICAL ARCHAEOLOGY

- 341J Greek Archaeology and Art (2)**
A survey of the major art forms from the Mycenaean to the Hellenistic period, with special attention to modern archaeological methods and excavations, illustrated by slides. Offered jointly with the School of Art.
- 342J Roman Archaeology and Art (2)**
A survey of the major art forms, with special attention to modern archaeological methods and excavations, illustrated by slides. Offered jointly with the School of Art.
- 343J Greek Sculpture (2)**
An intensive study from the archaic to the Hellenistic period, illustrated by slides. Offered jointly with the School of Art.

CLASSICS IN ENGLISH

- 101 Latin and Greek in Current Use (2)**
Designed to improve and increase English vocabulary through study of the Greek and Latin elements in English, with emphasis on words in literary and scientific use. No knowledge of Latin or Greek required.
- 210 Greek and Roman Classics in English (5)**
Introduction to classical literature through the study of some of the major works in translation.
- 430 Greek and Roman Mythology (3)**
The principal myths found in classical and later literature.

COMMUNICATIONS**Advertising**

- 226 Introduction to Advertising (3)**
Economic and social aspects; organizational structure; comparison of major advertising media, and the elements of creating and producing advertising. Open to nonmajors only. Prerequisite, sophomore standing.
- 340 Advertising Procedures (5)** **Denis**
Fundamentals of copywriting, layout, and mechanical productions in the creation of printed advertising. Open to nonmajors only. Prerequisite, 226 or Marketing 391.

Communications

- 201 Communications Today (2)**
An elementary course, including analysis of the communications process and of contributions of the various disciplines as applied to mass media news, advertising, and editorial interpretation. A critical study of language use. Open to lower-division nonmajors.
- 303 Public Relations (3)**
Principles and practice of public relations in business, industry, government, and social agencies; policy and conduct as fundamentals in good relationships. Open to nonmajors. Prerequisite, upper-division standing or permission.
- 414 History of Journalism (3)** **Ames**
Growth and development of the press, with emphasis on journalism in the United States, its social, political, and ethical responsibilities. Open to nonmajors. Prerequisite, 5 or more credits in American history or permission.
- 480 Propaganda (3)** **Edelstein**
Peace-time, war-time, and cold-war programs of the United States and other nations, with emphasis on the period immediately prior to, during, and after World War II. Open to nonmajors. Prerequisites, 10 credits in area history or political science.

Radio-Television

- 250 Survey of Radio and Television (3)** **Adams**
History of the media; organization and regulation of the industry; commercial aspects; educational use; elements of programming.

DRAMA

- 101, 102, 103 Introduction to the Theater (2,2,2)**
Significant aspects of the modern theater.

ECONOMICS

- 160 American Economic History (5)**
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)**
Organization, operation, and control of the American economy; consideration of problems of inflation, unemployment, taxation, the public debt, monopoly, trade unions, and international trade. American capitalism compared with communism and socialism. Open to freshmen.
- 201 Principles of Economics (5)**
Operation of the American economy, with special emphasis on prices, wages, production, and distribution of income and wealth; problems of the world economy. Prerequisite, 200.
- 202-203 Economic Principles and Price Determination (3-3)**
Condensation of 201, plus additional aspects of the economics of the firm, with special reference to the determination of product prices. Primarily for business administration students; other students by permission. No credit for 202- until -203 has been completed. Prerequisites, 200, Mathematics 156, and one quarter of mathematics beyond 156, or permission. No credit is allowed if 201 has been taken.
- 330 Government and Business (5)** **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 system. The policy of preserving competition as a means of regulating private business. Prerequisite, 200.

Labor Economics

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

- 350 Public Finance and Taxation I (5)** **Hall**
Principles of taxation, tax forms and practices, public expenditure, public credit, and public budgetary policy.
- 441 Union-Management Relations (5)** **Gillingham, Hopkins, McCaffree**
The collective-bargaining process, with special reference to economic implications. Prerequisite, 340 or permission.
- 442 American Labor History (5)** **Gillingham**
Analysis in historical perspective of the American labor movement, its organizational structure, ideology, policy, and practices.

ENGINEERING**Civil**

- 403 Principles of Urban Planning (3)** **Horwood**
Introduction to the urban planning process. Characteristics and determinants of urban land utilization. Elements of physical land planning and the comprehensive plan. Prerequisite, senior or graduate standing.

Mechanical

- 203 Metal Machining (1)** **Setchfield, Snyder**
Theory and application of the science of producing metal castings; preparation and testing of foundry sands; manual and machine preparation of sand molds and cores; gravity casting of gray cast iron and aluminum alloys into sand, shell, and permanent molds. Lecture and laboratory.
- 415 Statistical Quality Control (3)** **Fritz, Owens**
Elementary industrial statistics, with special application to the control of manufacturing processes. Statistical methods involving sampling procedure, calculations of probabilities, properties of normal distribution, control charts, and analysis of variance. Prerequisite, senior standing in engineering or business, or permission.
- 417 Methods Analysis (3)** **Owens**
Motion and time-study principles; flow-process charts; operations studies measuring human performance and the effects of fatigue on time required; delay and time-utilization studies; policies involved in using methods analysis; economic and morale limitations upon the use of motion and time study. Lecture and laboratory. Prerequisite, senior standing in engineering or business, or permission.
- 418 Work Simplification (2)** **Owens**
For majors in nursing, home economics, and allied fields. Principles of motion economy, work distribution and human-activity analysis; flow-process charts and diagrams; layout of work areas; economic and human factors involved in methods-study applications. Lecture and laboratory. Prerequisite, senior standing in nursing or home economics, or permission.

ENGLISH

- 101, 102, 103 Composition (3,3,3)** **Leggett**
Fundamentals of effective exposition; collecting, organizing, and evaluating materials for writing; reading contemporary writings for meaning and form.
- 257 Introduction to Poetry (5)** **Zillman**
Poetic techniques; readings from nineteenth- and twentieth-century English and American poets.
- 258 Introduction to Fiction (5)**
Fictional techniques, analysis of short stories and novels.
- 267 Survey of American Literature (5)** **Davis, Hilen, Phillips**
Includes Edwards, Franklin, Thoreau, Hawthorne, Melville, Twain.

FAR EASTERN AND RUSSIAN INSTITUTE

- 110 The Far East in the Modern World (5)**
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. Credit cannot be received for both 110 and 310.
- 310 The Far East in the Modern World (5)**
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 should take this course in place of 110, if possible. Credit cannot be received for both 310 and 110.

FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE**Chinese**

- 101 Chinese, Intensive AB (10)**
Introduction to the sounds and structure of modern Chinese (Mandarin) by inductive method. After acquiring a certain familiarity with the language, the students are introduced to the written language.
- 206 Chinese, Intensive CD (10)**
Continuation of 101. Prerequisite, 101 or equivalent.

Japanese

- 101-102, 103 First-Year Conversational Japanese (5-5, 5)**
Introduction to conversation, pronunciation, oral composition, and grammar; reading of

romanized Japanese; conversation, composition, and grammar; introduction to *kana* syllabaries and Chinese characters.

Korean

302-303 Elementary Spoken Korean Language (5-5)

Russian

100-105 Russian, Non-Intensive A-B (5-5)

Covers material of 110 in two quarters. Recommended for students who know from experience that they assimilate foreign languages slowly, or for those who find a 10-hour course would interfere seriously with their schedules. (Offered yearly, Autumn and Winter Quarters.)

110 Russian, Intensive AB (10)

Introduction to Russian. Extensive oral practice to afford assimilation of basic structural features. Two hours weekly. Lectures on pronunciation, grammar, and writing; opportunities for student questions conducted in English. Eight hours weekly: practice sessions conducted entirely in Russian. (Autumn Quarter only.)

GENERAL EDUCATION

Humanities

101 Literature (5)

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)

Painting, sculpture, music, architecture, the dance, and drama studied through example, discussion, and criticism.

103 Philosophy (5)

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. Identical with Philosophy 100.

201 Literature (5)

Reading and critical discussion of some of the greatest works in world literature.

Physical Science

101 The Physical Universe (5)

The universe as a unit; the stars; the solar system; the earth; the basic process; the atom. Identical with Physics 100.

Social Science

101 History of Civilization: The Great Cultural Traditions (5)

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. 101, 102, and 103 may be offered in partial fulfillment of the requirements for a major in history.

102 History of Civilization: The Western Tradition in World Civilization (5)

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.

103 History of Civilization: The Contemporary World (5)

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.

GEOGRAPHY

100 Introduction to Geography (5)

Major concepts and methods in the field of geography illustrated by and applied to the analysis of selected problems and types of regions.

200 World Regional Geography (5)

A study of the world's regional structure using the regional method in the analysis and interpretation of the world's cultural, economic, and resource patterns.

207 Economic Geography (5)

World survey of extractive, manufacturing, and distributing activities; emphasis is placed on regional characteristics relating to the availability of resources and markets and the utilization of technological skills.

258 Maps and Map Reading (2)

Categories of maps and aerial photographs and their special uses; map reading and interpretation.

277 Cities of the United States (3)

The major cities of the United States with an analysis of their location, settlement, growth, and present function.

Martin

Heath, Sherman

Martin, Thomas, Ullman

- 325 Historical Geography of America (3)** **Martin**
Exploration, migration routes, pioneer settlement, and the moving frontier in relation to geographic phenomena. Criteria for the differential development of regional cultures.

- 477 Urban Geography (5)** **Ullman**
A geographic analysis of urban and other agglomerated settlements in terms of their nature, economic base, principal functions, distribution, supporting areas, and internal structure.

GEOLOGY

- 101 Survey of Geology (5)**
- 102 Geology in World Affairs (5)** **Ellis**
Geological occurrence, world distribution, and production of coal, petroleum, and the important industrial materials. Prerequisite, 101 or 205.
- 103 Earth History (5)** **Mallory**
Geology through time, including the elements of stratigraphy and paleontology. Prerequisite, 101 or 205.

GERMANIC LANGUAGES AND LITERATURE

- 101-102, 103 First-Year German (5-5,5)**
Recommended for prospective majors and minors and those who wish to work toward a speaking knowledge. The methods and objectives are primarily oral-aural. Students with one year of high school German may receive 2½ credits only for -102.

HISTORY

- 101 Medieval European History (5)** **Griffiths, Kaminsky, 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)**
Political, social, economic, and cultural history of Europe from 1500 to the present; evolution of nationalism, democracy, and imperialism, and their interrelationship with the Industrial Revolution. Not open to students who have taken 305 and 306.
- 201-202 Ancient History (5-5)** **Katz**
Political, social, economic, and cultural development of the ancient Near East, Greece, and Rome; elements of ancient civilization that contributed vitally to medieval and modern civilization.
- 241 Survey of the History of the United States (5)** **Holt, Pressly, Savollo**
Supplies a basic knowledge of American history. 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)** **Costigan**
England from the earliest times to the present, stressing the origins of American institutions and social patterns.

HOME ECONOMICS

- 110 Food and Nutrition (5)** **Anderson, Crum**
Meal management and food preparation, with emphasis on nutritive and economic values. For nonmajors. Not open to students who have had 300.
- 125 Textiles (3)** **Brockway, Smith**
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.
- 134 Clothing (5)** **Hawthorne, Murdoch, Shigaya**
Sociological, psychological, economic, and aesthetic aspects of clothing selection. Custom techniques in the construction of cotton and linen garments.
- 148 The Home, Its Equipment and Management (3)** **Hall**
Management of resources to achieve family goals. Work simplification, heating, lighting, wiring, and the selection and care of equipment.
- 231 Clothing Selection (2)** **Hawthorne**
Sociological, psychological, economic, and aesthetic aspects of clothing for the individual. Not open to students who have had 134.
- 240 Home Furnishing (3)**
A study of the house and its furnishings for present day living. Not open to freshmen or to students who have taken 347.
- 300 Nutrition (2)** **Crum**
Importance of food to the maintenance of health; nutritive values and human needs; ways of meeting human requirements at different cost levels. For upper-division nonmajors. Not open to students who have taken 110.
- 350 Managing Family Finances (3)** **Hall**
Use of financial resources to further goals. Changes in income and in prices of consumer goods in relationship to family budgeting. Consumer credit, savings, insurance, social security, investments, taxes, trusts, and wills.

354 Family Economics and Finances (5)**Hall**

Economic and social conditions affecting the consumer. Use of financial resources to further family goals. Changes in income and in prices of consumer goods in relationship to family budgeting. Consumer credit, savings, insurance, social security, investments, taxes, trusts, and wills. Not open to those who have had 350. Prerequisites, Economics 200 and junior standing.

LIBERAL ARTS**101 Introduction to Modern Thought (5)****Lutef**

Man's place in the universe; cosmic origins; origin and nature of life; mind and behavior; values.

111 Introduction to the Study of Fine Arts (5)

Appreciation of masterpieces of architecture, painting, sculpture, and music; problems common to them; philosophy of art; relations of beauty, truth, and morality.

LIBRARIANSHIP**100 The Use of Books and Libraries (2)****Bauer**

Lectures and discussions illustrating the use of libraries, general reference materials and aids, and reference books to various subject fields.

MATHEMATICS**101 Intermediate Algebra (5)**

Similar to third term of high school algebra. Not open for credit to students who have taken one and one-half years of high school algebra. Prerequisite, one year of high school algebra.

103 Intermediate Algebra and Trigonometry (3)

Meets five hours per week. First four weeks: review of intermediate algebra. Last six weeks: plane trigonometry, equivalent to 104. Not open for credit to students who have taken trigonometry in high school. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101, and one year of plane geometry.

104 Plane Trigonometry (3)

Trigonometric functions, identities, equations, inverse functions, graphs, logarithms, and solution of triangles. Not open for credit to students who have taken trigonometry in high school. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101, and one year of plane geometry.

105 College Algebra

Real and complex number systems; sets and equations; simultaneous equations and matrices; inequalities; functions and relations; algebraic, exponential, and logarithmic functions. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101, or 103. Not open to students who have taken 155 or 156.

155, 156 College Algebra (3,3)

Real and complex number system; sets and equations; simultaneous equations and matrices; inequalities; functions and relations; algebraic, exponential, and logarithmic functions. Applications in business administration. Not open to students who have taken 105. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101 or 103 for 155; 155 for 156.

METEOROLOGY**101 Survey of the Atmosphere (5)**

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.

MUSIC**107 Survey of Music (5)**

Illustrated lectures with supplementary readings to provide the general student with background for understanding common musical forms, idioms, and styles.

108 The Orchestra (2)

The development of the orchestra and its literature.

117 Symphonic Music, Nineteenth Century (2)

Prerequisite, 107 or 108.

118 Symphonic Music, Seventeenth and Eighteenth Centuries (2)

Prerequisite, 107 or 108.

119 Symphonic Music, Contemporary (2)

Prerequisite, 107 or 108.

217, 218, 219 The Opera (2,2,2)**317 Chamber Music (2)****Heinitz**

Survey of literature for chamber music ensembles. Prerequisite, 107 or 108.

OCEANOGRAPHY**101 Survey of Oceanography (5)**

Origin and extent of the oceans; nature of the sea bottom; causes and effects of currents and tides; animal and plant life in the sea.

PHILOSOPHY**100 Introduction to Philosophy (5)**

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. (Identical with Humanities 103.)

120 Introduction to Logic (5)

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 in the sciences. Application of logic to other fields.

230 Philosophic Issues in World Affairs (2)

Philosophic issues in the conflict between soviet and liberal interpretations of democracy, and the bearing of these differences on world order. Ideals of the more neutralist nations. The philosophical basis of a world order. (Alternates with 231.)

PHYSICS**101, 102, 103 General Physics (4,4,4)****Kenworthy**

Concurrent registration in 107, 108, 109 recommended and may be required by individual departments. 101: mechanics. Prerequisites, plane geometry, trigonometry and one year of high school physics or its equivalent by permission. 102: sound and electricity. Prerequisite, 101. 103: heat, light, and modern physics. Prerequisite, 102 or concurrent registration in 102.

107, 108, 109 General Physics Laboratory (1,1,1)

107: mechanics laboratory. 108: sound, electricity, and magnetism laboratory. 109: heat and light laboratory. Prerequisites, 101 or concurrent registration in 101 for 107; 102 or concurrent registration in 102 for 108; 103 or concurrent registration in 103 for 109.

POLITICAL SCIENCE**201 Modern Government (5)**

The nature and function of political institutions in the major national systems; democracy and dictatorship; introductory comparative politics of the United States, Great Britain, France, and the Soviet Union.

202 American Government and Politics (5)

Popular government in the United States; the theory and practice of national institutions.

203 International Relations (5)

An analysis of the world community, its politics and government.

321 American Foreign Policy (3)**Gottfried**

Constitutional framework; major factors in formulation and execution of foreign policy; policies as modified by recent developments; the principal policy makers—President, Congress, political parties, pressure groups, and public opinion.

322 The Foreign Service (3)**Riley**

Department of State; diplomatic and consular services; American diplomatic practice and procedure.

323 International Relations of the Western Hemisphere (5)**Mander**

The Monroe Doctrine; Pan-Americanism; special interests in the Caribbean; hemisphere solidarity; the "Good Neighbor" policy; Latin America and World War II; Latin America and the United Nations.

324 Contemporary International Relations in Europe (5)**Hitchner**

European diplomacy and international relations between the two world wars; problems of European integration; contemporary developments.

PSYCHOLOGY**100 General Psychology (5)**

Introduction to the principles of human behavior.

101 Psychology of Adjustment (5)

Application of psychological principles to the problems of everyday life. Prerequisite, 100.

245 Individual Differences (3)**Woodburne**

The interrelationships and patternings of human traits and capacities. Prerequisite, 100.

306 Developmental Psychology (5)**Baer, Bijou, Birnbrauer**

The psychological development of the child and the antecedent conditions from infancy to adolescence. For nonmajors only. Prerequisite, 100.

345 Social Psychology (3)**Culbert**

Psychology of human institutions. Prerequisite, 100.

ROMANCE LANGUAGES AND LITERATURE**French****101-102, 103 Elementary (5-5,5)**

Methods and objectives are primarily oral-aural. Oral practice in the Language Laboratory is required. Honors sections are designated in the *Yearly Time Schedule* by an asterisk. No credit is granted for 101- until -102 (or a more advanced course as approved by the Department) has been satisfactorily completed. Prerequisite for -102, 101- or one high school semester or equivalent; for 103: A, B, or C in -102; A or B in second high school semester; or any passing grade in the third high school semester.

Italian**101-102, 103 Elementary (5-5,5)****Spanish****101-102, 103 Elementary (5-5,5)**

Recommended for prospective majors and minors and those working toward a speaking knowledge of the language. Methods and objectives are primarily oral-aural. Oral practice in the Language Laboratory required. No credit is granted for 101- until -102 (or a more advanced course as approved by the Department) has been satisfactorily completed. Prerequisites, 101- or two high school semesters or equivalent for -102; A, B, or C in -102, A or B in second high school semester or any passing grade in the third high school semester for 103.

110-111, 112 First-Year Reading Spanish (5-5,5)

A beginning course for nonmajors, in which the acquisition of a reading knowledge is stressed. Prerequisite for -111, 110- or equivalent; for 112, -111, or grade of A or B in the second high school semester, or any passing grade in the third high school semester, or equivalent.

121- Basic Grammar Review (5-)

Refresher course; should be taken instead of 103 by students who received a grade of D in -102 or C or D in the second high school semester. No student may receive credit for both 103 and 121-; nor will credit be granted for 121- until 201 or equivalent has been completed.

SCANDINAVIAN LANGUAGES AND LITERATURE**Norwegian****101-102, 103 Elementary Norwegian (3-3,3)**

Fundamentals of oral and written Norwegian.

Swedish**101-102, 103 Elementary Swedish (3-3,3)**

Fundamentals of oral and written Swedish.

SOCIOLOGY**110 Survey of Sociology (5)**

Basic principles of social relationships. Primarily for freshmen and sophomores. Not open to students who have taken 310.

240 Group Behavior (5)

Socialization of the individual; social processes and interaction of persons in groups. Prerequisites, 110 or 310.

270 Social Disorganization and Deviant Behavior (5)

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)

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.

352 The Family (5)

The family as a social institution; personality development within the family; marriage adjustment; changing family patterns; disorganization and reorganization. Prerequisite, 110 or 310.

371 Criminology (5)

Factors associated with crime and delinquency. Criminological theories. Survey of sub-
correctional facilities and programs. Visits to agencies and institutions. Prerequisite, 110 or 310.

Larsen**Hayner, Schrag****SPEECH****100 Basic Speech Improvement (5)**

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 communication, with emphasis on the more informal uses of speech in daily life. Frequent conferences with instructor.

110 Voice Improvement (2)

Study and application of principles basic to good voice quality, vocal variety, and the effective use of the voice in reading and speaking. Group and individual listening and speaking projects make use of laboratory and recording facilities. Two class meetings and one laboratory hour per week.

111 Articulation Improvement (2)

Introductory study of the sounds of American English and application of this study to individual problems in articulation and pronunciation. Analysis and correction of sub-standard speech patterns. Group and individual listening and speech projects with laboratory and recording facilities. Two class meetings and one laboratory hour per week.

140 Oral Interpretation (5)

Development and use of fundamental techniques for analysis and reading aloud of prose and poetry.

Grimes

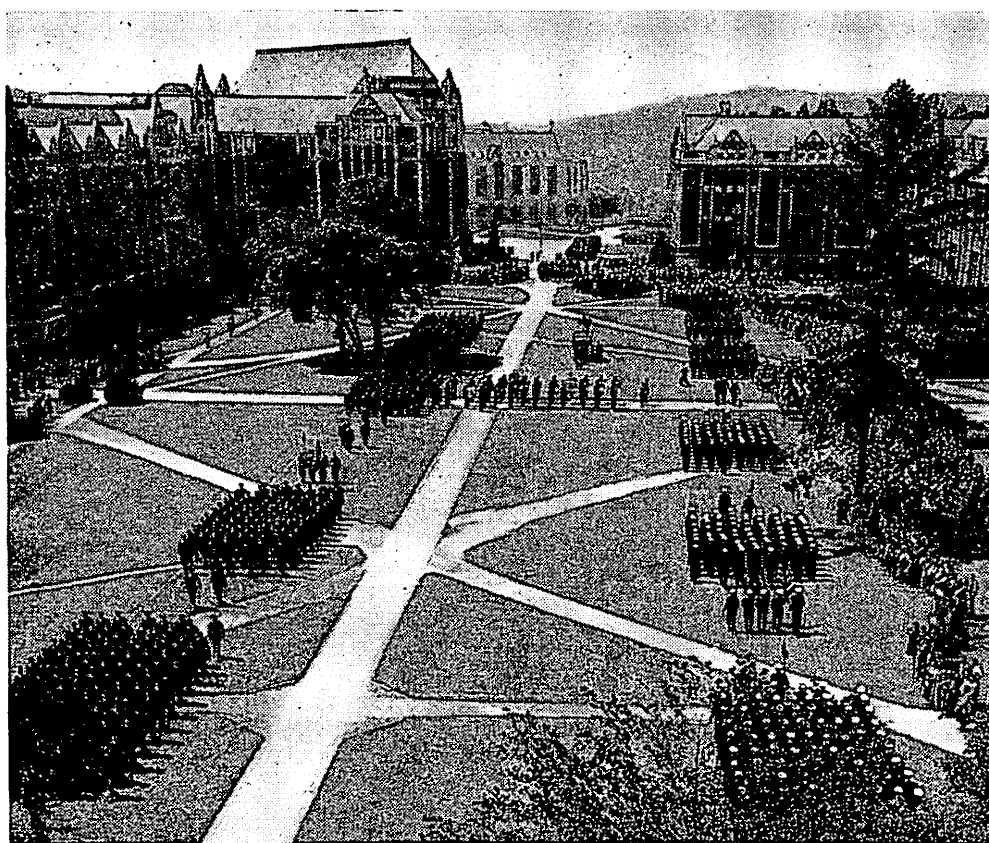
- 220 Introduction to Public Speaking (5)** **Nilsen**
Emphasizes choice and organization of material, sound reasoning, audience analysis, oral style, and delivery. Frequent speeches before the class, followed by conferences with instructor. Not open to students who earned credit for 120 prior to Autumn Quarter, 1961.
- 230 Essentials of Argument (5)** **Pence**
Argument as a technique in the investigation of social problems; evidence, proof, refutation, persuasion; training in argumentative speaking.
- 320 Public Speaking (5)** **Franzke**
Continuation of 220, 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. Primarily for students not majoring in speech. Prerequisite, 202 (formerly 201) or permission.

ZOOLOGY

- 111, 112 General Zoology (5,5)**
Prerequisite, 10 credits in biological sciences.
- 114 Evolution (2)**
A general survey of the evolution of animals, including man. For nonmajors.

URBAN PLANNING

- 380 Introduction to City Planning (3)** **Wolfe**
History, principles, theories of city growth and planning. City structure as a physical monument to contemporary culture. Present urban faults and remedial action. Prerequisite, permission.



RESERVE OFFICERS TRAINING PROGRAMS

RESERVE OFFICERS TRAINING PROGRAMS

THE DEPARTMENTS of Military Science, Naval Science, and Air Science conduct the ROTC programs under agreements between the University and the United States Army, Navy, and Air Force. At the University these programs are coordinated by the Dean of the College of Engineering.

The University requires male students to take at least two years of ROTC training. (For exemptions, see page 33.) The two-year basic programs offered by the Departments of Military Science and Air Science, and the four-year course offered by the Department of Naval Science, satisfy this requirement. In addition to the basic courses, the Department of Military Science and the Department of Air Science each offers for selected students, an advanced course which leads to commissioning in the Army or Air Force. The four-year course of the Department of Naval Science, also for selected students, leads to commissioning in the Navy or Marine Corps.

Students enrolling in Naval ROTC, and those who take the advanced course of Army or Air Force ROTC must agree in writing to complete the course of training and accept a commission in the service for which they are trained. *The honoring of this commitment is a condition of graduation from the University.*

MILITARY SCIENCE

Professor of Military Science: COL. GUINN B. GOODRICH, 318 Miller Hall

The basic program (freshmen and sophomores) of the Military Science Department requires drill one hour each week. Classroom military studies for freshmen are not required Autumn Quarter. One hour per week is required Winter Quarter, and two hours of classroom work are required Spring Quarter. As a substitute for these classroom hours in Autumn Quarter of the freshman year, registration is required in a selected 3-credit or 5-credit course in another department. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*. Sophomores are required to attend two hours per week of classroom military studies. The advanced course requires classroom attendance four hours each week, drill one hour each week, and a summer camp of six weeks in the

Summer Quarter following the junior year. In addition to the regular courses of instruction, light aircraft flight instruction is offered to a limited number of senior cadets, when federal funds are available.

When a cadet completes the advanced course, and is graduated from the University, he receives a commission as second lieutenant in the United States Army Reserve. A cadet graduating with a high academic rating and an outstanding ROTC record may be designated a Distinguished Military Graduate and may, thereby, be qualified for commissioning in the regular army.

Cadets for the advanced course are selected from applicants who show special aptitude during the basic course. In certain cases, previous active service in the army may be substituted for the basic course in qualifying for enrollment in the advanced course. To enroll in the advanced course, a cadet must meet requirements as to scholarship, physical fitness, and leadership potential, and must be of such an age that he may qualify for graduation and completion of ROTC training before his twenty-eighth birthday. The advanced ROTC cadet receives an allowance of approximately \$27.00 per month throughout the two years in which he is under contract and is paid approximately \$106 for summer-camp training.

Cadets are issued the regulation U.S. Army uniform, with distinctive ROTC insignia, and are required to wear the uniform on drill day each week. Upon registration a deposit of \$25.00 is required for the uniform and other government equipment issued. Upon return of the uniform and other equipment, a refund is made. The Army furnishes textbooks and equipment needed for military science instruction.

Inquiries about the Army ROTC should be addressed to the Professor of Military Science.

COURSES FOR UNDERGRADUATES

101, 102, 103 Military Science I—Basic (0,1,2)

Organization of the Army and ROTC; United States Army and National Security; individual weapons and marksmanship; leadership training.

201, 202, 203 Military Science II—Basic (2,2,2)

American military history; map and aerial photograph reading; introduction to basic tactics and techniques; leadership training and exercise of command.

301, 302, 303 Military Science III—Advanced (3,3,3)

Small unit tactics and communications; organization, function, and mission of the arms and services; military teaching principles; leadership; exercise of command.

360 Military Science III—Advanced Camp (3)

Six-weeks training at an army installation. Emphasis is placed on field training and the practical application of subjects taught during the academic year. (Offered Summer Quarter only.)

401, 402, 403 Military Science IV—Advanced (3,3,3)

Supply and evacuation; troop movements; motor transportation, command and staff; estimate of the situation and combat orders; military intelligence; the military team; training management; military administration; military justice; role of the United States in world affairs and the present situation; leadership; officer indoctrination; and exercise of command.

NAVAL SCIENCE

Professor of Naval Science: COL. T. J. COLLEY, USMC, 309 Clark Hall

The Department of Naval Science offers to selected students a four-year program, taken concurrently with their work toward a baccalaureate or higher degree, which prepares them for commissions in the regular or reserve components of the United States Navy or Marine Corps.

NAVAL ROTC STUDENTS (CONTRACT PROGRAM)

At the beginning of Autumn Quarter each year the Professor of Naval Science selects approximately fifty students to enter the Naval ROTC contract program. These students must have the following general qualifications:

1. Be eligible for admission to the University.
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, which include vision of 20/20, no cavities in teeth, and height between 64 and 78 inches.
4. Be unmarried and agree to remain unmarried until commissioned.

In addition, with the consent of their parents, they must agree to complete the four-year course unless released by the Secretary of the Navy, and to make one summer cruise of approximately three weeks. This cruise is normally scheduled during the summer between the junior and senior years.

Students who attain junior or senior standing in the Naval ROTC must complete the program as a condition of graduation from the University unless excused or dismissed from this requirement by authority of the Secretary of the Navy.

Entrance to the Naval ROTC program entitles students to deferment from the draft under the Selective Service Act of 1948 as amended. The Naval ROTC student, upon completion of program requirements, is required to accept a commission in the United States Naval Reserve or Marine Corps Reserve, if offered. Active duty of reserve officers commissioned from the Naval ROTC contract program is contingent upon the needs of the service at the time of graduation.

Naval ROTC students have the status of civilians entering into a mutual agreement 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 the uniforms and books used in naval science courses.

Students in the Naval ROTC program may enter any University curriculum that can normally be completed in four years. Students working toward a bachelor's degree in certain fields which may require more than four years for completion, such as engineering, architecture, and education, are eligible for entrance to the program. The Navy Class A swimming test must be passed and mathematics through trigonometry satisfactorily completed (unless previously completed in high school) by the end of the second year.

All Naval ROTC students take the same naval science courses for the first two years. Students who plan to be commissioned in the Marine Corps or Marine Corps Reserve take Marine Corps 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 the Naval Reserve take Supply Corps subjects during this period.

High school graduates interested in entering the Naval ROTC program should write to the Professor of Naval Science during the summer before University entrance.

MIDSHIPMEN, USNR (REGULAR PROGRAM)

Each year, at the beginning of Autumn Quarter, the Navy assigns a limited number of students to the Naval ROTC Unit, University of Washington, for appointment as midshipmen in the Naval Reserve. Qualifications are, in general, the same as those listed above for contract students. Midshipmen are appointed after a nation-wide competitive examination held in December of each year and selection by state selection committees. They are deferred from induction until graduation and receive tuition, all textbooks, uniforms, and \$50.00 per month for four years. Application to take the annual examination must reach the Naval Examining Section, Science Research Associates, 104 Pearl Street, McHenry, Illinois, before a deadline date set in November of each year for entrance to college the following year.

Further information about the regular program may be obtained from the University Naval ROTC headquarters.

COURSES FOR UNDERGRADUATES

- 111, 112, 113 Naval Orientation (3,3,3)**
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)**
Gun ammunition; principles of gun construction; semi-automatic and rapid fire guns; introduction to fire control; theory and operation of fire control systems; general concept of anti-submarine warfare.
- 213 Naval Weapons (3)**
Guided missiles; nuclear weapons; concept and organization of the attack carrier striking force; mine warfare; concept and organization of amphibious warfare; space technology.
- 214 Weapons Laboratory (1)**
Practical work on naval weapons and fire control computers.

LINE

- 311 Naval Engineering (3)**
Principles of ship propulsion, marine steam power plants and auxiliary systems; elements of stability and damage control.
- 312 Naval Engineering and Navigation (3)**
Engineering department organization and administration plus marine internal combustion and nuclear power plants; terrestrial navigation including dead reckoning, piloting and electronic developments.
- 313 Navigation (3)**
Celestial navigation; theory and practical work required in the daily work of the navigator at sea.
- 411 Naval Operations (3)**
Tactical communications; rules of the nautical road; maneuvering board; screening instructions.
- 412 Naval Operations and Administration (3)**
Combination of fleet communications, weather, and management.
- 413 Naval Administration (3)**
Leadership, management, and the naval judicial system.

MARINE CORPS

- 321 Evolution of the Art of War (3)**
Introduction to the art of war; broad resumé of the evolution and history of warfare from the earliest recorded battles through the Mexican War.
- 322 Evolution of the Art of War (3)**
A continuation of the resumé of the history of warfare with emphasis on the Civil War; brief coverage of the Spanish American War, World War I and World War II.
- 323 The Study of Modern Basic Strategy and Tactics (3)**
An introduction to the theoretical principles of modern strategy and tactics; brief resumé of U.S. foreign and military policy; extensive discussion of marine division organization.
- 421 Amphibious Warfare (3)**
Introduction to the development of amphibious warfare; detailed study of the amphibious campaigns of World War II; resumé of the Korean conflict.
- 422 Amphibious Warfare (3)**
A study of the detailed planning for an amphibious operation including Marine Corps Staff organizations, command relationship and task organizations.
- 423 Military Justice and Leadership (3)**
Introduction to the basic principles of the Uniform Code of Military Justice; a study of the principles of military leadership.

SUPPLY CORPS

- 331 Organization and Logistics, Navy Accounting and Finance (3)**
Introduction to supply corps: national security organization; Navy Bureau system; supply demand control point concept; naval finance; appropriation, property and cost accounting.
- 332 Advanced Navy Accounting and Basic Supply Afloat (3)**
Naval accounting; balance sheet reconciliation; reports and returns; organization and administration of supply afloat; afloat requirements determination and stock control.
- 333 Advanced Supply Afloat (3)**
Afloat custody and stowage and security of material; surveys; issues, transfers, and financial management of afloat inventories; special supply systems.
- 431 Ship's Stores Afloat: Clothing and Small Stores (3)**
Operating procedures, records, reports, and returns for ship's stores afloat; operating procedures, records, reports, and returns for clothing and small stores afloat.

AIR SCIENCE

Professor of Air Science: COL. ROY W. GUSTAFSON, Physics Annex 3

The basic program of the Department of Air Science consists of three quarters of military classroom instruction on the Foundations of Air Power. These are offered in the Spring Quarter of the first year and the Autumn and Winter Quarters of the second year. During each of the other three quarters, the student must substitute an approved University course in lieu of Air Science. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*. Leadership laboratory is required each of the six quarters of the basic program and is conducted one hour each week.

After completing the basic program, students may apply for entrance to the Advanced Air Force ROTC, which is designed to select and train college men as future Air Force officers. A limited number of outstanding students, including veterans, are selected for the advanced program, and each student selected must:

1. Successfully complete the two-year Basic Air Force ROTC program or, if a veteran, complete as much of the basic program as determined by the Professor of Air Science.
2. Execute a written agreement with the government to complete the advanced program, contingent upon remaining in the University, and to attend a summer training camp at the time specified.
3. Request immediate discharge from any reserve or National Guard organization other than the Air Force Reserve (according to law, discharge from any reserve unit must be granted).
4. Agree to complete all requirements for appointment as a second lieutenant before his twenty-eighth birthday. This age requirement is reduced to twenty-six and one-half years for flying personnel.
5. Successfully complete general survey and screening tests as prescribed.
6. Be selected by the Professor of Air Science and the President of the University.
7. Complete the advanced program as a prerequisite for graduation from the University.

The two-year advanced course requires classroom attendance four hours a week, plus one hour of practice in the leadership laboratory. In the first year of the advanced course, cadets study the knowledge and skills required of a junior officer in the Air Force with special emphasis on staff duties and leadership. This includes Air Force leadership doctrine, staff organization and functions, communicating, instructing, problem solving techniques, leadership principles and practices, and the military justice system. Between the junior and senior years, advanced-course cadets are required to attend a four-week summer camp. During the senior year, cadets participate in a study of global relations of special concern to the Air Force officer with attention to such aspects as weather, navigation, geography, international relations and their service as commissioned officers.

Advanced Air Force ROTC students are paid subsistence allowances of approximately \$27.00 a month. While attending summer camp they are paid at the rate of \$75.00 a month and are furnished travel to and from the camp, subsistence, housing, uniforms, and medical attention.

Students in the basic program are furnished complete uniforms of the type worn by Air Force personnel. Students in the advanced program are furnished officers' uniforms which become their personal property when commissioned. They are normally required to wear the uniform on drill days; wearing it to ROTC classes other than drill is optional. The Air Force furnishes all textbooks used in air science courses. At the time of registration each student must make a \$25.00 deposit, which, except for a \$2.50 laundry and cleaning charge to students in the

basic program, is refunded when the uniform and textbooks are returned undamaged.

Inquiries about enrollment or other information should be addressed to the Professor of Air Science, Physics Annex 3, University of Washington.

COURSES FOR UNDERGRADUATES

FOUNDATIONS OF AIR POWER AND FUNDAMENTALS OF AEROSPACE WEAPON SYSTEMS

133 Air Science 1—Basic (2)

A general survey of air power designed to provide an understanding of the elements and potentials of aerospace power. An introduction to elements of aircraft, aerodynamics, and space vehicles. Leadership laboratory.

231 Air Science 2—Basic (2)

An outline of professional opportunities in the USAF. Also included are the background of the military policy of the United States and the current national organization for defense. Aerospace missiles and aircraft, their propulsion systems, and the types of warheads used with aerospace weapon systems are also introduced. Cadet noncommissioned officer training.

232 Air Science 2—Basic (2)

An introduction to the principles, mechanics, and implications of chemical, biological, and nuclear weapons and warfare; and the defensive, strategic, and tactical organizations and operations of the USAF, including modern targeting and electronic warfare. Also introduces problems, mechanics, and military implications of future space operations, and contemporary aerospace military thought. Cadet noncommissioned officer training.

AIR FORCE OFFICER DEVELOPMENT

301 Air Science 3—Advanced (3)

Staff organization and functions and the skills required for effective staff work, with emphasis on communication. The course includes both principles and practice. Cadet junior officer training.

302 Air Science 3—Advanced (3)

Continuation of the study of staff work with emphasis on report writing and group problem solving. The course includes an introduction to military justice. Cadet junior officer training.

303 Air Science 3—Advanced (3)

Basic psychological and sociological principles of leadership and their application to leadership practice and problems. Cadet junior officer training.

304 Air Science 3—Advanced Camp (3)

Four weeks training at an Air Force base; familiarization with the duties and problems encountered by the Air Force junior officer.

491, 492, 493 Air Science 4—Advanced (3,3,3)

Military application of weather and aerial navigation; military aspects of the geography of climate, political geography, and international relations; flight training for pilot candidates; preparation for commissioned service; and cadet senior officer training.

I look to the diffusion of light and education as the resource most to be relied on for ameliorating the condition, promoting the virtue, and advancing the happiness of man.
Thomas Jefferson

BULLETIN • UNIVERSITY OF WASHINGTON
DIVISION OF CORRESPONDENCE STUDY
1962-1963

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes three general bulletins; bulletins of the colleges and schools; Summer Quarter Bulletin; the bulletin of the Center for Graduate Study at Hanford; and bulletins of the Division of Correspondence Study and the Division of Evening Classes.

INTRODUCTION TO THE UNIVERSITY, one of the general bulletins, is especially prepared for new and prospective students. It lists all the University curricula, with their admission requirements, and presents information on other phases of student life, including services for students, student activities, and expenses. UNIVERSITY RULES AND REGULATIONS, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as registered students. HANDBOOK OF SCHOLARSHIPS, the third general bulletin, lists the various scholarships available.

Curricula, courses, and scholarship requirements in each field of study are described in the college and school bulletins. Each of these bulletins also discusses services, organizations, and expenses as they relate to students in the particular college or school.

Requests for copies of any of the bulletins should be addressed to the Addressograph Service.

General Bulletins

HANDBOOK OF SCHOLARSHIPS (RESTRICTED DISTRIBUTION)
INTRODUCTION TO THE UNIVERSITY
UNIVERSITY RULES AND REGULATIONS (FOR REGISTERED STUDENTS ONLY)

Bulletins of the Colleges and Schools

COLLEGE OF ARCHITECTURE AND URBAN PLANNING
COLLEGE OF ARTS AND SCIENCES
COLLEGE OF BUSINESS ADMINISTRATION
SCHOOL OF DENTISTRY
COLLEGE OF EDUCATION
COLLEGE OF ENGINEERING
COLLEGE OF FISHERIES
COLLEGE OF FORESTRY
GRADUATE SCHOOL
SCHOOL OF LAW
SCHOOL OF MEDICINE
SCHOOL OF NURSING
COLLEGE OF PHARMACY
SCHOOL OF SOCIAL WORK

Other Bulletins

SUMMER QUARTER
CENTER FOR GRADUATE STUDY AT HANFORD
CORRESPONDENCE STUDY
EVENING CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
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ADMINISTRATION

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DIVISION OF CORRESPONDENCE STUDY FACULTY

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BENTLEY, G. NELSON, M.A.	<i>Assistant Professor of English</i>
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BOEHMER, HERBERT, M.S.	<i>Professor of General Engineering</i>
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BROWN, STEPHEN D., LL.M.	<i>Associate Professor of Business Law</i>
BURKE, ROBERT E., Ph.D.	<i>Associate Professor of History</i>
COHEN, JOSEPH, Ph.D.	<i>Assistant Professor of Sociology</i>

CONWAY, JOHN ASHBY, B.A.	Professor of Drama
COOMBS, HOWARD A., Ph.D.	Professor of Geology
CORBALLY, JOHN E., Ph.D.	Professor of Secondary Education
DAVID, JEAN FERDINAND, Ph.D.	Associate Professor of Romance Languages
DEMERY, JOSEPH, M.A.	Professor of General Business
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GATES, CHARLES M., Ph.D.	Professor of History
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GOTTFRIED, ALEX, Ph.D.	Associate Professor of Political Science
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GREENGO, ROBERT E., Ph.D.	Assistant Professor of Anthropology
GREINER, WILLIAM, M.A., LL.B.	Assistant Professor of Business Law
GUNTHER, ERNA, Ph.D.	Professor of Anthropology
HAMACK, FRANK H., LL.B.	Lecturer in Accounting
HATCH, MELVILLE HARRISON, Ph.D.	Professor of Zoology
HAYDEN, ALICE H., Ph.D.	Professor of Education
HEATHERS, LOUISE B., Ph.D.	Assistant Professor of Psychology
HENNING, CHARLES N., Ph.D.	Professor of Finance
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JOHNSON, WALTER GILBERT, Ph.D.	Professor of Scandinavian Languages
LITTLE, WALLACE I., Ph.D.	Associate Professor of Transportation
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McKEEVER, BENJAMIN BUTLER, Ph.D.	Associate Professor of Psychology
MARTIN, CHARLES E., Ph.D.	Professor of Political Science
MESSER, ROWLAND ENLOW, B.S.	Associate Professor of General Engineering
MILLER, CHARLES J., M.B.A.	Professor of Marketing
MIYAMOTO, FRANK, Ph.D.	Associate Professor of Sociology
MUELLER, FRED J., Ph.D.	Associate Professor of Accounting and Finance
NELSON, ROBERT A., Ph.D.	Associate Professor of Transportation
PERSON, HENRY A., Ph.D.	Associate Professor of English
POWERS, FRANCIS FOUNTAIN, Ph.D.	Professor of Educational Psychology
RANSOM, ROGER, A.B.	Teaching Assistant in Economics
REED, CARROLL E., Ph.D.	Professor of Germanic Languages
ROLLER, JULIUS A., B.B.A.	Professor of Accounting
RUSSELL, WILLIAM, A.B.	Acting Instructor of Economics
RUSTAD, JOHN R., M.A.	Assistant Professor of Humanistic-Social Studies
SALYER, RUFUS COLEMAN, JR., Ph.D.	Assistant Professor of Education
SARASON, IRWIN C., Ph.D.	Associate Professor of Psychology
SIMPSON, LURLINE VIOLET, Ph.D.	Associate Professor of Romance Languages
SOKOL, VILEM MARK, M.Mus.	Associate Professor of Music
SOUTHER, JAMES W., M.A.	Associate Professor of Humanistic-Social Studies
SPECTOR, IVAR, Ph.D.	Associate Professor of Far Eastern and Slavic Languages and Literature
STOREY, REED K., B.S.	Associate Professor of Accounting
STOTLAND, EZRA, Ph.D.	Associate Professor of Psychology

STRAYER, GEORGE DRAYTON, JR., Ph.D.	Professor of Educational Administration
SUH, DOO SOO, Ph.D.	Lecturer in Far Eastern and Slavic Languages and Literature
TOMASKE, JOHN A.	Acting Instructor in Economics
VANDERBILT, ROLFE KERMIT, Ph.D.	Assistant Professor of English
VARGAS-BARON, ANIBAL, Ph.D.	Associate Professor of Spanish
VOPNI SYLVIA, Ph.D.	Associate Professor of Education
WAGNER, LOUIS C., M.A.	Professor of Marketing
WALTERS, MARGARET C., M.A.	Assistant Professor of English
WEBSTER, DONALD H., Ph.D.	Professor of Political Science
WHEELER, BAYARD O., Ph.D.	Professor of Real Estate
WICKMAN, JAMES A., M.B.A.	Lecturer in Insurance
WILLIS, LEOTA SNIDER, Ph.D.	Lecturer in English
WILSON, CLOTILDE M., Ph.D.	Associate Professor of Romance Languages
WILSON, WILLIAM CHARLES E., Ph.D.	Professor of Romance Languages
WINTHER, SOPHUS KEITH, Ph.D.	Professor of English
WOLFSBERG, INGA, M.A.	Teaching Assistant in Scandinavian Languages
WORCESTER, DEAN A., JR., Ph.D.	Associate Professor of Economics
ZILLMAN, LAWRENCE J., Ph.D.	Professor of English
ZUCKERMAN, HELEN C., M.S.	Instructor in Mathematics

COOPERATING FACULTY

BOTHUN, VIRGINIA, M.A.	English
CORNU, ELIZABETH, M.A.	English
RYBERG, VIOLET, M.A.	Geography

OBSERVANCE OF UNIVERSITY RULES AND REGULATIONS

It is the University's expectation that a student will follow University rules and regulations as they are stated in the catalogues and bulletins. In instances where no appeal procedure is spelled out and the student is persuaded that a special set of circumstances makes appeal reasonable, he may appeal the application of specific rules or regulations to the Office of the Dean of the School or College in which he is enrolled in the case of an academic matter, or to the Office of the Dean of Students in the case of a nonacademic matter. These offices will either render a decision on the appeal or refer the student to the proper office for a decision.

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.

GENERAL INFORMATION

THE UNIVERSITY OF WASHINGTON offers more than three hundred Correspondence Study courses, open to anyone over eighteen years of age who is not attending high school and to any high school graduate who may be under eighteen.

Once enrolled, a student receives in the mail the assignments prepared by his instructor at the University. When he has completed an assignment the student mails it to the University, where the instructor grades and returns it with corrections and suggestions. In this way, correspondence study approaches the ideal in teaching—individual contact between the instructor and the student.

When a student completes all the assignments, he takes a final examination. Persons living in Seattle should take their examination at 203 Lewis Hall, Campus. Office hours are Monday through Friday, 8-5, and by appointment Wednesday evenings. Persons not living in Seattle should furnish the name and address of a principal or superintendent of a school who would supervise the examination. *Please give exact title of supervisor.* If a student passes satisfactorily, he receives a Certificate of Completion and his grade and earned credits are entered in the University records.

A student may begin a Correspondence Study course at any time of year and may proceed as rapidly or as slowly as he wishes, within reasonable limits.

Fees are \$8.00 per credit. A 2-credit course costs \$16.00; a 3-credit course, \$24.00; a 4-credit course, \$32.00; and a 5-credit course, \$40.00. The number of credits for each course is given with its description in this Bulletin.

ENROLLMENT PROCEDURES

To enroll in a Correspondence Study course use the Application for Registration form attached between pages of this bulletin.

If the form has been used or removed, students may write or call the Division of Correspondence Study for a new application or provide the following information:

Name, full address, telephone number, occupation, date and place of birth, previous education including high school (number of years attended if not graduated) and institutions attended beyond the high school (including dates attended and degrees), current status at the University of Washington (resident day student, evening classes, or enrolled in other correspondence courses), the objective in taking correspondence courses (university credit, fulfilling requirements for teaching certificate, general interest, etc.). Be sure to list the title of the course.

Address all communications concerning Correspondence Study to:

UNIVERSITY OF WASHINGTON
DIVISION OF CORRESPONDENCE STUDY
SEATTLE 5, WASHINGTON

Resident students must have special permission to take correspondence courses from the dean of the college in which they are enrolled. The appropriate request form is available at the office of the Division of Correspondence Study.

A student must transmit the necessary fees along with his application and 25 cents for the regulation (first sheet) stationery. He should also indicate whether he wants the Division of Correspondence Study to order the required textbooks for him. A student may order books directly from the University Book Store, 4326 University Way, Seattle 5, Washington, or the Washington Book Store, 4316 University Way, Seattle 5, Washington.

As soon as a student's application is accepted, the Division of Correspondence Study will send his lessons to him. If for any reason the application is not accepted, all fees will be returned.

CORRESPONDENCE STUDY FOR UNIVERSITY CREDIT

The University of Washington grants credit toward a bachelor's degree for most of its correspondence courses to students who qualify for regular admission to the University. The University's regulations pertaining to credit for correspondence study are substantially those which apply in regular residence work.

Correspondence Study students may complete no more than 5 credits of correspondence work in one month, 4 credits in twenty-five days, 3 credits in twenty-one days, or 2 credits in fourteen days. No more than one lesson a day may be submitted, and if a student is taking more than one course simultaneously by correspondence he may not submit more than one lesson a day in either course.

The University of Washington offers credit on a quarter basis. Generally, a quarter credit equals $2/3$ semester credits; thus 2 quarter credits equal $1\frac{1}{3}$ semester credits, 3 quarter credits 2 semester credits, 4 quarter credits $2\frac{2}{3}$ semester credits, $4\frac{1}{2}$ quarter credits equal 3 semester credits, and 5 quarter credits equal $3\frac{1}{3}$ semester credits. The equivalence is not automatic and students wishing credit for courses taken at other institutions should consult the University's Office of Admissions.

The University will accept no more than a combined total of 90 credits earned in correspondence study and/or evening classes; the 90 credits may include as many as 45 credits earned through correspondence or extension classes at other institutions, including United States Armed Forces training school credits. Advanced credit examination and acceptable Armed Forces training credits must be counted in the 90-credit maximum. No more than 10 extension or correspondence credits from this University can apply toward the work of the senior year. If a student plans to take a large part of his undergraduate work through correspondence study, he should consult with faculty advisers and plan his program well in advance. In general, it is better to take the *first* rather than the latter part of a University program by correspondence.

TRANSFER OF CREDITS

Extension credits earned in other institutions do not apply toward work in the senior year. The University accepts, without requiring examination, extension and correspondence credits from institutions belonging to the National University Extension Association; credits from colleges and universities that are not members are accepted only after examination. Pre-law students in the combined liberal arts-law program may not take Correspondence Study courses for credit during their first three years.

The University has no control over acceptance of credits by other schools. A student who enrolls in a Correspondence Study course expecting to use the credits toward a degree in another institution should communicate with that institution to determine whether it will accept the credits. A student desiring to have an official transcript forwarded to another institution should apply at the Transcript Office, 109 Administration Building, *after* he has completed the course.

ADVANCED DEGREE CREDITS

Correspondence Study credits do not count toward graduate degrees. In working toward the Standard General Certificate, however, it is possible to earn as many as 12 credits in the fifth year. The remaining 33 credits required for this Certificate must be taken in residence.

NONCREDIT CORRESPONDENCE STUDY

Many persons may be interested in correspondence study but have no desire or need for academic credit. Such individuals may enroll as auditors by applying in the regular manner and requesting permission to audit the course. Under such circumstances it is possible to take a more advanced course without the usual prerequisites provided the instructor in the course feels the prospective auditor has sufficient background to understand the work. The fees and other conditions for noncredit audited courses are the same as those for regular courses. Instructors provide auditors with the same services as those studying for credit.

A student may receive credit in audited courses only by enrolling in them later as a regular student. For such enrollment, the regular prerequisites prevail.

TELECOURSES

The University of Washington Division of Correspondence Study offers both locally and nationally televised courses throughout the state of Washington. A series of noncredit lecture courses as well as courses for University credit may be taken in the Seattle area. Credit courses are not generally available outside Seattle. Other cities which offer telecourses through the Division of Correspondence Study are: Yakima, Bellingham, Spokane, Portland, Anchorage, Fairbanks, and Juneau.

For further information about the types of courses offered and registration procedures, write or call the Division of Correspondence Study, University of Washington, Seattle 5, Washington, LAkeview 4-6000, Extension 2861.

PREPARATORY COURSES

The University of Washington, through Correspondence Study, offers several courses which are preparatory to university study. Detailed information about these courses is on page 39 of this Bulletin.

LESSONS IN SUMMER

The Division of Correspondence Study cannot guarantee that all lessons will be corrected promptly during the summer, especially during September, which is the vacation period between the Summer and Autumn Quarters. At such times, the Division will attempt either to provide a substitute while the instructor is away or to forward lessons to the instructor, but delays may occur. A student should keep this in mind if he wishes to complete a course before Autumn Quarter opens.

GENERAL REGULATIONS

TIME REQUIREMENTS

The Division of Correspondence Study requires that students enrolled in correspondence studies:

1. Submit the first lesson within sixty days of registration
2. Submit subsequent assignments within ninety days of each other
3. Take the final examination within sixty days after the last assignment is received by the Division of Correspondence Study
4. Complete a course within the required time, which is one year for a 5-credit course, ten months for a 4-credit course, eight months for a 3-credit course, and five months for a 2-credit course.

Failure to meet these requirements may result in dropping a student from a course. To avoid such action a student may apply to the Director of the Division of Correspondence Study for an extension in time explaining why it will be impossible to complete his assignment within the required time.

Dropped students are charged \$1.00 per credit for reinstatement; for example, \$5.00 for a 5-credit course. The Division cannot reinstate students if the course is no longer offered through Correspondence Study or if more than four years have elapsed since the date of registration.

If a Correspondence Study student registers as a regular student at the University, he may obtain an extension of time to complete his correspondence course equal to the time he spends in residence by notifying the Division of Correspondence Study. He must also secure permission as a regular student to continue his correspondence course. Printed forms for this permission may be obtained from the Division of Correspondence Study or the dean of his college.

FEES

1. *Rates.* Fees are \$8.00 per credit for students living anywhere in the world.
2. *When Paid.* Fees are due and payable at the time of enrollment. They are refunded if the University rejects the student or fails to give the course. Enrollment constitutes an agreement by the student to complete the course and he must take the responsibility for any failure on his part to do so.
3. *No Discounts.* Fees are not subject to discount.
4. *Changing Courses.* With the consent of the Director of Correspondence Study, students may transfer from one course to another before the work actually has begun, if the student requests transfer within sixty days after enrollment. This necessitates an additional fee of \$1.00 per credit, plus \$1.00 for change of registration. After the student has sent in one or more assignments, transfer to another course will be permitted only under exceptional circumstances. In addition to the transfer fees mentioned above, an additional charge of \$1.00 will be assessed for each assignment already submitted.

5. *Sixty-day Limit.* Students failing to make any report within sixty days after enrollment will be dropped and no fees will be refunded. Once enrolled, the student is expected to begin the work or to report promptly his reason for not doing so.

6. *Refunds.* No refund of fees will be made after thirty days from the date of registration unless illness makes it impossible for the student to continue his work. A statement showing the nature and probable duration of the illness must accompany the request for a refund. No refunds due to illness will be made after four months have elapsed. In case of withdrawal from a course within thirty days after registration or because of illness, the Division of Correspondence Study will retain a fee of \$1.00 per credit carried by the course and \$1.00 for each assignment submitted. The balance of fees paid will be refunded, provided that all charges for materials, books, and other supplies have been met. Laboratory fees and fees paid for loan of books and materials are not returnable.

BOOKS AND MATERIALS

It is necessary to purchase one or more books for most correspondence courses. The cost of these books is not included in the tuition fee. There are several alternatives available in purchasing the necessary texts:

1. A student can purchase the books directly from the University Book Store, 4326 University Way, Seattle 5, Washington, or the Washington Book Store, 4316 University Way, Seattle 5, Washington, either in person or by mail.

2. Upon request, the Division of Correspondence Study will order textbooks which will be sent, parcel post, C.O.D. Since it is not possible to send books C.O.D. to Canada, the Division, upon receiving a request for the purchase of texts, will inform the student of the cost of the texts and will order them for the student upon receipt of funds.

For the convenience of both instructor and student, Correspondence Study students are asked to use a printed first sheet with each assignment. For the following pages, any good 8½" x 11" paper may be used. Printed first sheets may be obtained from the Division of Correspondence Study in pads of forty for 25 cents. Plain second sheets in pads of fifty may also be obtained from this office for 20 cents. Each thirty-assignment course requires one pad of printed sheets and two or more pads of second sheets.

LIBRARY FACILITIES

Many courses require reference reading. A student may obtain reference books from either the public libraries or the University of Washington Library. The Division of Correspondence Study will issue a University Library card for a fee of \$1.00. This card, valid for one year, entitles a student to borrow University Library books for one-month periods, provided the same volumes are not required for use by resident students. The card, when first presented to the Library, will be held there. Students requesting books by mail should address: University of Washington Library, Circulation Department, Seattle 5. The student is expected to pay transportation charges both ways.

FINAL EXAMINATIONS

For a certificate of completion or an official transcript for University credit, a student must pass a supervised final examination at the end of the course. The examination will be given only after all assignments have been completed and all fees have been paid.

Whenever Correspondence Study credits are needed for entrance into the University, or for reinstatement or graduation, the student must take the final examination and send it to the Correspondence Study Office at least one week before the grade is required by the Registrar's Office.

GRADES

The regular University grading system applies to Correspondence Study courses, as follows (grade points are in parentheses): A, Honor (4); B, Good (3); C,

Medium (2); D, Poor (low pass) (1); E, Failed (0); I, Incomplete. No grades are given for noncredit work.

NOTICE TO VETERANS

Most courses are available to veterans under Public Law 550. Information may be obtained from the Division of Correspondence Study upon request.

Veterans must keep in mind that eligibility to use their educational benefits for correspondence study is determined by the Veterans Administration. In order to establish his eligibility, a veteran must obtain a Certificate for Education and Training from the Veterans Administration before his delimiting date under Public Law 550.

Students who have not already been formally admitted to the University of Washington are urged to consult with the University's Veterans Division, Safety Division Building, for instruction in the proper procedure and to obtain a clearance card for their enrollment in correspondence courses.

CORRESPONDENCE STUDY COURSES

ANTHROPOLOGY

- C202 Cultural Anthropology: Comparison and Analysis (5)** **Viola Garfield**
Man's social customs, political institutions, religion, art, literature, and language. (30 lessons, \$40.00.) Textbooks: Melville J. Herskovits, *Man and His Work* (New York: Alfred Knopf, 1948); Melville Jacobs and Bernhard J. Stern, *General Anthropology, College Outline Series* (New York: Barnes and Noble, 1952).
- C210 Indians of North America (3)** **Viola Garfield**
A survey of the great variety of Indian tribes and their cultures as they existed in the nineteenth century and earlier. Special emphasis on native peoples north of Mexico. (18 lessons, \$24.00.) Textbook: Harold Driver, *Indians of North America* (Chicago: University of Chicago Press, 1961).
- C370 Methods and Problems of Archaeology (5)** **Robert Greengo**
Field experience in this locality is included. Prerequisite, 203. (30 lessons, \$40.00.) Textbooks: R. F. Heizer, *A Guide to Archaeological Field Methods* (3rd ed. rev.; Palo Alto: The National Press, 1958); James B. Griffin, *Essays on Archaeological Methods* (Anthro. Papers No. 8, Museum of Anthropology, Ann Arbor, Mich.: University of Michigan Press, 1951); Kathleen M. Kenyon, *Beginning in Archaeology* (New York: Frederick A. Praeger, 1952).
- C433 Primitive Art (3)** **Erna Gunther**
Aesthetic theories and artistic achievements of preliterate peoples. Museum material is used for illustration. Prerequisite, 10 credits in anthropology or art. (18 lessons, \$24.00.) Textbook: Franz Boas, *Primitive Art* (New York: Dover Publications Inc., 1955). Library facilities are also necessary for research paper.

ARCHITECTURE

- C105 The House (2)** **Arthur Herrman**
Analysis of domestic architecture. (12 lessons, \$16.00.) Textbooks: References.

a: First half of a course.

b: Second half of a course.

C: Correspondence course.

-: Hyphen indicates a hyphenated course, which must be followed or preceded by a companion course before the student can receive credit for either course.

Credits: Credits are indicated by the number in parentheses following the course title.

Numbers:

0 to 299—Lower-division (freshman and sophomore) classes.

300 to 499—Upper-division (junior and senior) classes.

Permission: Permission of instructor.

Prerequisite: Courses or training which must have been taken previously either through correspondence, extension, or residence. Course numbers listed as prerequisites are in the same department unless otherwise indicated.

ART

- C205 Lettering (3)** **Frederick Anderson**
Design in letters and the composition of letters. Prerequisites, 107 and 111, or permission. (18 lessons, \$24.00.) Textbook: *Speedball Textbook*. Hunt Pen Co. Also art supplies.

BUSINESS ADMINISTRATION

ACCOUNTING

- C210 Fundamentals of Accounting (3)** **Frank Hamack**
Basic principles and procedures, including recording of business transactions and preparation of financial statements. (18 lessons, \$24.00.) Formerly 150. Textbook: Noble and Niswonger, *Accounting Principles* (8th ed.; Burlingame, Calif.: Southwestern Pub. Co.); Working Papers, 1-15; Practice Set No. 1.
- C220 Fundamentals of Accounting (3)** **W. Baker Flowers**
Elements of manufacturing, partnership, and corporation accounting. (18 lessons, \$24.00.) Formerly 151. Prerequisite, 210. Textbook: Noble and Niswonger, *Accounting Principles* (8th ed.; Burlingame, Calif.: Southwestern Pub. Co.); Working Papers 16-30; Practice Set No. 3.
- C230 Basic Accounting Analysis (3)** **W. Baker Flowers**
Financial and cost analysis and interpretation. Formerly 255. Prerequisite, 220. (18 lessons, \$24.00.) Textbook: C. Aubrey Smith and Jim G. Ashburne, *Financial and Administrative Accounting* (2nd ed.; Corte-Madera, Calif.: McGraw-Hill); accounting paper: journal paper, 2-column (25 sheets); statement paper, 4-column (25 sheets); worksheet paper, at least 8-column (25 sheets).
- C311 Cost Accounting (3)** **Reed Storey**
Theory of cost accounting: accumulation and allocation of costs; managerial control through cost data. Formerly 330. Prerequisite, 230 or permission. (18 lessons, \$24.00.) Textbook: Matz, Curry, and Frank, *Cost Accounting* (2nd ed.; Burlingame, Calif.: Southwestern Pub. Co. 1957).
- C321 Equity Accounting (3)** **G. Mueller**
Theory and problems in accounting for ownership equity in corporations and partnerships. Quasi-reorganizations, business combinations, income tax allocation, investments. Formerly 360. Prerequisite, 230. (18 lessons, \$24.00.) Textbook: Finney and Miller, *Principles of Accounting—Intermediate and Advanced* (5th ed.; Englewood Cliffs, N.J.: Prentice-Hall, 1958).
- C331 Income Determination Accounting (5)** **Reed Storey**
Concepts and principles underlying accounting processes. Theory and problems of financial accounting, including financial statement analysis. Formerly 310. Prerequisite, 230. (30 lessons, \$40.00.) Textbook: Finney and Miller, *Principles of Accounting* (5th ed.; Englewood Cliffs, N.J.: Prentice-Hall, 1958); one pad each of balance sheets, work sheets, and ledger paper.
- C421 Federal Income Tax (5)** **Julius Roller**
Individual, partnership, and corporation income tax, including installment sales and inventory tax accounting. Formerly 320. Prerequisite, 230. (30 lessons, \$40.00.) Textbook: *Federal Tax Course* (Englewood Cliffs, N.J.: Prentice-Hall, 1961).

BUSINESS LAW

- C201 Legal Factors in the Business Environment (3)** **William Greiner**
Legal institutions and processes; law as a system of social thought and behavior, and as a frame of order and authority within which rival claims of individuals and groups are resolved and compromised; legal reasoning; the interaction of law and business; the lawyer and the business firm. Prerequisite, English 102. (18 lessons, \$24.00.)
- C301 Business Agreements (3)** **S. Darden Brown**
The nature, development, and operation of those principles of contract law primarily affecting the formation and performance of business agreements. Prerequisite, 201. (18 lessons, \$24.00.) Textbooks: Anderson and Kumpf, *Business Law* (6th ed.; Burlingame, Calif.: Southwestern Pub. Co.); Anderson and Kumpf, *Workbook-Business Law* (6th ed.).
- C403 Commercial Law (5)** **S. Darden Brown**
Principles of the law of agency and business organization, property, sales, negotiable instruments, and security transactions. Formerly 302. Prerequisite, Business Law 301. (30 lessons, \$40.00.) Textbooks: Anderson and Kumpf, *Business Law* (5th ed.; Burlingame, Calif.: Southwestern Pub.); Anderson and Kumpf, *Workbook-Business Law* (5th ed.).

BUSINESS STATISTICS: QUANTITATIVE ANALYSIS

- C201 Statistical Analysis (3)** **George Brabb**
A nonmathematical survey of the basic elements of descriptive statistics; use of the library as a source of business data; measurements useful in the analysis of data; some methods of data presentation. Prerequisite, sophomore standing. (18 lessons, \$24.00.) Textbook: Hanson and Brabb, *Managerial Statistics* (2nd ed.; Englewood Cliffs, N.J.: Prentice-Hall, 1961).

FINANCE

- C320 Money, Financial Institutions, and Income (4)** **Charles Henning**
Nature and functions of money, debt and credit, and liquidity; financial institutions and the flow of funds in the economy; income and monetary theory and introduction to money market analysis. The following topics are covered in this course: the nature and functions of money and financial institutions in the economy; the creation of debt and credit, and the theory of liquidity; operations of the commercial banking system; other financial institutions, their operations, and their activities in the money market; the theory of money, prices, and output; the nature and functions of monetary and fiscal policies; international financial procedures and institutions. Formerly 201. Prerequisites, Economics 200 and Accounting 230. (24 lessons, \$32.00.) Textbook: Charles L. Prather, *Money and Banking* (6th ed.; Homewood, Ill.: Irwin Publications, 1957).
- C330 Investments (3)** **Fred Mueller**
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, 350. (18 lessons, \$24.00.) Textbook: Sauvain, *Investment Management* (2nd ed.; Englewood Cliffs, N.J.: Prentice-Hall, 1959).
- C350 Business Finance (4)** **Fred Mueller**
Problems dealing with the sources, uses, and control of funds in business enterprises. Major emphasis is devoted to sources of long- and short-term funds, policies relating to working capital, income management, and the financing of growth and expansion. Prerequisites, 320, Accounting 230. (24 lessons, \$32.00.) Textbooks: Robert W. Johnson, *Financial Management* (Englewood Cliffs, N.J.: Allyn and Bacon, Inc., 1959); Robert J. Oppitz, *Selected Case Problems in Finance* (Englewood Cliffs, N.J.: Prentice-Hall, 1956).

GENERAL BUSINESS

- C101 Business: An Introductory Analysis (5)** **Bayard Wheeler**
The nature, growth, and problems of business; management of the business firm; types of ownership; production, personnel, marketing, financing, and other management functions; managerial controls, including accounting, statistics, and budgeting; the influence of environmental forces upon business, including government, labor, consumers, and the public. Business opportunities. (30 lessons, \$40.00.) Textbook: Spengler and Klein, *Introduction to Business* (4th ed.; New York: McGraw-Hill, 1955).
- C439 Analysis of Business Conditions (4)** **Leonard Goldberg**
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 350, Marketing 301, Production 301, and Business Statistics 201. (24 lessons, \$32.00.) Textbook: R. A. Gordon, *Business Fluctuations* (New York: Harper and Bros., 1961).

MARKETING

- C301 Marketing, Transportation, and International Business: An Integrative Analysis** **Charles Miller**
Analytical survey of institutions, functions, problems, and policies involved in the distribution of goods from producer to consumer. Pricing, marketing costs, and governmental regulations. (30 lessons, \$40.00.) Textbook: Converse, Huegy, and Mitchell, *The Elements of Marketing* (5th ed.; New York: Barnes and Noble, 1952).
- C381 Retailing (5)** **John Wheatley**
Profit planning in business control; buying, stock control, pricing, promotion; store location, layout, organization, policies, systems; coordination of store activities. Prerequisite, 301. (30 lessons, \$40.00.) Textbook: D. J. Duncan and C. F. Phillips, *Retailing: Principles and Methods* (4th ed.; Homewood, Ill.: Irwin Publications).
- C391 Advertising (5)** **Louis Wagner**
To develop an understanding of, and ability to appraise, advertising as a part of the marketing program. Among the topics covered are: purposes and functions, product and market analysis, preparation of advertisements, evaluation of media, testing effectiveness, coordination with other means of selling, advertising organization, social and economic aspects. The student is asked to apply principles to several short cases or problems. Prerequisite, 301. (30 lessons, \$40.00.) Textbook: A. W. Frey, *Advertising* (2nd ed.; New York: The Ronald Press, 1953).
- C401 Sales Management (5)** **Harrison Grathwohl**
Analysis of sales methods, policies, and costs; sales organization; management of the sales force (selection, training, compensation, and supervision); sales planning; sales and distribution policies, problems. The continuing tendency for the work of the sales executive to become more professional in nature has led to significant current variations in emphasis on the different facets of his job. In this course, considerable attention is given to the development of the sales administrator as a professional marketing executive with a vital role in the decision making process. The reasons for this development are analyzed, and its effects on over-all policy in marketing management are presented. Emphasis is placed on those areas which guide the market manager in his planning activities, and principles are stressed throughout the course. As an indication of the scope of the course, the following subjects are examined: Organization Principles and Sales Operations, The Structure of the Sales Organization, Relation of Sales to Other Departments, The Principal Marketing Executive and His Leadership Problems, The Place of Marketing Research in Sales Management, Forecasting Sales, Market Potentials and Sales

Quotas, Sales Territories, Policies and Methods of Salesmen Selection, Tests as an Aid in the Selection of Salesmen, Basic Principles and Methods of Training Salesmen, Principles and Methods of Compensating Salesmen, Salesmen's Traveling Expenses, Stimulating the Sales Force by Contests, Supervising and Evaluating the Work of Salesmen, Sales Policies, Price and Service Policies, Policies Governing the Choice of Channels of Distribution, Distribution Cost Information and Sales Budgets, Distribution Cost Standards, and the Applications of Cost Analysis to Policy Decisions. Prerequisite, 301. (30 lessons, \$40.00.) Textbook: Maynard and Davis, *Sales Management* (3rd ed.; New York: Ronald Press, 1957).

RISK AND INSURANCE

- CN31 Insurance Agent's Review Course (0)** **James Wickman**
A course designed to assist the prospective applicant for a license as an insurance agent to prepare himself for the examination given by the State Insurance Commission. (30 lessons, \$40.00.) Textbook: Solon and Martin, *General Insurance in Washington* (San Francisco: General Educational Publications, 1956).
- C310 Fundamentals of Risk and Insurance (5)** **James Wickman**
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. (30 lessons, \$40.00.) Textbook: Mehr and Cammack, *Principles of Insurance* (Homewood, Ill.: Irwin Publications).

TRANSPORTATION

- C310 Principles of Transportation (5)** **Robert Nelson**
Survey of the economic organization and functioning of the transportation industries. Impact of transportation on industrial location, prices, and markets. The nature and appropriateness of public policy in transportation. (30 lessons, \$40.00.) Textbook: Locklin, D. P. *Economics of Transportation* (5th ed.; Homewood, Ill.: Irwin Publications, 1960).
- C317 Water Transportation (5)** **Wallace Little**
The economic principles of international water transportation, its historical development, current significance, and regulations; the forms of services rendered in ocean transportation, the routes covered, management principles, and pricing procedures. Prerequisite, 310. (30 lessons, \$40.00.) Textbook: McDowell and Gibbs, *Ocean Transportation* (Corte-Madera, Calif.: McGraw-Hill, 1954).

DRAMA

- C441, C442, C443 History of World Theater and Drama (5,5,5)** **John Conway**
Great playwrights and dramatic literature correlated with the history and development of world theater. The physical playhouse and methods of production. (30 lessons each, \$40.00 each.) Formerly 427, 428, 429, 451, 452, 453.
C441: History of World Theater and Drama: Classic and Oriental
C442: History of World Theater and Drama: Medieval and Renaissance
C443: History of World Theater and Drama: Modern

ECONOMICS

- C160 American Economic History (5)** **Roger Ransom**
American economic institutions, their European background and development; the impact of industrialization on the American economy from 1850 to the present. (30 lessons, \$40.00.) Textbooks: Faulkner, *American Economic History* (7th ed.; New York: Barnes and Noble, 1954 or Wilcox, Follett Co.); G. D. H. Cole, *Introduction to Economic History 1750-1950* (New York: St. Martin's Press, 1952).
- C200 Introduction to Economics (5)** **Dean Worcester**
Organization and operation of the American economy; consideration of contemporary economic problems of money, banking, labor, international trade, and employment; proposals for promoting social welfare. Open to freshmen. Prerequisite to all upper-division economics courses. (30 lessons, \$40.00.) Textbook: Dean A. Worcester, Jr., *Fundamentals of Political Economy* (New York: Barnes and Noble, 1953).
- C201 Principles of Economics (5)** **William Russell**
Operation of the American economy in determining prices, wages, production, distribution of income and wealth; problems of the world economy; alternative economic systems—communism, socialism, fascism, mixed economies. Prerequisite, 200. (30 lessons, \$40.00.) Textbook: Peterson, Shorey, *Economics* (New York: Henry Holt and Co., 1954).

EDUCATION

- C188 Principles of Education (3)** **Homer Boroughs, Clifford Foster**
The presentation of contemporary, historical, and philosophical understandings which are essential in gaining an appreciation of the role of education in modern society. The student's interest and perspective concerning the goals and problem areas of education are made more meaningful through a series of required visitations on the elementary school and secondary school levels. (18 lessons, \$24.00.) Textbook: V. T. Thayer, *The Role of the School in American Society* (New York: Dodd-Mead and Co., 1960).

- C209 Educational Psychology (3)** **Alice Hayden**
Psychological basis of education; principles applied to teaching procedures. Emphasizes conduct as a conditioning process. Prerequisite, Psychology 100. (18 lessons, \$24.00.) Textbook: Arden N. Frandsen, *Educational Psychology* (Corte-Madera, Calif.: McGraw-Hill).
- C327 Teachers' Course in Trade and Industrial Education (3)** **Athol Bailey**
Methods and techniques of teaching industrial education; shop management; motivation of learning in the shop; measurement of achievement; inter-school and community relations. (18 lessons, \$24.00.) Textbooks: E. E. Ericson, *Teaching the Industrial Arts* (Peoria, Ill.: Charles A. Bennett Co., 1946); G. H. Silvius and Estill Curry, *Teaching Successfully, The Industrial Arts and Vocational Subjects* (Bloomington, Ill.: McKnight and McKnight Publ. Co., 1953).
- C329 Teachers' Course in French (2)** **Lurline Simpson**
Examination and critical consideration of aims, problems, methods, and modern techniques and devices for teaching French. Prerequisite, permission of instructor. (12 lessons, \$16.00.) Textbook: Cole and Tharp, *Modern Foreign Languages and Their Teaching* (New York: Appleton-Century-Crofts, 1937).
- C331 Teachers' Course in History (2)** **Homer Boroughs**
A critical examination of the objectives, methods, and specific techniques for teaching history in the junior and senior high school. Prerequisite, 370S. (12 lessons, \$16.00.) Textbook: Wesley and Wronski, *Teaching Social Studies in High School* (4th ed.; San Francisco: D. C. Heath and Co., 1958).
- C343 Teachers' Course in Spanish (2)** **Lurline Simpson**
Examination and critical consideration of aims, problems, methods, and modern techniques and devices for teaching Spanish. Prerequisite, permission of instructor. (12 lessons, \$16.00.) Textbook: Cole and Tharp, *Modern Foreign Languages and Their Teaching* (Rev. ed.; New York: Appleton-Century-Crofts, 1937).
- C360 Curriculum Development (3)** **Edgar Draper**
A study of curriculum development in the United States. Recent trends will be emphasized. The relationship of curriculum development to the professional activities of teachers in the fields of guidance and extracurricular activities will be stressed. Students will be required to develop a resource unit in their major field. Reading assignments. (18 lessons, \$24.00.) Textbook: E. D. Krug, *Curriculum Planning* (Rev. ed.; New York: Harper and Bros., 1957).
- C370E Elementary School Methods (3)** **Clifford Foster**
An examination of the basic principles, techniques, and methods of teaching in the elementary school from the kindergarten through the intermediate grades. Principles and techniques of audio-visual instruction are provided. Emphasis is placed upon planning for instruction in the Language Arts and the Social Studies. Prerequisites, 188 and 209. (18 lessons, \$24.00.) Textbooks: H. Wilber Dutton and John A. Hockett, *The Modern Elementary School, Curriculum and Methods* (New York: Holt, Rinehart & Winston, 1959); DeKieffer and Cochran, *Manual of Audio-Visual Techniques* (Englewood Cliffs, N.J.: Prentice-Hall, 1955, 1961).
- C370S Secondary School Methods (3)** **Homer Boroughs**
An examination of the basic principles of classroom methodology applicable to all secondary level subject-matter areas. Emphasis is placed upon practical considerations. Special attention is given audio-visual equipment and materials. Prerequisite, 188. (18 lessons, \$24.00.) Textbooks: L. H. Clark and I. S. Starr, *Secondary School Teaching Methods* (New York: Macmillan, 1959); DeKieffer and Cochran, *Manual of Audio-Visual Techniques* (Englewood Cliffs, N.J.: Prentice-Hall, 1955).
- C373 Washington State Manual (2)** **John Corbally, John Jessup**
Constitution of the state of Washington, and excerpts from the School Code: State, county, district administration, organization, finance, teacher liability, course of study, and the like. (12 lessons, \$16.00.) Textbook: *State Manual of Washington* (18th ed.; Olympia, Wash., 1960). Lloyd J. Andrews, Supt. of Public Instruction.
- C374E Fundamentals of Reading Instruction: Elementary (3)** **Henry Fea**
A basic course in the methods, techniques, and materials used in the teaching of reading from the readiness period of the kindergarten-primary area through the study techniques of the intermediate grades. (18 lessons, \$24.00.) Textbook: John J. DeBoer and Martha Dallmang, *The Teaching of Reading* (New York: Henry Holt, 1960).
- C379 Arithmetic for Elementary Teachers (3)** **Sylvia Vopni**
A re-examination of elementary arithmetic from a mature point of view, with emphasis upon a sound knowledge of arithmetic processes and the problems encountered in teaching these to elementary students. The subject matter includes that normally taught in grades one through eight. One credit may count as mathematics toward the basic academic field and two as education. (18 lessons, \$24.00.) Textbook: P. E. Brossnickle and Leo J. Bruechner, *Discovering Meanings in Arithmetic* (Philadelphia: John C. Winston Co., 1959).
- C388 Selection and Organization of Industrial Education Subject Matter (3)** **Athol Bailey**
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. (18 lessons, \$24.00.) Textbook: Giachino and Gallington, *Course Construction in Industrial Art and Vocational Education* (Chicago: American Tech. Soc., 1954).

- C390 Evaluation in Education (3)** **August 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. Prerequisites, 209 and 370S. (18 lessons, \$24.00.) Textbook: Ross, *Measurement in Today's Schools* (3rd ed.; Englewood Cliffs, N. J.: Prentice-Hall, 1954).
- C402 Child Study and Development (3)** **Alice Hayden**
Stages of child development; theories of 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 attitude of others on a child's behavior and adjustment. (18 lessons, \$24.00.) Textbook: Willard C. Olson, *Child Development* (2nd ed.; San Francisco: D.C. Heath, 1959).
- C403 Psychology of Elementary School Subjects (3)** **Clifford Foster**
A study of important developments in the subjects of elementary school curriculum with emphasis upon research. A consideration is given to the practical implications for teaching. (18 lessons, \$24.00.) Textbook: Luella Cole, *The Elementary School Subjects* (New York: Holt, Rinehart, and Winston).
- C404 Education of Exceptional Children (3)** **Francis Powers**
A typical child study from the point of view of the classroom teacher. (18 lessons, \$24.00.) Textbook: Magary and Eichorn, *The Exceptional Child; A Book of Readings* (New York: Holt, Rinehart, and Winston, 1960).
- C405 Problems of Adolescence (3)** **Clifford Foster**
A survey of the problems of adolescence with analysis and discussion of the educational and social implications. (18 lessons, \$24.00.) Textbook: Luella Cole, *Psychology of Adolescence* (5th ed.; New York: Holt, Rinehart, and Winston, 1959).
- C408 Mental Hygiene for Teachers and Administrators (3)** **Rufus Salyer**
A study of the 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 will be emphasized. (18 lessons, \$24.00.) Textbook: Henry C. Lindgren, *Mental Health in Education* (New York: Henry Holt & Co., 1954).
- C410 Educational Sociology (3)** **John Corbally**
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. Special emphasis is given to the relationship of the school to the community. (18 lessons, \$24.00.) Textbook: Francis J. Brown, *Educational Sociology* (2nd ed.; Englewood Cliffs, N. J.: Prentice-Hall, 1954).
- C415 Principles of Safety Education (3)** **John Corbally**
Designed primarily for teachers and administrators interested in developing a school safety program in elementary, junior, and senior high schools. Special emphasis is placed on the need for a safe school environment and the legal responsibility of the teacher in promoting safety. (18 lessons, \$24.00.) Textbook: Stack and Elkow, *Education for Safe Living* (3rd ed.; Englewood Cliffs, N. J.: Prentice-Hall, 1957).
- C417 Adult Education (3)** **John Jessup**
This course is intended to serve as a guide for directors of adult education in a broad range of agencies and community organizations. It draws upon research findings and pulls together experiences from practitioners in a variety of situations. It should suggest solutions to many recurring problems of program administrators. (18 lessons, \$24.00.) Textbook: Homer Kempfer, *Adult Education* (Corte-Madera, Cal.: McGraw-Hill, 1955).
- C425 Remedial Reading (3)** **Henry Fea**
Experiences in and study of analysis of difficulties in reading, and application of appropriate remedial instruction, such analysis and instruction to be that which is both feasible and practical for the classroom teacher working with individuals or with a group. Prerequisite, 374E or S, or equivalent. (18 lessons, \$24.00.) Textbook: A. J. Harris, *How To Increase Reading Ability* (4th ed.; New York: Longmans, Green, 1961).
- C430 Public School Administration (3)** **George 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. (18 lessons, \$24.00.) Textbook: Morphet, Johns and Reller, *Educational Administration* (Englewood Cliffs, N. J.: Prentice-Hall, 1959).
- C431 School Finance (3)** **George Strayer**
Basic issues, concepts and problems; economics of school finance; sources of revenue; development of local and state school support; the foundation program; financing capital outlay; federal support; budgetary procedures; personnel; financial accounting; business administration services. (18 lessons, \$24.00.) Textbook: Roe L. Johns and Edgar L. Morphet, *Financing the Public Schools* (Englewood Cliffs, N. J.: Prentice-Hall, 1960).
- C433 Elementary School Organization and Administration (3)** **John Jessup**
The work of the elementary school principal; plans of organization, promotion schemes, supervisory duties, teacher welfare, student organizations, and public relations. (18 lessons, \$24.00.) Textbook: Hicks and Jameson, *The Elementary School Principal at Work* (Englewood Cliffs, N. J.: Prentice-Hall, 1957).

- C434 High School Organization and Administration (3)** **George Strayer**
The executive function; types of secondary schools in our democracy. The high school principal's relationships to the staff, the superintendent, and the board. General and specialized education; student organizations; schedule making and the modified day and year; special services. Pupil personnel policies. Business and school plant management. The high school and its community. (18 lessons, \$24.00.) Textbook: French, Hull and Dodds, *American High School Administration* (New York: Holt, Rinehart and Winston, 1957).
- C435 Administration and Supervision of Junior High Schools (3)** **George Strayer**
Development, philosophy and effectiveness. The core curriculum and curriculum trends and fields; learning activities and individual differences. Guidance and the homeroom; co-curricular activities. Pupil personnel records, reports and progress; organization and schedule construction. Staff and other problems. (18 lessons, \$24.00.) Textbook: Gruhn and Douglass, *The Modern Junior High School* (2nd ed.; New York: The Ronald Press, 1956).
- C437 School Supervision (3)** **John Jessup**
Analysis of the problems and techniques of the improvement of schoolwork. Special emphasis is given to facilitating pupil growth, facilitating teacher growth, improving curriculum, and using teaching aids to greatest advantage. (18 lessons, \$24.00.) Textbook: Burton and Barr, *Supervision, a Social Process* (3rd ed.; New York: Appleton-Century-Crofts, 1955).
- C439 Pupil Personnel and Progress Reporting (3)** **Sylvia Vopni**
Development of practical techniques in pupil personnel and progress reporting at the elementary and secondary school levels; emphasis on parent-teacher conference as a part of progress reporting and teacher-parent-pupil relationships in personnel procedures. (18 lessons, \$24.00.) Textbook: Fred C. Ayer, *Practical Child Accounting* (Austin, Texas: Steck Co., 1953).
- C445V Principles and Objectives of Vocational Education (3)** **Athol Bailly**
Aims and objectives of vocational education; materials of instruction; standards of work; judging measurement of work. (18 lessons, \$24.00.) Textbook: References only.
- C447 Principles of Guidance (3)** **John Corbally**
An introduction to guidance and normally the first course taken by those who plan to offer guidance as a field for an advanced degree. Special emphasis on types of programs in elementary and secondary schools together with an introduction to tools, techniques, organization, and evaluation for teachers and administrators. (18 lessons, \$24.00.) Textbook: Arthur J. Jones, *Principles of Guidance* (4th ed.; Corte-Madera, Calif.: McGraw-Hill, 1951).
- C448 Improvement of Guidance Techniques (3)** **Rufus Salyer**
Designed for teachers, administrators, and counselors. Special emphasis is given to the improvement of guidance techniques. (18 lessons, \$24.00.) Textbook: Froehlich and Hoyt, *Guidance Testing* (3rd ed.; Chicago: Science Research Associates, 1959).
- C461 Elementary School Curriculum (3)** **John 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. (18 lessons, \$24.00.) Textbook: Lee and Lee, *The Child and His Curriculum* (3rd ed.; New York: Appleton-Century-Crofts, 1960).
- C466 Workshop in Curriculum Improvement (5)** **Edgar Draper**
Organized to assist the classroom teacher in dealing with units of work and courses of study materials for her class or classes. Readings in curriculum are assigned to enable the teacher to prepare the lessons from her experimentation with units of work preparation in her own classes. (30 lessons, \$40.00.) Textbook: Harl R. Douglass, *The High School Curriculum* (2nd ed.; New York: The Ronald Press, 1956).
- C467 Principles and Techniques of Curriculum Improvement (3)** **Edgar Draper**
Intensive study of the basic principles and techniques utilized in the development of curriculum materials at all levels in the public schools; action research studies in the development and evaluation of objectives, learning experiences, resource units, and learning units. (18 lessons, \$24.00.) Textbook: Saylor and Alexander, *Curriculum Planning* (New York: Holt, Rinehart and Winston, 1954).
- C470 Historical Backgrounds of Educational Methods (3)** **Clifford Foster**
A study of the historical development of methodology with references to the content, aims, and cultural setting of education in various periods. Attention is given to important individuals who have contributed to the development of educational methods. Principal figures studied include Plato, Aristotle, Comenius, Locke, Rousseau, Pestalozzi, Herbart, Froebel and Spencer. (18 lessons, \$24.00.) Textbook: Elmer H. Wilds, *The Foundations of Modern Education* (New York: Holt, Rinehart and Winston, 1958).
- C475B Improvement of Teaching: Arithmetic (3)** **Sylvia Vopni**
Designed for teachers of arithmetic, grades one through nine. Emphasis is placed on the contributions of research to the improvement of the teaching of arithmetic. (18 lessons, \$24.00.) Textbook: *Instruction in Arithmetic* (25th Yearbook; Washington, D. C.: National Council of Teachers of Mathematics, 1960).
- C475N Introduction to the Literature of Nature Study (2)** **Sylvia Vopni**
Review of books dealing with elementary nature study; suitable for elementary teachers and group leaders. Books include reference material and science materials for children. Nontechnical books dealing with the various branches of nature study are evaluated from the point of view of accuracy and usefulness. (12 lessons, \$16.00.) Textbooks: References only.

- C4755 Improvement of Teaching: Elementary School Science (3)** **Sylvia Vopni**
Designed for the nonspecialized classroom teacher; emphasis on the teaching and learning of science in primary and intermediate grades; content includes aims, methods, materials, concepts of science, and methods of problem solving. (18 lessons, \$24.00.) Textbook: Navarra and Zaffaroni, *Science Today for the Elementary-School Teacher* (Evanston, Ill.: Row, Peterson & Co., 1960).
- C4757 Improvement of Teaching: Secondary School Science (3)** **Sylvia Vopni**
Survey of the status and potential role of science in education; trends and their implications for the teaching of both biological and physical sciences in the junior and senior high schools; representative curriculum proposals and related teaching procedures; the psychology of concept formation and problem solving; and guidance implications of the science program. Of special interest to science teachers, administrators, and curriculum consultants. (18 lessons, \$24.00.) Textbook: Paul F. Brandwein, Watson, and Blackwood, *Teaching High School Science—A Book of Methods* (Burlingame, Cal.: Harcourt Brace & Co., 1958).
- C477 The Teaching of Reading (3)** **Francis Powers**
The teaching of reading in the intermediate and upper grades of the elementary school and high school with consideration of the following topics: speed and comprehension; phonics; silent and oral reading; motivation of reading, and other major topics in the methodology of reading instruction. (18 lessons, \$24.00.) Textbook: David H. Russell, *Children Learn to Read* (Palo Alto, Cal.: Ginn & Co., 1949).
- C480 History of Education (5)** **John Jessup**
A social interpretation of the 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 the newer concepts involving the worldwide spread of democracy and education. (30 lessons, \$40.00.) Textbook: James Mulhern, *A History of Education* (2nd ed.; New York: The Ronald Press, 1959).
- C483 Organization and Administration of Industrial Education (3)** **Athol Bailly**
Types of programs of vocational-industrial education and industrial arts; organization and administration of these programs, the relationships between them, and their place in public school programs. Textbooks: References only.
- C484 Comparative Education (5)** **John 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. (30 lessons, \$40.00.) Textbook: Adolph E. Meyer, *The Development of Education in the 20th Century* (2nd ed.; Englewood Cliffs, N. J.: Prentice-Hall, 1951).
- C486 Trends in Industrial Education (3)** **Athol Bailly**
A study of the leaders, agencies, movements, experiments and publications that have contributed to the development of industrial education, with special attention to the economic, social and philosophical factors which have motivated and influenced this development in America. (18 lessons, \$24.00.) Textbooks: References only.
- C487 Instructional Analysis for Industrial Education Teachers (3)** **Athol Bailly**
A study of the techniques and procedures used in analyzing instructional areas into their basic elements as has been developed by various leaders in industrial education. Arranging the elements into a teaching plan and sequence for industrial arts and vocational industrial education courses. (18 lessons, \$24.00.) Textbooks: References only.
- C488 Philosophy of Education (3)** **John Jessup**
The philosophy responsible for the American school system. The fundamental philosophy of education on which the aims and objectives of a democratic society may be developed. Education in relation to other factors in twentieth-century life. Aims of education, problems of methods, curriculum building, etc. (18 lessons, \$24.00.) Textbook: Joseph Park, *Selected Readings in the Philosophy of Education* (New York: Macmillan Co., 1958).

ENGINEERING

GENERAL ENGINEERING

- C101 Engineering Graphics (3)** **Herbert Boehmer**
Use of instruments, scales; techniques of lettering and line work. Fundamentals of orthographic projection, including sections. Simple isometric drawings. Orthographic and isometric sketches. Introduction to dimensioning of shop drawings. Simple rectilinear graphs. (18 lessons, \$24.00.) Textbook: Giesecke, Mitchell, Spencer, *Technical Drawing* (4th ed.; New York: Macmillan Co., 1958).
- C102 Engineering Graphics (2)** **Rowland Messer**
Orthographic projection continued, including secondary auxiliary views. Reading and interpretation of engineering drawings, diagrams, and notes, including the making and using of freehand sketches. The study and interpretation of drafting standards, tables, and other references. The study of shop practice as it affects the making of drawings. The making of acceptable engineering drawings and graphs. Prerequisite, 101. (18 lessons, \$24.00.) Textbook: Giesecke, Mitchell, Spencer, *Technical Drawing* (4th ed.; New York: Macmillan Co., 1958). The student will also need engineering supplies.
- C103 Applied Descriptive Geometry (3)** **Clarence Douglass**
Applied descriptive geometry. Practical application of fundamental principles to the solution of problems in the different fields of engineering by drafting room methods. Includes point, line, and plane problems, intersections and developments, and forces in space. Prerequisites, 101 and 102. (18 lessons, \$24.00.) Textbooks: Warner, *Applied Descriptive Geometry* (3rd or 4th editions; Corte-Madera, Calif.: McGraw-Hill, 1954); Warner and Douglass, *Applied Descriptive Geometry Problem Book* (5th ed.; Corte-Madera, Calif.: McGraw-Hill, 1959). The student will also need engineering supplies.

ENGLISH

- CN45 Current Reading for Enjoyment (0)** **Edwin Adams**
Reviews and written discussion of new books chosen primarily for the reader's enjoyment. (12 lessons, \$16.00.) Textbooks: References.
- CN50 Fundamentals of English (0)** **Virginia Bothun**
A review of English grammar and basic composition. For those who fail in entrance tests for 101 and for those who wish a general review of English fundamentals for personal enrichment or advancement. The course includes: workbook drill in basic grammar, punctuation, spelling, and mechanics; composition exercises; and vocabulary work through reading assignments. Textbooks: Rorabacher, *A Concise Guide to Composition* (New York: Harper & Brothers, 1956); Emery and Kierzek, *English Fundamentals* (4th ed.; Form A, New York: Macmillan, 1958); Cox and Foote, *Reading Approach to College Writing* (Alternate ed.; San Francisco: Howard Chandler, 1960).
- C101, C102, C103 Composition (3,3,3)** **Elizabeth Cornu (C101, C102), Sylvia Anderson (C103)**
Fundamentals of effective exposition; collecting, organizing, and evaluating materials for writing; reading contemporary writings for meaning and form. Not only is adapted to the needs of any mature student who wishes to learn to express himself clearly, but it also meets the University requirements in freshman English. The courses are arranged in order of progressive difficulty. Adequate preparation for C102 and C103 is based largely on satisfactory performance in the work of the previous course of the sequence or its equivalent. (18 lessons each, \$24.00 each.) Textbooks for C101 and C102: Shaw, *A Complete Course in Freshman English* (5th ed.; New York: Harper and Bros., 1959); Shaw, *Workbook* (New York: Harper and Bros., 1959); *Manual of Freshman English*, University of Washington. Textbooks for C103: Altick, *Preface to Critical Reading* (3rd ed.; New York: Barnes & Noble, 1956); Perrin, *Writer's Guide and Index to English* (Rev. ed.; Palo Alto, Calif.: Scott, Foresman & Co., 1950, 1959); Leonard F. Dean, *Essays* (Rev. ed.; Burlingame, Calif.: Harcourt, Brace & Co., 1955).
- C251 Factual Writing (3)** **Margaret Walters**
A course intended for students who wish practice and guidance in various types of writing; expository articles, book reviews, informational writing. The requirements are flexible to suit the needs of the individual students. Prerequisites, 101, 102, 103, or equivalent. (18 lessons, \$24.00.) Textbook: McShea and Ratigan, *Rendezvous, A Prose Reader* (Englewood Cliffs, N. J.: Charles Scribner's Sons, 1960).
- C252 Factual Writing (3)** **Margaret Walters**
A course intended for students who wish further practice in writing of longer papers: essays, feature articles, opinion or argument. Students may suit the required writing to their own purposes. No textbook is required. Prerequisites, 101, 102, 103, or equivalent. (18 lessons, \$24.00).
- C257 Introduction to Poetry (5)** **Lawrence Zillman**
Poetry as an art; its relationship to other arts and to the creative mind. No verse writing required. The object of this course is to develop an understanding of poetry and, through it, the workings of the imaginative process. The poems studied are accordingly taken from English and American literature of all periods. Such a course entails not only the intelligent reading and interpretation of the poems studied, but also an understanding of the verse forms and the effects of sound and rhythm which characterize these poems. (30 lessons, \$40.00.) Textbook: Walter Blair and W. K. Chandler, *Approaches to Poetry* (2nd ed.; New York: Appleton-Century-Crofts, 1953).
- C258 Introduction to Fiction (5)** **Morton Jacobs**
Critical analysis of narrative poems, short stories, novels, and plays. For majors in literature and drama and others who desire to study the organization of narrative literature. (30 lessons, \$40.00.) Textbooks: James Dow McCallum, *The 1947 College Omnibus* (Burlingame, Calif.: Harcourt Brace & Co.); John Galsworthy, *The Man of Property* (Englewood Cliffs, N. J.: Charles Scribner's Sons, 1949); Douglas Bement and Rose M. Taylor, *The Fabric of Fiction* (Burlingame, Calif.: Harcourt Brace & Co., 1943).
- C261, C262, C263 Verse Writing (5,5,5)** **Lawrence Zillman**
The aim of this course is to aid the student, through criticism and suggestion, to improve the quality and form of his verse writing; and to enable him to become more appreciative of poetry in general because he has worked with the techniques of the art. Prerequisites, 101, 102, 103, or equivalent. (30 lessons each, \$40.00 each.) Textbook: Anne Hamilton, *How to Revise Your Own Poems* (Boston, Mass.: The Writer, Inc., 1945).
- C264a, C264b Literary Backgrounds (2½, 2½)** **Henry Person**
Survey of early English Literature. Content, literary forms, and historical relations of the important English classics from Beowulf and Chaucer to Shakespeare's early plays. Prerequisite for C264b is C264a. (15 lessons each, \$20.00 each.) Textbooks for C264a: Lieder, Lovett and Root, *British Poetry and Prose* (Rev. ed.; Palo Alto, Calif.: Houghton, Mifflin, 1950 or 1938) Part I; Whitelock, *The Beginnings of English Society* (Baltimore: Penguin, 1959); Boris Ford, *The Age of Chaucer* (Baltimore: Penguin, 1959). Textbooks for C264b: Lieder, Lovett and Root, *British Poetry and Prose* (Rev. ed.; Palo Alto, Cal.: Houghton, Mifflin, 1950 or 1938) Part I; Boris Ford, *The Age of Shakespeare* (Baltimore: Penguin, 1960); Shakespeare, *Henry IV, Twelfth Night* (New York: Appleton-Century-Crofts, 1948) Part I.
- C265a, C265b Literary Backgrounds (2½, 2½)** **Henry Person**
Survey of early English Literature. Content, literary forms, and historical relations of the important English classics, especially Shakespeare's later plays, Milton, Dryden, etc. Prerequisites for C265b is C265a. (15 lessons each, \$20.00 each.) Textbooks for C265a: Lieder, Lovett and Root, *British Poetry and Prose* (3rd ed.; Palo Alto, Calif.: Houghton, Mifflin, 1950) Part I; Boris Ford, *Age of Shakespeare* (Baltimore: Penguin, 1960); Bunyan, *Pilgrim's Progress* (New York: Holt, Rinehart and Winston); Shakespeare, *Hamlet* (New York: Appleton-Century-Crofts, 1946); Shakespeare, *Romeo and Juliet*

- (New York: Appleton-Century-Crofts, 1946); Ashley, *England in the 17th Century* (Baltimore: Penguin, 1954). Textbooks for C265b: Lieder, Lovett, and Root, *British Poetry and Prose* (3rd ed.; Palo Alto, Cal.: Houghton, Mifflin, 1950) Part I; Goldsmith, *She Stoops to Conquer* or *The Good-Natured Man* (Palo Alto, Cal.: Houghton, Mifflin, 1936).
- C267 Survey of American Literature (5)** **Donna Gerstenberger**
From the beginnings to 1900, including Edwards, Franklin, Thoreau, Hawthorne, Melville, Twain. Not open for credit to students who have taken or are taking 361, 362, or 363. (30 lessons, \$40.00.)
- C272 Introduction to Modern Literature (2)** **Malcolm Brown**
The modern novel; short stories; nonfiction. Not open for credit to students who have taken or are taking 404, 406, or 466. (12 lessons, \$16.00.) Textbooks: John Hersey, *Hiroshima*, Bantam Books; Robert B. Heilman, *Modern Short Stories* (Burlingame, Cal.: Harcourt, Brace & Co.).
- C277, C278 Narrative Writing (3,3)** **Berenice Thorpe**
Elementary narrative writing for students beginning work in short story. Exercises, sketches, story outlines; also one completed short story in C277 and one in C278 and C279. Prerequisites, 101, 102, 103, or equivalent. (18 lessons each, \$24.00 each.) Textbook: Philip Van Doren Stern (ed.), *The Pocket Book of Modern Short Stories* (New York: Pocketbooks, Inc., 1943). Other paperbacks will be required.
- C362a, C362b American Literature (2½,2½)** **Kermit Vanderbilt**
A survey from 1815 to 1870 with emphasis on Emerson, Thoreau, Hawthorne, Melville, and Whitman. Prerequisite for 362b is 362a. (15 lessons each, \$20.00 each.) Textbooks for C362a: V. L. Parrington, *The Romantic Revolution in America*, Vol. II of *Main Currents in American Thought* (Burlingame, Calif.: Harcourt, Brace & Co., 1954); R. W. Emerson, *The Selected Writings of R. W. Emerson* (New York: Modern Library, 1950); H. D. Thoreau, *Walden and Other Writings* (New York: Modern Library, 1950). Textbooks for C362b: V. L. Parrington, *The Romantic Revolution in America*, Vol. II of *Main Currents in American Thought* (Burlingame, Calif.: Harcourt, Brace & Co., 1954); Nathaniel Hawthorne, *The Scarlet Letter* (New York: Holt, Rinehart, & Winston, 1959); Herman Melville, *Moby Dick* (New York: Modern Library, 1950); Walt Whitman, *Leaves of Grass and Selected Prose* (New York: Modern Library, 1950).
- C367 Seventeenth-Century Literature (5)** **Leota Willis**
A survey with emphasis on Bacon, Donne, Thomas Browne, Dryden, and others. (30 lessons, \$40.00.) Textbooks: Coffin and Witherspoon, *Seventeenth Century Prose and Poetry* (Rev. and enlarged ed.; Burlingame, Calif.: Harcourt, Brace & Co., 1957); Hazelton Spencer, *Elizabethan Plays* or Brooke and Paradise, *English Drama 1580-1642* (San Francisco: D. C. Heath, 1933).
- C368a, C368b Seventeenth-Century Literature (2½,2½)** **Leota Willis**
A study of Milton with particular emphasis on *Paradise Lost*. Prerequisite for 368b is 368a. (15 lessons each, \$20.00 each.) Textbooks: Milton, ed. Merritt Hughes (3 vols.; New York: Odyssey Press, 1935-47); *The Student's Milton*, ed. F. A. Patterson (New York: F. S. Crofts & Co., 1957).
- C370a, C370b Shakespeare (2½,2½)** **Robert Adams**
A sampling of the plays, so arranged as to suggest the essential outlines of Shakespeare's over-all power as an entertaining dramatist, with emphasis given to the broadest kinds of popular appeal. (15 lessons each, \$20.00 each.) Textbook: *Shakespeare, the Complete Works*, ed. G. B. Harrison (Burlingame, Calif.: Harcourt, Brace & Co.).
- C371a, C371b Shakespeare (2½,2½)** **Robert Adams**
A study of some of Shakespeare's more complex and penetrating dramas, comedies, and histories, including at least one of the profound and "universal" tragedies. Shakespeare's comedies and a few history plays, studied especially to show the evolution of his comic vision. (15 lessons each, \$20.00 each.) Textbook: *Shakespeare, The Complete Works*, ed. G. B. Harrison (Burlingame, Cal.: Harcourt, Brace & Co., 1952).
- C374a, C374b Late Nineteenth-Century Literature (2½,2½)** **Sophus K. Winther**
A cross-section of Victorian literature: fiction by Dickens and George Eliot; poems by Arnold, Hallam, and Tennyson; essays and literary criticism by Carlyle and Arnold. Significant attitudes of the age from which our own has evolved. Prerequisite for C374b is C374a. (15 lessons each, \$20.00 each.) Textbook: Stephens, Beck and Snow, *Victorian and Later English Poets* (New York: American Book, 1949). Also references.
- C375a, C375b Late Nineteenth-Century Literature (2½,2½)** **Sophus K. Winther**
Concentrates on the nineteenth century literature which looks forward to the present age. From one great Victorian novelist, Thackeray, develops the evolution of literary naturalism through readings in Darwin and Hardy. Traces shifts in poetry through Browning, Swinburne, Rossetti, and some minor poets. Prerequisite for C375b is C375a. (15 lessons each, \$20.00 each.) Textbook: Stephens, Beck and Snow, *Victorian and Later English Poets* (New York: American Book, 1949). Also references.
- C377a, C377b Early Nineteenth-Century Literature (2½,2½)** **Sophus K. Winther**
The emergence of romanticism in the first generation poets, Wordsworth and Coleridge. Criticism and familiar essays by Lamb and Hazlitt. Shows one of the most important revolutions in English literary history. Prerequisite for C377b is C377a. (15 lessons each, \$20.00 each.) Textbook: Stephens, Beck and Snow, *English Romantic Poets* (New York: American Book, 1952). Also references.
- C378a, C378b Early Nineteenth-Century Literature (2½,2½)** **Sophus K. Winther**
The development of romanticism in the second generation poets—Byron, Keats, Shelley, and others. Prerequisite for C378b is C378a. (15 lessons each, \$20.00 each.) Textbook: Stephens, Beck and Snow, *English Romantic Poets* (New York: American Book, 1952). Also references.

- C388 Current English Usage (3)** **Henry Person**
Observation, analysis, and discussion of present-day English grammar and word-usage, to serve as a background for good English in speaking and writing by helping the student develop an intelligent attitude toward and an understanding of problems of usage and their solution. (18 lessons, \$24.00.) Textbook: Porter G. Perrin, *Writer's Guide and Index to English* (Rev. ed.; Palo Alto, Calif.: Scott, Foresman & Co., 1950).
- C410, C411, C412 Advanced Verse Writing (5,5,5)** **Lawrence Zillman**
Continued work in verse writing at a level commensurate with the skills developed in the earlier courses. Prerequisites, 261, 262, 263. (30 lessons each, \$40.00 each.) Textbook: Anne Hamilton, *How to Revise Your Own Poems* (Boston: The Writer, Inc., 1945).
- C417 History of the English Language (5)** **Henry Person**
A study of the changes the English language has undergone in sounds, lexicon (vocabulary), grammar, and style from its beginnings in Anglo-Saxon times to the present. Emphasis on the development of present English. (30 lessons, \$40.00.) Textbooks: A. C. Baugh, *History of the English Language* (New York: Appleton-Century-Crofts, 1957); Otto Jespersen, *Growth and Structure of the English Language* (New York: Doubleday Anchor paperbound, 1956); and either Albert H. Marckwardt, *American English* (New York: Oxford University Press, 1958); or Thomas Pyles, *Words and Ways of American English* (New York: Random House, 1952).
- C440a, C440b Social Ideas in Literature (2½,2½)** **Robert Adams**
A study of ideas that have shaped social action toward a better life for the entire community or state. Utopias and anti-utopias; readings from Plato's *Republic*, the Bible, and such works as More's *Utopia*, Bacon's *New Atlantis*, Swift's *Gulliver's Travels*, Butler's *Erewhon*, Bellamy's *Looking Backward*, Thoreau's *Walden*, Huxley's *Brave New World*, Orwell's *1984*, etc. (15 lessons each, \$20.00 each.) Textbooks: References.
- 441a, 441b Social Ideas in Literature (2½,2½)** **Robert Adams**
A study of ideas that have shaped social action toward the greater happiness of free men. Readings from such works as Mill's *On Liberty*, Bronte's *Wuthering Heights*, Cozzens' *The Just and the Unjust*, Hemingway's *A Farewell to Arms*, etc. (15 lessons each, \$20.00 each.) Textbooks: References.
- C448 The English Novel (5)** **Malcolm Brown**
Novels by Bronte, Dickens, Thackeray, Trollope, George Eliot. (30 lessons, \$40.00).
- C449 The English Novel (5)** **Malcolm Brown**
Novels by Hardy, Joyce, Conrad, D. H. Lawrence, Huxley. (30 lessons, \$40.00).
- C466a, C466b Modern American Literature (2½,2½)** **Nelson Bentley**
From the beginning of realism to contemporary fiction and poetry. Major novels, poems, short stories, and plays by Stephen Crane, Dreiser, Masters, Sherwood Anderson, Sinclair Lewis, Willa Cather, Wolfe, Frost, Robinson, Edith Wharton, T. S. Eliot, Hemingway, Steinbeck, Eugene O'Neil, Faulkner, and Theodore Roethke. (15 lessons each, \$20.00 each.) Textbooks: References.

FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE

KOREAN

- C405 Korean Grammar (5)** **Doo Soo Suh**
Functional grammar review; written composition. Prerequisite, 304 or permission. (30 lessons, \$40.00.) Textbooks: References.
- C406, C407 Advanced Korean Reading (5,5)** **Doo Soo Suh**
Prerequisite, 405 or permission. (30 lessons each, \$40.00 each.) Textbooks: References.

RUSSIAN

- C100- Russian, Non-Intensive (5-)** **Ivar Spector**
The purpose of this course is to enable the student to obtain a reading knowledge of the Russian language. The emphasis will be placed on grammar and vocabulary. No credit for 100- until -105 is completed. (30 lessons, \$40.00.) Textbook: Ivar Spector, *Elementary Russian* (Portland, Ore.: Abbott, Kerns & Ball Co., 1951); Russian-English Dictionary; English-Russian Dictionary.
- C320 Russian Literature in English (5)** **Ivar Spector**
Introduction to Russian literature from 1782 to the present. Representative prose and poetical works of the foremost Russian and Soviet writers are discussed and analyzed. (30 lessons, \$40.00.) Textbook: Ivar Spector, *The Golden Age of Russian Literature* (Caldwell, Idaho: Caxton, 1952); Also references.

GEOGRAPHY

- C207 Economic Geography (5)** **Violet Ryberg**
World survey of extractive, manufacturing, and distributing activities; emphasis is placed on regional characteristics relating to the availability of resources and markets and the utilization of technological skills. (30 lessons, \$40.00.) Textbooks: Clarence F. Jones and Gordon G. Darkenwald, *Economic Geography* (Rev. ed.; New York: Macmillan, 1954); *Goode's School Atlas* (11th ed.; Chicago: Rand, McNally); two copies World Continents Map—H201HC; Goode's Series.

GEOLOGY

- C101 Survey of Geology (5)** **Howard Coombs**
A survey of the field of geology including both physical and historical branches. Physical geology deals with the formation and identification of rocks and minerals and the study of mountain building and earthquakes. Historical geology is a study of the earth and its life through a succession of events from the beginning to the present. A special set of rocks, minerals, and topographic maps is used for the laboratory instruction. A deposit of \$5.00 is made for these specimens; \$4.00 is refunded at the completion of the course. (30 lessons, \$40.00.) Textbooks: Landes and Hussey, *Geology and Man* (San Francisco: Prentice-Hall, 1948). Laboratory Manual.
- C205 Rocks and Minerals (5)** **Howard Coombs**
An introductory course; emphasis on the materials of the earth's crust. A special set of more than 120 minerals and rocks with mimeographed notes and detailed laboratory instruction sheets enables the student to proceed by the inductive method of reasoning. A deposit of \$15.00 is required at the time the specimens are borrowed; \$13.00 is refunded at the completion of the course. The set of rocks is sent express collect and is to be returned prepaid. Prerequisite, high school chemistry. (30 lessons, \$40.00.) Textbook: Longwell, Knopf, and Flint, *Physical Geology* (3rd ed.; New York: John Wiley & Sons, 1948).

GERMANIC LANGUAGES AND LITERATURE

- C101-C102 First-Year German (5-5)** **Herman Myer (C101-), Carroll Reed (C102)**
For persons who have had no previous instruction in German. Acquisition of a fairly large vocabulary; grammar; practice in reading and writing. Not open to those who have taken 110-111. No credit for C101- until C102 is completed. (30 lessons each, \$40.00 each.) Textbooks for C101-: P. H. Curtis, *Basic German* (3rd ed.; Englewood Cliffs, N. J.: Prentice-Hall, 1952); Peter Hagboldt, *Graded German Readers* (Books I-V, First Series; San Francisco: D. C. Heath, 1957). Textbooks for C102: E. H. Zeydel, *Graded German Reader for Beginners* (2nd ed.; New York: Appleton-Century-Crofts, 1947); P. H. Curtis, *Basic German* (3rd ed.; Englewood Cliffs, N. J.: Prentice-Hall, 1952).
- C103 First-Year Reading (5)** **Carroll Reed**
Continuation of 101-102. Prerequisite, 101-102 or one year of high school German. Not open to those who have taken 112. (30 lessons, \$40.00.) Textbook: Robert O. Röseler and Wayne Wonderley, *Altes und Neues* (Rev. ed.; New York: Holt, Rinehart and Winston, 1960).
- C201 Basic Second-Year Reading (3)** **Herman Meyer**
Vocabulary building, modern prose. Prerequisite, 103 or two years high school German. (30 lessons, \$40.00.) Textbook: D. C. McCluney, *Im Geist der Gegenwart* (New York: Oxford University Press, 1959).
- C202 Intermediate Second-Year Reading (3)** **Herman Meyer**
Prerequisite, 201. (18 lessons, \$24.00.) Textbook: Spann and Goedsche, *Deutsche Denker und Forscher* (New York: Appleton-Century-Crofts, 1954).
- C203 Advanced Second-Year Reading (3)** **Herman Meyer**
Prerequisite, 202. (18 lessons, \$24.00) Textbooks: Ricarda Huch, *Der Fall Deruga* (San Francisco: D. C. Heath, 1961). F. Dürrenmatt, *Der Richter und sein Henker* (Palo Alto: Houghton Mifflin, 1961).
- C210 Second-Year Grammar Review (3)** **Carroll Reed**
Systematic grammar review with a complete, introductory college German text as basis. Prerequisite, 103, or two years of high school German. (18 lessons, \$24.00.) Textbooks: Evans and Roseler, *College German* (4th ed.; New York: Appleton-Century-Crofts, 1939); *Workbook for 4th Edition of College German* (New York: Appleton-Century-Crofts, 1939).
- C260 Lower-Division Scientific German (3)** **Carroll Reed**
Selected readings of German scientific material from the fields of chemistry, physics, and biology. Prerequisite 202. (18 lessons, \$24.00.) Textbook: Harold F. H. Lenz, *Scientific German* (New York: W. W. Norton & Co., 1951).

HISTORY

- C464 History of Washington and the Pacific Northwest (5)** **Robert Burke, Charles Gates**
Exploration and settlement, economic development, growth of government and social institutions, the period of statehood. This satisfies the state requirement for a course in the history of Washington for certification for teaching. (30 lessons, \$40.00.) Textbooks: Johansen and Gates, *Empire of the Columbia: A History of the Pacific Northwest* (New York: Harper, 1957); Charles M. Gates, *Readings in Pacific Northwest History* (Seattle, Wash.: University of Washington Press, 1941); Freeman and Martin, *The Pacific Northwest: A Regional, Human and Economic Survey of Resources and Development* (New York: John Wiley & Sons, 1954).

HUMANISTIC-SOCIAL STUDIES FOR ENGINEERS

- C270 Engineering Report Writing (2)** **John Rustad**
 Practical problems in making a logical, concise, and attractive presentation of technical materials; periodicals and reference works; the requirements of the reader; style; principles of spacing; illustrations; accepted abbreviations, proper bibliographical usages. Prerequisite, 265 or equivalent. For engineering students only. (12 lessons, \$16.00.) Textbooks: Robert L. Shurter, *Effective Letters in Business* (2nd ed.; Corte-Madera, Cal.: McGraw-Hill, 1954); James W. Souther, *Technical Report Writing* (New York: John Wiley & Sons); Robert H. Moore, *Plan Before You Write* (New York: Holt, Rinehart & Winston, 1960).
- C302 Technical Writing (3)** **James Souther**
 Focusing on various types of technical and scientific writing: reports, articles, technical papers, manuals, proposals, books. Prerequisite, 270 or permission. For engineering students only. (18 lessons, \$24.00.) Textbooks: Reginald O. Kapp, *The Presentation of Technical Information* (New York: Macmillan); James W. Souther, *Technical Report Writing* (New York: John Wiley & Sons); Tyler G. Hicks, *Successful Technical Writing* (Corte-Madera, Calif.: McGraw-Hill).

LIBERAL ARTS

- C101 Introduction to Modern Thought (5)** **William Lutey**
 Man's place in the universe; cosmic origin; origin and nature of life; mind and behavior values. (30 lessons, \$40.00.) Textbooks: James, *The Universe Around Us* (4th ed.; New York: Cambridge University Press, 1960), paperback; Dampier, *A History of Science* (4th ed.; New York: Cambridge University Press, 1961).
- C111 Introduction to the Study of the Fine Arts (5)** **William Lutey**
 The appreciation of masterpieces of architecture, painting, sculpture, and music; the problems common to them; the philosophy of art; the relationships of beauty and truth and morality. (30 lessons, \$40.00.) Textbooks: Beam, *The Language of Art* (New York: The Ronald Press, 1958.); Parker, *Principles of Aesthetics* (2nd ed.; New York: F. S. Crofts & Co., 1946).

MATHEMATICS

- C101 Intermediate Algebra (5)** **Helen Zuckerman**
 Similar to third-term high school algebra. Not open for credit to students who have taken one and one-half years of algebra in high school. Prerequisite, one year of high school algebra. (30 lessons, \$40.00.) Textbook: Lyman M. Kells, *Intermediate Algebra* (Englewood Cliffs, N. J.: Prentice-Hall, 1959).
- C104 Plane Trigonometry (3)** **Helen Zuckerman**
 Trigonometric functions, identities, graphs, logarithms, and solution of triangles. Prerequisites, one and one-half years of algebra or 101, and one year of plane geometry. (18 lessons, \$24.00.) Textbook: Cecil T. Holmes, *Trigonometry* (with tables) (Corte-Madera, Calif.: McGraw-Hill, 1951).
- C105 College Algebra (5)** **Helen Zuckerman**
 Functions and graphs; linear and quadratic equations; progressions; complex numbers; theory of equations; determinants. Prerequisite, one and one-half years of algebra or 101 or 103. (30 lessons, \$40.00.) Textbook: Rosenbach and Whitman, *College Algebra* (4th ed.; Palo Alto, Calif.: Ginn & Co., 1958).
- C124 Calculus with Analytic Geometry (5)** **Helen Zuckerman**
 Graphs and simple functions, differentiation of algebraic functions, extremals and other applications, integration. Prerequisites, 104 (or 103) and 105. (30 lessons, \$40.00.) Textbook: A. E. Taylor, *Calculus With Analytic Geometry* (Englewood Cliffs, N. J.: Prentice-Hall, 1959).
- C125 Calculus with Analytic Geometry (5)** **Helen Zuckerman**
 Applications of the definite integral, transcendental functions, methods of integration, plane analytic geometry. Prerequisite, 124. (30 lessons, \$40.00.) Textbook: A. E. Taylor, *Calculus With Analytic Geometry* (Englewood Cliffs, N. J.: Prentice-Hall, 1959).
- C126 Calculus with Analytic Geometry (5)** **Helen Zuckerman**
 Polar coordinates, vectors and parametric equations in plane and solid geometry, partial differentiation, multiple integration, simple differential equations. Prerequisite, 125 or 251. (30 lessons, \$40.00.) Textbook: A. E. Taylor, *Calculus With Analytic Geometry* (Englewood Cliffs, N. J.: Prentice-Hall, 1959).
- C221 Elements of Differential Equations (3)** **Helen Zuckerman**
 Elementary methods of solution, linear differential equations of second order, linear differential equations with constant coefficients. Prerequisite, 126. (18 lessons, \$24.00.) Textbook: Ford, *Differential Equations* (2nd ed.; Corte-Madera, Cal.: McGraw-Hill, 1955).
- C224, C225 Intermediate Analysis (3,3)** **Helen Zuckerman**
 Real numbers, induction, functions, sequences, limits, continuity, infinite series, power series. Taylor series, series of functions, Rolle's theorem, mean value theorem, inverse functions, l'Hospital's rule, fundamental theorem of calculus, improper integrals. Prerequisites, 126 for 224; 224 for 225. (18 lessons each, \$24.00 each.) Textbook: Olmsted, *Intermediate Analysis* (New York: Appleton-Century-Crofts, 1956).

- C322 Principles of Differential Equations (3)** **Helen Zuckerman**
General linear differential equations, linear systems, solution by series, numerical methods, existence of solutions. Prerequisite, 221. (18 lessons, \$24.00.) Textbook: Ford, *Differential Equations* (2nd ed.; Corte-Madera, Calif.: McGraw-Hill, 1955).

MUSIC

- C117 Music: Nineteenth Century (2)** **Vilem Sokol**
Presentation of important symphonic works in all major orchestral forms, including the music of Franck, Brahms, Beethoven, and Tchaikovsky. The building of a vocabulary to help in the intelligent evaluation and discussion of symphonic music. Acquaintance with orchestras, conductors, and artists through the medium of recordings. (12 lessons, \$16.00.) Textbook: Aaron Copland, *What to Listen for in Music* (Corte-Madera, Calif.: McGraw-Hill, 1957).

POLITICAL SCIENCE

No more than 10 credits may be used to satisfy departmental major requirements.

- C201 Modern Government (5)** **Alex Gottfried**
The nature and function of political institutions in the major national systems; democracy and dictatorship; introductory comparative politics of the United States, Great Britain, France, and the Soviet Union. (30 lessons, \$40.00.)
- C202 American Government and Politics (5)** **Alex Gottfried**
Popular government in the United States; the theory and practice of national institutions. A standard introduction to American government. Ordinarily a prerequisite for upper-division courses in political science. Emphasis on the constitutional basis of our political institutions and the how and why the chief of these institutions operate: Congress, the Supreme Court, the Presidency, Civil Liberties, Foreign Policy, and National Security. (30 lessons, \$40.00.) Textbooks: Carr, Morrison, Bernstein and Snyder, *American Democracy in Theory and Practice* (New York: Holt, Rinehart & Winston, 1955); Christensen and Kirkpatrick, *The People, Politics and the Politician* (Rev. Brief ed.; San Francisco: Henry Holt & Co., 1953).
- C203 International Relations (5)** **Dell Hitchner**
An analysis of the world community, its politics and government. (30 lessons, \$40.00.) Textbooks: H. J. Morgenthau, *Politics Among Nations: The Struggle for Power and Peace* (2nd ed.; New York: Knopf, 1954); Norman Hill, *International Relations: Documents and Readings* (New York: Oxford University Press, 1950).
- C321 American Foreign Policy (3)** **Charles Martin**
Major policies as modified by recent developments; international cooperation. (18 lessons, \$24.00.) Textbook: Hollis W. Barber, *Foreign Policies of the U. S.* (San Francisco: Henry Holt & Co., 1953).
- C336 National Power and International Politics (5)** **Charles Martin**
Geographical, economic, and political foundations of the major powers as factors in international relations of the world. (30 lessons, \$40.00.) Textbook: A. F. K. Organiski, *World Politics* (New York: Alfred A. Knopf, 1960).
- C360 The American Constitutional System (3)** **Charles Martin**
Fundamental principles; function; evolution, unwritten constitution; recent tendencies. The framing of the American Constitution; the Constitution of the state of Washington. (18 lessons, \$24.00.) Textbooks: John M. Mathews, *The American Constitutional System* (2nd ed.; New York: Barnes & Noble); Robert E. Cushman, *Leading Constitutional Decisions* (9th ed.; New York: F. S. Crofts & Co.).
- C370 Government and the American Economy (5)** **Alex Gottfried**
Government regulation, promotion, and services affecting general business, public utilities, agriculture, banking, investments, and social welfare. Analysis of organizations representing business, agriculture, and labor. Who gets what, when, how and why in our domestic politics. (30 lessons \$40.00.) Textbooks: Marshall E. Dimock, *Business and Government* (3rd ed.; San Francisco: Henry Holt & Co., 1957); supp. texts: F. A. Hayek, *The Road to Serfdom* (Chicago: University of Chicago Press, 1949); Herman Finer, *The Road to Reaction* (Chicago: University of Chicago Press, 1945).
- C375 Problems of Municipal Government and Administration (5)** **Donald Webster**
Municipal powers; structure; charters; relations with the state and other local units; municipal functions and services, with reference to municipalities in the state of Washington. (30 lessons, \$40.00.) Textbooks: Arthur W. Bromage, *Introduction to Municipal Government and Administration* (New York: Appleton-Century-Crofts, 1956); Charles M. Kneier, *City Government in the United States* (New York: Harper and Bros., 1957).
- C376 State and Local Government and Administration (5)** **Donald Webster**
Structure; functions; procedures; suggested reorganization; with special reference to the state of Washington and its units of local government. (30 lessons, \$40.00.) Textbooks: Austin F. MacDonald, *American State Government and Administration* (5th ed.; New York: Crowell Co., 1955); Oliver P. Field, Sikes and Stoner (Bates and Fields), *State Government* (3rd ed.; New York: Harper and Bros., 1949).

C450 Political Parties and Elections (5)**Hugh Bone**

Growth, nature, and future of party government in the U.S. Nominations, campaigns, and elections; money in politics, voting behavior, public opinion, and the press. (30 lessons, \$40.00.) Textbook: Hugh Bone, *American Politics and the Party System* (Corte-Madera, Calif.: McGraw-Hill, 1955).

PSYCHOLOGY**C100 General Psychology (5)****Benjamin McKeever**

An introduction to the principles of human behavior. (30 lessons, \$40.00.) Textbooks: Ruch, *Psychology and Life* (5th ed.; Chicago, Ill.: Scott, Forsman, 1958); Daniel, *Contemporary Readings in General Psychology* (Palo Alto, Calif.: Houghton, Mifflin, 1959).

C101 Psychology of Adjustment (5)**Irwin Sarason**

Applications of psychological principles to the problems of everyday life. Prerequisite, 100. (30 lessons, \$40.00.) Textbooks: H. C. Lindgren, *Psychology of Personal and Social Adjustment* (New York: American Book Co., 1953); Dollard and Miller, *Personality and Psychotherapy; an Analysis in Terms of Learning, Thinking, and Culture* (Corte-Madera, Calif.: McGraw-Hill, 1950); Arthur Miller, *Death of a Salesman* (New York: The Viking Press, 1950).

C301 Statistical Methods (5)**Louise Heathers**

Application of statistical methods of 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. Prerequisites, 100 and Mathematics 101. (30 lessons, \$40.00.) Textbooks: O. L. Lacey, *Statistical Methods in Experimentation* (New York: Macmillan Co., 1953); A. L. Edwards, *Statistical Methods for the Behavioral Sciences* (New York: Holt, Rinehart, and Winston, 1954).

C306 Developmental Psychology (5)**Donald Baer, Sidney Bijou**

Theory and research in the psychological development of the child and the conditions pertinent to development from infancy to adolescence. For nonmajors only. Not open to students who have taken 308. Prerequisite, 100. (30 lessons, \$40.00.) Textbooks: P. H. Mussen and J. J. Conger, *Child Development and Personality* (New York: Harper and Bros., 1956); S. W. Bijou, and D. M. Baer, *Child Development: A Systematic and Empirical Theory* (New York: Appleton-Century-Crofts, 1961).

ROMANCE LANGUAGES AND LITERATURE**FRENCH****C101-C102, C103 Elementary (5,5,5)****Lurline V. Simpson**

The essentials of French grammar. No credit is granted for 101- until -102 (or a more advanced course, as approved by the Department) has been completed satisfactorily. Prerequisites for -102: 101- or one high school semester, or equivalent; for 103: A, B or C in -102; A or B in second high school semester, or any passing grade in the third high school semester. (30 lessons each, \$40.00 each.) Recordings are available to provide models for oral practice; their use is optional. Those interested may order *Records for Basic French*, directly from Ginn and Company, 2550 Hanover St., Palo Alto, California. Textbook for C101-: Dickman, *Basic French* (Palo Alto, California: Ginn and Co., 1956); textbooks for -C102: Dickman, *Basic French* (Palo Alto, California: Ginn and Co., 1956); Croteau and Selvi, *Belles Lectures Françaises* (New York: American Book Co.); textbooks for C103: Jean L'Hôte, *La Communale* (New York: Appleton-Century-Crofts); Grubbs and Lapp, *French Reviewed for Colleges* (Palo Alto, California: Houghton, Mifflin, 1956).

C201, C202 Intermediate (5,5)**Lurline V. Simpson**

Intensive practice in reading and writing. Systematic review of French grammar. Prerequisite for 201: 103 or two years of high school French; for 202: 201 or equivalent. (30 lessons each, \$40.00 each.) Basic textbook for C201, C202: Harris and Lévêque, *Intermediate Conversational French* (New York: Holt, Rinehart, and Winston); additional textbook for C201: Carlut and Brée, *France De Nos Jours* (New York: Macmillan, 1957); additional textbooks for C202: Anatole France, *Le Crime de Sylvestre Bonnard* (San Francisco: D. C. Heath and Co.); Molière, *Le Bourgeois Gentilhomme* (Boston: D. C. Heath and Co., 1947).

C301 French Stylistics (3)**Lurline V. Simpson**

Functional grammar review; reading and written composition with special attention to problems of style. Prerequisite, 202 or three years of high school French or equivalent. (18 lessons, \$24.00.) Textbook: Coindreau and Lowe, *Alternative French Composition* (San Francisco: Henry Holt and Co., 1936).

C304, C305, C306 Survey of French Literature (5,5,5)**Lurline V. Simpson**

Masterpieces from early times to the present. C304: 1100-1680—Middle Ages through the Classical Period. C305: 1680-1800—The Age of Enlightenment and Pre-romanticism. C306: 1800-1960—Romanticism, realism, naturalism, symbolism, and twentieth-century literature. Prerequisite, 202 or equivalent. (30 lessons each, \$40.00 each.) Textbooks for C304: Steinhauer and Walter, *Omnibus of French Literature* (New York: Macmillan, 1941), Vol. I. Also any history of French literature; textbooks for C305: Steinhauer and Walter, *Omnibus of French Literature* (New York: Macmillan, 1941), Vol. II; Duhamel, *Le Notaire du Havre* (San Francisco: Henry Holt, 1954); Camus, *L'Étranger* (New York: Appleton-Century-Crofts, 1955) or *La Peste* (Macmillan); textbooks for C306: selected twentieth-century texts.

- C390 Supervised Study (2-5, maximum 20)**
 Omnibus. Ordinarily noncredit, but credits may be arranged after consultation with the Division of Correspondence Study. Package assignments for reading in French on topics of individual interest; for example, science.
- C426 Fiction: 1900-1950 (3)** **Lurline V. Simpson**
 Novelists of the twentieth century, including Proust, Sartre, Camus. Study and critical analysis of representative twentieth-century fiction. Prerequisite, 202 or equivalent. (18 lessons, \$24.00.) Textbooks for C426: Gide, *Les Faux-Monnayeurs* (New York: Macmillan); Proust, *Un Amour de Schwann* (New York: Macmillan, 1919); Duhamel, *Le Notaire du Havre* (San Francisco: Henry Holt and Co., 1954); Sartre, *La Nausée* (Paris: Gallimard, 1936); Camus, *L'Étranger* (New York: Appleton-Century-Crofts, 1955); Simone de Beauvoir, *Les Mandarins* (Paris: Gallimard, 1954); Cesbron, *Les Saints Vont En Enfer* and *Le Cercle du Livre de France* (New York: Robert Lafont, 1952) or any other comparable texts.
- C464 Twentieth-Century Drama (3)** **Lurline V. Simpson**
 Modern drama. Study and critical analysis of representative plays of the twentieth century, including Satre, Camus, Aymé, and others. Prerequisite, 202 or equivalent. (18 lessons, \$24.00.) Textbooks for C464: Pucciani, *The French Theater Since 1930* (Palo Alto, California: Ginn and Co., 1954); Sartre, *Les Jeux Son Faits* (New York: Appleton-Century-Crofts, 1952); Camus, *Les Justes* (Paris: Gallimard, 1949); Aymé *La Tête des Autres*; Grant, *Four French Plays of the 20th Century* (New York: Harper and Brothers, 1949).

ITALIAN

- C101-C102, C103 Elementary (5-5,5)** **Margherita Cottino-Jones**
 Basic study of Italian grammar and idiomatic usages of the language. No credit is given for 101- until -102 has been completed. (30 lessons each, \$40.00 each.) Textbook: Joseph Palmeri and Karl Bottke, *Practical Italian* (New York: Vannie Publ.).
- C212, C213, C214 Readings in Modern Italian Literature (3,3,3)** **Margherita Cottino-Jones**
 The course provides a general background of the historical, social, and literary conditions of Italy up to the present times. It aims to improve written understanding of the language and oral practice. Prerequisite, 103 or permission. (18 lessons, \$24.00.) Textbook: Charles Speroni and Carlo L. Golino, *Panorama Italiano* (New York: Holt, Rinehart and Winston).
- C421, C422, C423 Survey of Italian Literature (3,3,3)** **Margherita Cottino-Jones**
 Reading and discussion of selected literary works representative of each century; composition. (18 lessons each, \$24.00 each.) Textbooks: Luigi Russo, *I classici italiani*, Firenze, Sansoni, Vol. I, parts 1 and 2. Complete editions of: Dante, *La Vita Nuova*; Dante, *La Divina Commedia*; Petrarca, *Il Canzoniere*; Boccaccio, *Il Decamerone*.

PORTUGUESE

- C101-C102, C103 Elementary (5-5,5)** **Clotilde Wilson**
 Grammar and reading. Stress will be laid upon grammar, accurate translation, and composition. No credit for 101- until -102 is completed. (30 lessons each, \$40.00 each.) Textbook: Sa Pereira, *Brazilian Portuguese Grammar*, (Boston: D. C. Heath and Co., 1948).

SPANISH

- C101- First-Year Speaking Spanish (5-)** **Anibal Vargas-Baron**
 Recommended for prospective majors and those who wish to work toward a speaking knowledge of the language. As a substitute for the practice in the language laboratory required of our students enrolled on the campus, the student studying by correspondence is strongly advised to buy the set of records made especially for the text. Text: Armitage and Meiden, *Beginning Spanish* (Palo Alto, Calif.: Houghton Mifflin Company). Three records (33 1/4 r.p.m., vinylite), may be purchased for \$18.00 from Houghton Mifflin Company, 777 California Avenue, Palo Alto, California. (30 lessons, \$40.00.)
- C102 First-Year Speaking Spanish (-5)** **Anibal Vargas-Baron**
 Recommended for prospective majors and those who wish to work toward a speaking knowledge of the language. As a substitute for the practice in the language laboratory required of our students enrolled on the campus, the student studying by correspondence is strongly advised to buy the set of records made especially for the text. Prerequisite, 101- or equivalent. Text: Armitage and Meiden, *Beginning Spanish* (Palo Alto, Calif.: Houghton Mifflin Company). Three records (33 1/4 r.p.m., vinylite) may be purchased for \$18.00 from Houghton Mifflin Company, 777 California Avenue, Palo Alto, California. (30 lessons, \$40.00.)
- C103 First-Year Speaking Spanish (5)** **William Wilson**
 Recommended for prospective majors and those who wish to work toward a speaking knowledge of the language. As a substitute for the practice in the language laboratory required of our students enrolled on the campus, the student studying by correspondence is strongly advised to buy the set of records made especially for the text. Prerequisite, a grade of A, B, C in -102, or A or B in the second high school semester, or any passing grade in the third high school semester. See 121-. Text: Armitage and Meiden, *Beginning Spanish* (Palo Alto, Calif.: Houghton Mifflin Company). Three records (33 1/4 r.p.m., vinylite) may be purchased for \$18.00 from Houghton Mifflin Company, 777 California Avenue, Palo Alto, California. (30 lessons, \$40.00.)

- C121- Basic Grammar Review (5-)** **William Wilson**
 Refresher course; should be taken instead of 103 by students who have received a grade of D in -102 or C or D in the second high school semester. No student may receive credit for both 103 and 121-; nor will credit be granted for 121- until 201 or equivalent has been completed. (30 lessons, \$40.00.) Textbook: Grismer and Arjona, *Short Spanish Review Grammar* (New York: Harper and Bros., 1943).
- C201, C202, C203 Intermediate (3,3,3)** **William Wilson**
 Modern texts, composition, and functional grammar. Prerequisite, 103 or 121- or four high school semesters or equivalent for 201. (18 lessons each, \$24.00 each.) Textbooks: Garcia, *Nuevas Lecturas* (Boston: D. C. Heath and Co., 1952); Turk, *Spanish Review Grammar and Composition* (Boston: D. C. Heath and Co., 1943).
- C210, C211 Elementary Spanish Conversation (2,2)** **William Wilson**
 Exercises on phonograph records or tape recordings will be used. Prerequisites, 103 or 121-, or equivalent for 210; 210 or permission for 211. (12 lessons each, \$16.00 each.) Textbook: Garcia-Prada and Wilson, *Entendamonos* (Palo Alto, Calif.: Houghton Mifflin Company, 1948).
- C212 Modern Readings (2)** **Anibal Vargas-Baron**
 Reading for the acquisition of an extensive vocabulary. Prerequisite, 203 or equivalent. (12 lessons, \$16.00.) Textbook: Robert R. Ashburn, *Selected Spanish Short Stories* (New York: Thomas Y. Crowell Co., 1943).
- C301, C302, C303 Advanced Composition and Conversation (3,3,3)**
William Wilson (C301, C302), Anibal Vargas-Baron (C303)
 Prerequisite, 203 or equivalent. (18 lessons each, \$24.00 each.) Textbook for C301 and C302: Foster, *Spanish Composition, Based on Modern Spanish Texts* (New York: W. W. Norton and Co., 1939). No textbook for C303.
- C462, C463 Spanish Literature of the Golden Era (3,3)** **William Wilson**
 C462: drama of the Golden Era; C463: prose fiction of the Golden Era. Prerequisite, 203 or permission. (18 lessons each, \$24.00 each.) Textbook for C462: Hill and Harlan, *Cuatro Comedias* (New York: W. W. Norton and Co., 1941); textbooks for C463: *La Vida de Lazarillo de Tormes*, Classics Castellanos (New York: Roig Publishing Co., 1959), Vol. 25; Cervantes, *Don Quijote de la Mancha*, Biblioteca Mundial Sopena (2 vols.; New York: Roig Publishing Co., 1954).
- C481, C482, C483 Spanish-American Literature (3,3,3)** **Anibal Vargas-Baron**
 General survey of the literature of Spanish America. C481: the colonial period and early years of independence; C482: the middle years of the nineteenth century; C483: the twentieth century. Prerequisite, 203 or equivalent. (18 lessons each, \$24.00 each.) Textbooks: Hespelt and others, *An Anthology of Spanish-American Literature* (New York: Appleton-Century-Crofts, 1946); Hespelt and others, *An Outline History of Spanish-American Literature* (New York: Appleton-Century-Crofts, 1942).

SCANDINAVIAN LANGUAGES AND LITERATURE

DANISH

- C101-C102, C103 Elementary Danish (3-3,3)** **Inga Wolfsberg**
 The fundamentals of oral and written Danish. Courses 101-102, 103 may be taken with 104-105, 106 to make 5-credit courses. No credit for 101- until -102 is completed. (18 lessons each, \$24.00 each.) Textbooks: Ingeborg Steman, *Danish: A Practical Reader* (Copenhagen: H. Hagerup Publishing Co., 1953); Ingeborg Steman, *Danish-English Vocabulary* (Copenhagen: H. Hagerup Publishing Co., 1953).
- C104-C105, C106 Danish Reading (2-2,2)** **Inga Wolfsberg**
 Reading of easy texts. A student who registers for this course need not have any knowledge of Danish. No credit for 104- until -105 is completed. Should accompany 101-102, 103. (12 lessons each, \$16.00 each.) Textbook for C104- and -C105: H. C. Andersen, *Eventyr og Historier* (Copenhagen: Glydendal Forlag, 1953); textbook for C106: H. C. Branner, *Rytteren (The Horseman)* (Copenhagen: Egnar Munksgaard Forlag).
- C220, C221, C222 Introduction to Danish Literature (2,2,2)** **Inga Wolfsberg**
 An introduction to modern drama and prose fiction. Prerequisite, -102 or ability to read easy Danish. (12 lessons each, \$16.00 each.) Textbook: Any collection of Hans Christian Andersen Fairy Tales.

NORWEGIAN

- C101-C102, C103 Elementary Norwegian (3-3,3)** **Sverre Arestad**
 The fundamentals of oral and written Norwegian. Courses 101-102, 103 may be taken with 104-105, 106 to make 5-credit courses. No credit for 101- until -102 is completed. (18 lessons each, \$24.00 each.) Textbook for C101- and -C102: Einar I. Haugen, *Beginning Norwegian* (3rd ed.; New York: Appleton-Century-Crofts); textbook for C103: Einar I. Haugen, *Reading Norwegian* (New York: Appleton-Century-Crofts, 1940).
- C104-C105, C106 Norwegian Reading (2-2,2)** **Sverre Arestad**
 Reading of easy texts. A student need not have any previous knowledge of Norwegian. No credit for 104- until 105 completed. Should accompany 101-102, 103. (12 lessons each, \$16.00 each.) Textbook for C104: Same as for -C103; textbook for C105 and C106: Bernard Stokke, *Fedrelandet og Andre Land* (Oslo: J. W. Cappelens Forlag).

- C220, C221, C222 Introduction to Norwegian Literature (2,2,2)** **Sverre Arestad**
 An introduction to modern drama and prose fiction. Prerequisite, 103 or ability to read easy Norwegian. (12 lessons each, \$16.00 each.) Textbook for C220: *En Glad Gut*, ed. Vowles (Minneapolis: Messenger Book Co., 1927); textbook for C221: *Synnove Solbakken*, ed. Flom (Minneapolis: Free Church Book Concern); textbook for C222: *Et Dukkehjem*, ed. Marie Schnieders (Oslo: Norsk Forlag).

SWEDISH

- C101-C102, C103 Elementary Swedish (3-3,3)** **Walter Johnson**
 The fundamentals of oral and written Swedish; grammar and reading. Courses 101-102, 103 may be taken with 104-105, 106 to make 5-credit courses. No credit for 101- until -102 is completed. (18 lessons each, \$24.00 each.) Textbook: W. G. Johnson, *Beginning Swedish* (Rev. ed.; Rock Island, Ill.: Augustana Book Concern).
- C104-C105, C106 Swedish Reading (2-2,2)** **Walter Johnson**
 Reading of easy texts. A student who registers for this course should also be enrolled in 101-102, 103. No credit for -104 until -105 is completed. (12 lessons each, \$16.00 each.) Textbook: Geijerstam, *Mina Pojkar*, ed. Arthur Wald (Rock Island, Ill.: Augustana Book Concern, 1954).
- C220 Introduction to Swedish Literature (2)** **Walter Johnson**
Gustaf Fröding and His Poetry
 An introduction to Fröding's lyric and narrative poetry from "Våran prost" to "Levnadsfarden." (12 lessons, \$16.00.) Textbook: Mimeographed text with word lists included with lessons.
- C221 Introduction to Swedish Literature (2)** **Walter Johnson**
Hjalmer Söderberg and His Short Stories
 The reading, translating, and analysis of Söderberg's famous "historietter" from "Tuschrutningen" to "Duggregnet." (12 lessons, \$16.00.) Textbook: Mimeographed text with word lists included with lessons.
- C222 Introduction to Swedish Literature (2)** **Walter Johnson**
The Modern Swedish Short Story
 The study of outstanding stories by twentieth-century writers. (12 lessons, \$16.00.) Textbook: Söderbäck's *Swedish Reader* (Rock Island, Ill.: Augustana Book Concern).

SOCIOLOGY

- C110 Survey of Sociology (5)** **Joseph Cohen**
 A general survey, at an introductory level, of the whole field of sociology. The course emphasizes the scientific approach to questions pertaining to social interrelationships. Population and communities, behavior systems, communication, and group behavior, social institutions, and social change are the principal topics studied. (30 lessons, \$40.00.) Textbook: Lundberg, Schrag, and Larsen, *Sociology* (Palo Alto, Calif.: Houghton Mifflin, 1958).
- C310 General Sociology (5)** **Joseph Cohen**
 Major concepts of sociology and the scientific point of view in dealing with social phenomena. An introduction to the whole field of sociology. (Juniors and seniors are advised to take this course in place of 110. Credit cannot be received for both 110 and 310.) (30 lessons, \$40.00.) Textbook: Lundberg, Schrag, and Larsen, *Sociology* (Palo Alto, Calif.: Houghton Mifflin, 1958).
- C352 The Family (5)** **Joseph Cohen**
 The family as a social institution; personality development within the family; marriage adjustment; courtship and mate selection; family disorganization and reorganization. Prerequisite, 110 or 310. (30 lessons, \$40.00.) Textbook: E. W. Burgess and H. J. Locke, *The Family* (New York: American Book Co., 1960); readings: Marvin Sussman, *Selected Readings in Marriage and the Family*.
- C362 Race Relations (5)** **Frank Miyamoto**
 The study of the effect of racial and ethnic differences in structuring relations in society. Attention is given to (1) how the differentiation arises through power relations, ethnocentrism, and prejudice; (2) the resulting institutions which emerge in the minority and larger community; and (3) the resulting processes of conflict and integration. Textbook: George E. Simpson and J. Milton Yinger, *Racial and Cultural Minorities* (Rev. ed.; New York: Harper and Bros., 1958); readings: Milton L. Barron, *American Minorities* (New York: Alfred Knopf, 1957).

ZOOLOGY

- C114 Evolution (2)** **Melville Hatch**
 Introductory course treating with evolutionary biology and the more important biological problems connect with the theory of evolution. (12 lessons, \$16.00.) Textbook: Nathan Fasten, *Origin Through Evolution* (New York: Alfred Knopf, 1929.)

PREPARATORY CORRESPONDENCE STUDY COURSES

Several courses are offered by Correspondence Study for adult students who have not completed high school. They do not carry University credit but may be used to qualify the student for entrance to the University. The credits are stated in terms of high school units. In addition to courses listed, elementary language courses may also be used in qualifying for admission.

- CA Survey of Elementary Algebra (1/2 unit)** **Helen Zuckerman**
Similar to the first term of high school algebra. (18 lessons, \$24.00.) Textbook: Hawkes, Luby and Touton, *First Year Algebra* (Palo Alto, Calif.: Ginn & Co., 1951 or 1956).
- CB Survey of Elementary Algebra (1/2 unit)** **Helen Zuckerman**
Similar to the second term of high school algebra. Prerequisite, Survey of Elementary Algebra A. (18 lessons, \$24.00.) Textbook: Same as for CA.
- CC Survey of Plane Geometry (1/2 unit)** **Helen Zuckerman**
Similar to the first term of high school plane geometry. Prerequisite, one year of high school algebra. (18 lessons, \$24.00.) Textbook: Welchons and Krickenberg, *New Plane Geometry* (Palo Alto, Calif.: Ginn & Co., 1952 or 1956).
- CD Survey of Plane Geometry (1/2 unit)** **Helen Zuckerman**
Similar to the second term of high school geometry. Prerequisite, Survey of Plane Geometry C. (18 lessons, \$24.00.) Textbook: Same as for CC.

DENTISTRY**1962-1964**

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes three general bulletins; bulletins of the colleges and schools; Summer Quarter Bulletin; the bulletin of the Center for Graduate Study at Hanford; and bulletins of the Division of Correspondence Study and the Division of Evening Classes.

INTRODUCTION TO THE UNIVERSITY, one of the general bulletins, is especially prepared for new and prospective students. It lists all the University curricula, with their admission requirements, and presents information on other phases of student life, including services for students, student activities, and expenses. UNIVERSITY RULES AND REGULATIONS, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as registered students. HANDBOOK OF SCHOLARSHIPS, the third general bulletin, lists the various scholarships available.

Curricula, courses, and scholarship requirements in each field of study are described in the college and school bulletins. Each of these bulletins also discusses services, organizations, and expenses as they relate to students in the particular college or school.

Requests for copies of any of the bulletins should be addressed to the Addressograph service.

General Bulletins

HANDBOOK OF SCHOLARSHIPS (RESTRICTED DISTRIBUTION)
INTRODUCTION TO THE UNIVERSITY
UNIVERSITY RULES AND REGULATIONS (FOR REGISTERED STUDENTS ONLY)

Bulletins of the Colleges and Schools

COLLEGE OF ARCHITECTURE AND URBAN PLANNING
COLLEGE OF ARTS AND SCIENCES
COLLEGE OF BUSINESS ADMINISTRATION
SCHOOL OF DENTISTRY
COLLEGE OF EDUCATION
COLLEGE OF ENGINEERING
COLLEGE OF FISHERIES
COLLEGE OF FORESTRY
GRADUATE SCHOOL
SCHOOL OF LAW
SCHOOL OF MEDICINE
SCHOOL OF NURSING
COLLEGE OF PHARMACY
SCHOOL OF SOCIAL WORK

Other Bulletins

SUMMER QUARTER
CENTER FOR GRADUATE STUDY AT HANFORD
CORRESPONDENCE STUDY
EVENING CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON

General Series No. 982
June, 1962

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CALENDAR

All fees must be paid at the time of registration.

AUTUMN QUARTER, 1962

SEPT. 17—MONDAY	Orientation instruction begins, Third Year Students (8 a.m.)
SEPT. 24—MONDAY	Registration and orientation instruction begins, First Year Students (8 a.m.)
OCT. 1—MONDAY	Classroom instruction begins, All Four Classes (8 a.m.)
NOV. 12—MONDAY	State Admission Day holiday
NOV. 21-26	Thanksgiving recess (5 p.m.-8 a.m.)
DEC. 17-20	Examinations
DEC. 20—THURSDAY	Quarter ends

WINTER QUARTER, 1963

JAN. 7—MONDAY	Instruction begins, All Four Classes (8 a.m.)
FEB. 22—FRIDAY	Washington's Birthday and Founder's Day holiday
MAR. 18-21	Examinations
MAR. 21—THURSDAY	Quarter ends

SPRING QUARTER, 1963

APRIL 1—MONDAY	Instruction begins, All Four Classes (8 a.m.)
MAY 30—THURSDAY	Memorial Day holiday
JUNE 10-13	Examinations
JUNE 13—THURSDAY	Quarter ends
JUNE 15—SATURDAY	Commencement

SUMMER QUARTER, 1963 — For Graduate Students

JUNE 24—MONDAY	Instruction begins
AUG. 23—FRIDAY	Instruction ends

AUTUMN QUARTER, 1963

SEPT. 16—MONDAY	Orientation instruction begins, Third Year Students (8 a.m.)
SEPT. 23—MONDAY	Registration and orientation instruction begins, First Year Students (8 a.m.)
SEPT. 30—MONDAY	Classroom instruction begins, All Four Classes (8 a.m.)
NOV. 11—MONDAY	State Admission Day holiday
NOV. 27-DEC. 2	Thanksgiving recess (5 p.m.-8 a.m.)
DEC. 11-17	Examinations
DEC. 17—TUESDAY	Quarter ends

WINTER QUARTER, 1964

JAN. 6—MONDAY	Instruction begins, All Four Classes (8 a.m.)
FEB. 22—SATURDAY	Washington's Birthday and Founder's Day holiday
MAR. 16-19	Examinations
MAR. 19—THURSDAY	Quarter ends

SPRING QUARTER, 1964

MAR. 30—MONDAY	Instruction begins, All Four Classes (8 a.m.)
MAY 30—SATURDAY	Memorial Day holiday
JUNE 8-11	Examinations
JUNE 11—THURSDAY	Quarter ends
JUNE 13—SATURDAY	Commencement

SUMMER QUARTER, 1964

JUNE 22—MONDAY	Instruction begins
AUG. 21—THURSDAY	Instruction ends

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 Seattle
 Seattle
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 HAROLD A. ADAMS, M.S.
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President of the University
Provost of the University
Vice-Provost of the University
Registrar
Director of Admissions
Dean of Students
Dean of the School of Dentistry

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 JOSEPH L. MCCARTHY, Ph.D.
 SOLOMON KATZ, Ph.D.
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President of the University
Dean of the School of Medicine;
Chairman of the Board
Dean of the School of Dentistry
Dean of the Graduate School
Dean of the College of Arts and Sciences
Dean of the College of Pharmacy
Dean of the School of Nursing

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OFFICERS OF THE SCHOOL OF DENTISTRY

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 BERTON E. ANDERSON, D.M.D.
 SAUL SCHLUGER, D.D.S.
 MARTEA H. FALES, R.D.H., A.B.Ed.

Dean
Assistant Dean
Director of Graduate Dental Education
Director of Department of
Dental Hygiene

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JEAN ASHFORD, B.A.
 DERWIN R. DEMERS
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 CLIFFORD L. FREEHE
 DONALD HISCOX, B.F.A.
 DOROTHY D. KIPPLE
 T. W. PENFOLD, D.V.M.
 JESSIE PHILLIPS, B.F.A.

Acting Librarian, Division of Health Sciences
Assistant Business Manager, Division of Health Sciences
Manager of Dental Supplies
Director of Television and Dental Photography
Administrative Assistant, Division of Health Sciences
Administrative Assistant, School of Dentistry
Veterinarian

LEROY S. RAMBECK, B.A.
 SEYMOUR M. STANDISH

Director of Medical Illustration,
Division of Health Sciences
Hospital Administrator
Assistant to the Chairman, Division of Health Sciences

FACULTY, SCHOOL OF DENTISTRY

DENTAL SCIENCE AND LITERATURE

ANDERSON, Berton Emmett, 1948
Professor of Dental Science and Literature
D.M.D., 1925, Oregon

GILBERT, Howard I., 1949
Clinical Associate in Dental Materials
D.M.D., 1917, Oregon

MEHUS, Paul Edward, 1950
Clinical Associate in Dental Science and Literature
B.S., D.M.D., 1929, Oregon

WILSON, Gale E., 1950
Clinical Associate in Jurisprudence (Dental Science and Literature)
B.S., 1926, Washington; M.D., 1930, Harvard

FIXED PARTIAL DENTURES

BRUMWELL, G. Keith, 1953
Clinical Associate in Fixed Partial Dentures
D.M.D., 1943, Oregon

CLEAVER, William H., 1960
Clinical Assistant in Fixed Partial Dentures
D.D.S., 1960, Washington

ENDZELL, Frank, 1952
Clinical Assistant in Fixed Partial Dentures
D.D.S., 1952, Washington

GUTHRIE, John D., 1950
Clinical Associate in Fixed Partial Dentures
D.M.D., 1928, Oregon

HAGEN, William H., 1947
Clinical Associate in Fixed Partial Dentures
D.D.S., 1920, Minnesota

HANFORD, E. Matthew, 1957
Clinical Assistant in Fixed Partial Dentures
D.D.S., 1957, Washington

JOHNSON, Marvin A., 1958
Clinical Assistant in Fixed Partial Dentures
D.D.S., 1952, Washington

LOOMIS, Olin M., 1955
Clinical Associate in Fixed Partial Dentures
D.M.D., 1943, North Pacific College (Oregon)

MAHAN, Thomas G., 1952
Clinical Associate in Fixed Partial Dentures
B.A., 1943, Valley City State College (North Dakota); D.D.S., 1950, Loyola

MORRISON, Kenneth N., 1948
Associate Professor of Fixed Partial Dentures; Chairman in Fixed Partial Dentures
D.D.S., 1943, Toronto (Canada); M.S., 1952, Washington

SPROULE, W. John, 1957
Clinical Associate in Fixed Partial Dentures
D.D.S., 1944, Toronto; M.S.D., 1952, Washington

TEEL, W. Stephen, 1954
Clinical Associate in Fixed Partial Dentures
D.D.S., 1954, Washington

TIMBERLAKE, Keith, 1952
Clinical Associate in Fixed Partial Dentures
D.D.S., 1952, Washington

TIMBERLAKE, Wayne J., 1957
Clinical Assistant in Fixed Partial Dentures
D.D.S., 1954, Washington

VIGG, John, 1959
Assistant Professor in Fixed Partial Denture
D.D.S., 1956, Washington

WARNICK, Myron E., 1956
Assistant Professor in Fixed Partial Denture
D.D.S., 1955, Alberta

DEPARTMENT OF OPERATIVE DENTISTRY

ALEXANDER, Richard M.
Instructor in Operative Dentistry
D.D.S., 1961, Washington

BURKE, Joseph L., 1954
Clinical Associate in Operative Dentistry
D.D.S., 1952, Iowa

CANFIELD, Robert C., 1951
Clinical Associate in Operative Dentistry
D.D.S., 1951, Washington

DEANS, Donald B., 1960
Clinical Assistant in Operative Dentistry
D.M.D., 1949, Oregon

DIEPENHEIM, Jan
Associate Professor in Operative Dentistry
D.D.S., 1956, University of Alberta

ELLSPERMAN, George A., 1957
Special Lecturer in Operative Dentistry
D.D.S., 1917, Southern California

FERRIER, Walden I.
Senior Consultant in Operative Dentistry
D.M.D., 1908, North Pacific College

GREY, John M., 1955
Clinical Associate in Operative Dentistry
B.A., 1934, Carleton College; B.S., 1943, Oregon; D.D.S., 1947, Oregon

HABERMAN, James D., 1960
Instructor in Operative Dentistry
B.A., 1952, Central Washington College of Education; D.D.S., 1960, Washington

HODSON, Jean E., 1952
Assistant Professor in Operative Dentistry (Ceramics and Oral Anatomy)
B.S., 1952, M.S., 1958, Washington

MASTON, Earl C., 1959
Clinical Associate in Operative Dentistry
D.D.S., 1953, Washington

MERRILL, O. Monte, 1962
Instructor in Operative Dentistry
D.D.S., 1961, Washington

OSTLUND, Lyle E., 1950
Clinical Associate in Operative Dentistry
D.M.D., B.S., 1947, Oregon

REDMAN, Robert W., 1958
Clinical Assistant in Operative Dentistry
D.D.S., 1956, Washington

SCHROETER, Charles, 1950
Assistant Professor of Oral Anatomy
Fortbildungs-Institut des Verbandes der Dentisten im Deutschen Reiche, Berlin, Germany

SCHWARTZ, Henry H., 1961
Clinical Assistant in Operative Dentistry
D.M.D., 1947, Oregon

- SMITH, Bruce B., 1946
Clinical Associate in Operative Dentistry
D.M.D., 1942, North Pacific College
- STENBERG, Ralph G., 1958
Clinical Associate in Operative Dentistry
D.D.S., 1954, Washington
- STIBBS, Gerald D., 1948
*Professor of Operative Dentistry and
Fixed Partial Dentures; Chairman of the
Department of Operative Dentistry;
Director of the Dental Operatory*
B.S., D.M.D., 1931, Oregon
- STRAND, Harvey A., 1961
Clinical Assistant in Operative Dentistry
D.D.S., 1957, Washington
- WELK, Donald A., 1962
Instructor in Operative Dentistry
B.S., 1959, Seattle Pacific College
D.D.S., 1962, Washington

ORAL DIAGNOSIS

- BOURASSA, Edward A., 1951
Senior Consultant in Oral Roentgenology
D.M.D., 1925, Oregon
- BUSEMAN, Ralph H., 1957
Instructor in Oral Diagnosis
B.A., 1953, D.D.S., 1957, Washington
- DEGERING, Charles Irvin, 1950
*Assistant Professor of Oral Diagnosis and
Treatment Planning*
B.A., 1942, Walla Walla College; D.D.S.,
1950, Washington
- JACOBSON, F. Lloyd, 1950
*Associate Professor of Oral Diagnosis and
Treatment Planning; Chairman
of the Department of Oral Diagnosis
and Treatment Planning*
D.M.D., 1934, Oregon
- McCALLUM, William Burgess, 1959
*Clinical Associate of Oral Diagnosis and
Treatment Planning*
D.D.S., 1953, Minnesota
- REDDICK, James McLewis, 1958
Clinical Assistant in Oral Roentgenology
B.S., 1947, Seattle Pacific College; D.D.S.,
1953, Washington
- WALL, Thomas P., 1952
*Clinical Associate of Oral Diagnosis and
Treatment Planning*
D.M.D., 1934, Oregon

ORAL PATHOLOGY

- ROSS, Russell, 1962
*Assistant Professor of Oral Pathology;
Assistant Professor of Pathology,
Department of Pathology, School
of Medicine*
A.B., 1951, D.D.S., 1955, Columbia
University; Ph.D., 1962, Washington
- SREEBNY, Leo M., 1957
*Professor of Oral Pathology; Chairman
of the Department of Oral Pathology;
Professor, Department of Pathology,
School of Medicine*
A.B., 1942, D.D.S., 1945, M.S., 1950,
Ph.D., 1954, University of Illinois
- TAMARIN, Arnold, 1962
Assistant Professor of Oral Pathology
B.S., 1949, D.D.S., 1951, University
of Illinois; M.S., 1961, Washington
- YAMANE, George M., 1959
Assistant Professor of Oral Pathology
A.B., 1946, D.D.S., 1950, Ph.D., 1962,
Minnesota

ORAL SURGERY

- BRISCOE, DeWayne L., 1962
Instructor of Oral Surgery
D.D.S., 1959, M.S.D., 1962, Washington
- DORÉ, George David, Jr., 1949
Clinical Associate in Oral Surgery
D.D.S., 1941, Northwestern
- FRANCIS, Frederick Henderson, 1949
Clinical Associate in Oral Surgery
B.S., 1939, Washington; D.D.S., 1943,
Northwestern
- GEHRIG, John D., 1954
*Associate Professor of Oral Surgery;
Chairman of the Department of
Oral Surgery*
D.D.S., 1946, M.S.D., 1951, Minnesota
- GREGGSON, Leif C., 1959
Clinical Assistant in Oral Surgery
D.D.S., 1954, University of Washington
- HANSON, Lawrence E., 1959
Clinical Associate in Oral Surgery
D.M.D., 1925, North Pacific College;
M.S.D., 1932, Northwestern
- HOEFFLER, Clement Louis, 1959
Clinical Assistant in Oral Surgery
D.D.S., 1932, College of Physicians and
Surgeons
- IVERSON, James R., 1957
Clinical Associate in Oral Surgery
D.D.S., 1953, University of Washington
- JOHNSON, Robert Edward, 1949
Clinical Associate in Oral Surgery
D.D.S., 1944, M.S., 1948, Michigan
- McINTYRE, Thomas J., 1953
Clinical Associate in Oral Surgery
B.S., 1947, D.D.S., 1948, Northwestern
- MOORE, Robert H., 1961
Clinical Assistant in Oral Surgery
D.D.S., 1930, Iowa
- PHILLIPS, Donald McCracken, 1958
Clinical Associate in Oral Surgery
A.B., 1937, Washington; M.S., 1942, D.D.S.,
1945, Iowa
- SWANSON, Alva Edison, 1958
Clinical Associate in Oral Surgery
D.D.S., 1949, Toronto; M.S., 1956, Michigan
- SWENSON, Ralph D., 1958
Assistant Professor in Oral Surgery
D.D.S., 1953, Washington; M.S., 1958,
Georgetown
- WESTERBERG, Milton L., 1956
Clinical Associate in Oral Surgery
D.D.S., 1948, Washington; M.S.D., 1954,
Minnesota

ORTHODONTICS

- BISHOP, Everard Allen, 1949
Clinical Associate in Orthodontics
D.D.S., 1919, Northwestern
- BOLTON, Wayne A., 1954
Clinical Associate in Orthodontics
D.D.S., 1950, M.S., 1952, Washington
- DOHNER, Gerald Norwood, 1961
Clinical Assistant in Orthodontics
D.M.D., 1943, North Pacific College, Oregon
Cert., 1950, Washington
- ERICKSON, Leslie C., 1958
Clinical Assistant in Orthodontics
D.D.S., 1954, M.S., 1958, Washington

- FRASER, Emery James, 1949
Senior Consultant in Orthodontics
D.D.S., 1924, Northwestern
- HOUG, Andrew Marc, 1960
Clinical Assistant in Orthodontics
D.D.S., 1956, Iowa; M.S.D., 1959, Washington
- KAHN, Kenneth S., 1950
Clinical Assistant in Orthodontics
B.A., 1940, Washington; B.S., D.D.S., 1943, California; M.S., 1950, Washington
- KRAUS, Bertram S., 1957
Professor of Physical Anthropology
A.B., 1934, Western Reserve University, M.A., Ph.D., 1949, Chicago
- LEWIS, Paul Donovan, 1949
Clinical Associate in Orthodontics
D.M.D., 1919, Oregon
- MCCULLOCH, George R., 1959
Clinical Associate in Orthodontics
D.M.D., 1933, North Pacific College, Oregon
- McGOVERN, William Carr, 1958
Clinical Assistant in Orthodontics
D.D.S., 1950, M.S., 1954, Washington
- MOORE, Alton Wallace, 1948
Professor of Orthodontics; Chairman of the Department of Orthodontics
D.D.S., 1941, California; M.S., 1948, Illinois
- PHILBRICK, Richard C., 1953
Clinical Consultant in Orthodontics
B.S., 1942, D.D.S., 1943, California
- RAYNES, John G., 1956
Clinical Assistant in Orthodontics
D.D.S., 1952, M.S., 1956, Washington
- RIEDEL, Richard Anthony, 1949
Assistant Professor of Orthodontics
D.D.S., 1945, Marquette; M.S.D., 1948, Northwestern
- ROGERS, John R., 1962
Clinical Assistant in Orthodontics
B.S., 1943, Coast Guard Academy, Conn.; D.D.S., 1951, Northwestern; M.S.D., 1961, Washington
- TAKANO, William S., 1950
Clinical Associate in Orthodontics
D.D.S., 1949, Marquette; M.S., 1950, Washington
- ## PEDODONTICS
- BAUGH, Leland R., 1961
Clinical Assistant in Pedodontics
D.D.S., 1956, Washington
- BEASLEY, Bruce A., 1953
Clinical Assistant in Pedodontics
D.D.S., 1953, Washington
- BOWLER, Frank T., 1947
Clinical Associate in Pedodontics
D.M.D., 1945, Oregon
- CRUIKSHANK, Ramon A., 1959
Clinical Assistant in Pedodontics
D.D.S., 1959, Washington
- FRICKE, Harold H., 1956
Clinical Assistant in Pedodontics
B.S. in Pharmacy, 1943, Idaho; D.D.S., 1956, Washington
- HOFFMAN, Olin E., 1950
Clinical Associate in Pedodontics
M.P.H., 1943, Michigan; D.D.S., 1921, Iowa
- JINKS, Gordon MacMillan, 1950
Clinical Assistant in Pedodontics
D.D.S., 1946, Toronto
- LAW, David Barclay, 1947
Associate Professor of Pedodontics; Chairman of the Department of Pedodontics
B.S.D., D.D.S., 1938, M.S., 1941, Northwestern
- LEWIS, Thompson M., 1955
Assistant Professor of Pedodontics
D.D.S., 1950, Northwestern; M.S.D., 1955, Washington
- MICHEL, Peter Joseph, Jr., 1957
Clinical Assistant in Pedodontics
D.D.S., 1957, Washington; B.S., 1954, College of Great Falls (Montana)
- PETERSON, John C., 1961
Clinical Assistant in Pedodontics
B.S., Washington State University, 1955; D.M.D., Oregon, 1955; M.S.D., University of Washington, 1960
- SCHUMACHER, Erwin R., 1957
Clinical Assistant and Research Associate in Pedodontics
B.A., 1948, Iowa State Teacher's College; D.D.S., 1956, Iowa; M.S., 1959, Washington
- SUPERNAW, Eugene W., 1957
Clinical Assistant in Pedodontics
D.D.S., 1953, Marquette; M.S., 1955, Washington
- ## PERIODONTICS & ENDODONTICS
- BECHLEM, Donald Nielsen, 1959
Instructor in Periodontics and Endodontics
D.D.S., 1943, Northwestern; M.S.D., 1959, Washington
- BELL, John Allen, 1952
Clinical Associate in Periodontics and Endodontics
D.D.S., 1952, Washington
- BRADEN, B. E., 1962
Clinical Assistant in Periodontics and Endodontics
D.M.D., 1949, Oregon
- BURRELL, F. Chester, 1952
Clinical Associate in Periodontics and Endodontics
D.D.S., 1952, Washington
- DOW, Pierre Roger, 1952
Clinical Associate in Periodontics and Endodontics
B.S., 1948; D.D.S., 1952, Washington
- DRENNAN, George Alexander, 1962
Instructor in Periodontics and Endodontics
L.D.S., 1946, Toronto (Canada); D.D.S., 1946, Toronto; M.S.D., 1962, Washington
- GALLAGHER, J. Wilfred, 1949
Clinical Associate in Periodontics and Endodontics
D.M.D., 1934, Oregon
- INGLE, John Ide, 1948
Professor of Periodontics and Endodontics; Chairman of the Department of Periodontics and Endodontics
D.D.S., 1942, Northwestern; M.S.D., 1948, Michigan
- KAREN, Keith, 1962
Instructor in Periodontics and Endodontics
D.D.S., 1956, Washington; M.S.D., 1962, Washington
- LOSH, John Harvey, 1950
Clinical Associate in Periodontics and Endodontics
D.M.D., 1942, Oregon
- NATKIN, Eugene, 1962
Instructor in Periodontics and Endodontics
A.B., 1953, Columbia; D.D.S., 1957, New York; M.S.D., 1962, Washington

- OGILVIE, Alfred L., 1948
Associate Professor of Periodontics and Endodontics
D.D.S., 1944, Toronto (Canada); M.S., 1948, California
- OVERBY, Grant E., 1955
Clinical Associate in Periodontics and Endodontics
B.S., 1948, D.D.S., 1953, Washington
- SCHLUGER, Saul, 1958
Professor of Periodontics
D.D.S., 1931, Louisville
- SPINOLA, Joseph S., 1956
Clinical Associate in Periodontics and Endodontics
B.S., 1952; D.D.S., 1956, Washington
- STARKS, Milan V., 1948
Clinical Associate in Periodontics and Endodontics
B.S., D.D.S., 1940, Nebraska
- STERN, Irving B., 1959
Assistant Professor in Periodontics and Endodontics
B.S., 1941, City College of New York; D.D.S., 1946, New York; Certif. 1956, Columbia
- ZELDOW, Bernard J., 1957
Assistant Professor in Periodontics and Endodontics
B.A., 1949, Buffalo; M.S., 1951, Washington; D.D.S., 1956, Pennsylvania

PROSTHODONTICS

- AMPHLETT, James, 1960
Clinical Assistant in Prosthodontics
B.A., 1952, Connecticut; D.D.S., 1958, Columbia
- ANDERSON, Carl O., 1947
Clinical Associate in Prosthodontics
D.D.S., 1924, Northwestern
- ANDERSON, Howard S., 1954
Clinical Associate in Prosthodontics
D.D.S., 1951, Washington
- BALLARD, Charles S., 1950
Clinical Associate in Prosthodontics
D.M.D., 1921, Oregon
- BEDER, Oscar Edward, 1952
Professor of Prosthodontics
B.S., 1936, Rutgers; D.D.S., 1941, Columbia
- BERMAN, Nicholas, 1956
Clinical Associate in Prosthodontics
M.D., 1934, D.D.S., 1938, Prague (Czechoslovakia); D.D.S., 1948, Kansas City
- BOLENDER, Charles L., 1959
Assistant Professor in Prosthodontics
D.D.S., 1956, Iowa
- BURHEN, William K., 1960
Clinical Assistant in Prosthetics
D.D.S., 1953, Washington
- COULSON, Richard A., 1958
Clinical Assistant in Prosthetics
B.A., 1953, Iowa; D.D.S., 1956, Iowa; M.S., 1960, Washington
- DUTTON, David A., 1961
Clinical Assistant in Prosthetics
B.A., 1956, Ohio State; D.D.S., 1959, Ohio State
- GUTHRIE, Frank B., 1958
Clinical Associate in Prosthodontics
D.D.S., 1958, Washington
- GUTHRIE, John D., 1960
Clinical Associate in Prosthodontics
D.M.D., 1928, Oregon
- HARDY, Leland R., 1960
Clinical Assistant in Prosthetics
D.D.S., 1958, Washington
- HILL, Roy C., 1957
Clinical Associate in Prosthodontics
D.M.D., 1936, North Pacific College
- HUNGAR, Gordon E., 1959
Clinical Assistant in Prosthodontics
B.S., 1948, D.D.S., 1957, Washington
- JANKELSON, Bernard, 1951
Clinical Associate in Prosthodontics
D.M.D., 1924, Oregon
- JOHNSON, Richard J., 1953
Clinical Associate in Prosthodontics
D.D.S., 1939, Northwestern
- KYDD, William L., 1950
Clinical Associate in Prosthodontics
D.M.D., 1947, Oregon
- MAYO, Jacque L., 1960
Clinical Assistant in Prosthetics
D.D.S., 1956, Washington
- MILLER, Ronald W., 1960
Clinical Assistant in Prosthetics
B.A., 1948, Eastern Washington; D.D.S., 1952, Washington
- MITCHELL, Robert D., 1955
Clinical Associate in Prosthodontics
B.S., 1947, Brigham Young; D.D.S., 1951, Washington
- NASH, Brent I., 1958
Clinical Assistant in Prosthodontics
B.S., 1954, Utah State; D.D.S., 1958, Washington
- SHAW, Donald Robert, 1955
Clinical Associate in Prosthodontics
D.D.S., 1938, Iowa
- SMITH, Dale E., 1960
Clinical Assistant in Prosthodontics
D.D.S., 1952, University of Pittsburgh
- ULIP, Edward J., 1956
Clinical Associate in Prosthodontics
D.D.S., 1937, Chicago College of Dental Surgery
- WOOD, Don C., 1961
Clinical Assistant in Prosthetics
B.A., 1951, California; D.D.S., 1959, Washington
- WORDEN, Jeremy F., 1961
Clinical Assistant in Prosthetics
B.A., 1949, Vanderbilt; D.D.S., 1957, Washington
- WYKHUIS, Walter A., 1956
Associate Professor of Prosthodontics
B.A., 1932, Calvin College; D.D.S., 1936, Chicago College of Dental Surgery
- YOUNG, Harry A., 1948
Professor of Prosthodontics; Chairman of the Department of Prosthodontics
D.D.S., 1919, Indiana

DENTAL HYGIENE

- FALES, Martha H., 1959
Assistant Professor of Dental Hygiene
Director of the Department of Dental Hygiene
R.D.H., 1935, A.B.Ed., 1943, Michigan
- HASTINGS, Mary Anne, 1962
Instructor in Dental Hygiene
B.S., Indiana, 1962
- KOCHER, Linda M., 1961
Instructor in Dental Hygiene
B.S., R.D.H., 1958, Washington
- RYAN, Mary Margaret, 1962
Instructor in Dental Hygiene
B.S., Washington, 1956
- WELLS, Norma J., 1960
Instructor in Dental Hygiene
B.S., R.D.H., 1958, Washington

COMMITTEES

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MEDICAL ILLUSTRATION: R. F. Rushmer, *Chairman*; J. Phillips, *Secretary*; D. L. Bassett, D. J. Hanahan, A. W. Moore, J. G. Skahen, L. Steward, T. C. West. *Ex officio*: D. R. de Mers.

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CURRICULUM COMMITTEE: D. B. Law, *Chairman*; B. E. Anderson, J. D. Gehrig, M. J. Hickey, J. I. Ingle, F. L. Jacobson, B. S. Kraus, K. L. Morrison, Leo Sreebny, G. D. Stibbs, H. A. Young.

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GRADUATE DENTAL ADMISSIONS COMMITTEE: Saul Schluger, *Chairman*; B. E. Anderson, M. J. Hickey, B. S. Kraus, D. B. Law, A. W. Moore, Leo Sreebny.

SPACE PLANNING AND ALLOCATION COMMITTEE: A. W. Moore, *Chairman*; B. E. Anderson, M. J. Hickey, J. I. Ingle, D. B. Law, K. N. Morrison, G. D. Stibbs.

STUDENT EVALUATING COMMITTEES: *Chairman:* G. D. Stibbs, first-year class; K. N. Morrison, second-year class; F. L. Jacobson, third-year class; B. E. Anderson, fourth-year class.

STUDENTS' HONORS AND AWARDS COMMITTEE: F. L. Jacobson, *Chairman*; C. I. Degering, K. N. Morrison, A. M. Ogilvie, W. A. Wykhuis.

STUDENT LOAN COMMITTEE: A. L. Ogilvie, *Chairman*; C. I. Degering, J. I. Ingle.

THESIS COMMITTEE: A. L. Ogilvie, *Chairman*; B. E. Anderson, B. S. Kraus, D. B. Law, G. D. Stibbs.

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It is the University's expectation that a student will follow University rules and regulations as they are stated in the Bulletins. In instances where no appeal procedure is spelled out and the student is persuaded that a special set of circumstances makes appeal reasonable, he may appeal the application of specific rules or regulations to the Office of the Dean of the School or College in which he is enrolled in the case of an academic matter, or to the Office of the Dean of Students in the case of a nonacademic matter. These offices will either render a decision on the appeal or refer the student to the proper office for a decision.

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.



THE DIVISION OF HEALTH SCIENCES

THE DIVISION OF HEALTH SCIENCES

THE DIVISION OF HEALTH SCIENCES of the University of Washington was established in the autumn of 1945 to include the Schools of Dentistry, Medicine, and Nursing, the College of Pharmacy, the Student Health Service, and the University Hospital. In February, 1945, the legislature of the state of Washington authorized the Board of Regents of the University to establish the Schools of Dentistry and Medicine, which were brought into the Division along with the already existing School of Nursing and College of Pharmacy. The University has offered training in nursing for more than a quarter of a century, and since 1931 the School of Nursing has had an integrated academic and hospital course leading to bachelor's and advanced degrees. The College of Pharmacy was founded in 1894. The present five-year program was adopted in 1957, and the College offers courses leading to the degrees of Bachelor of Science in Pharmacy, Master of Science, and Doctor of Philosophy.

Each part of the Division of Health Sciences functions as an autonomous unit. The Division coordinates development, research, and teaching activities to strengthen and reinforce the work of each unit. For example, the basic sciences departments meet the needs of the whole Division and of other sections of the University that are concerned with work in anatomy, biochemistry, microbiology, pathology, pharmacology, physiology and biophysics, public health, and preventive medicine.

HEALTH SCIENCES PLANT

The Health Sciences Building overlooks the Portage Bay Yacht Basin between Lake Washington and Lake Union. It is near enough to the upper campus to offer great potentialities for cooperative research with other sections of the University, such as the Departments of Anthropology, Biology, Botany, Chemistry, Genetics, Physics, Psychology, and Zoology; the College of Engineering; the College of Fisheries; the School of Social Work; and the Student Health Service (Hall Health Center).

From 1945 to 1949, the Schools of Dentistry, Medicine, and Nursing were in temporary quarters while the Health Sciences Building was planned and built. In March, 1947, ground was broken and construction begun on the building which now houses administrative units of the three schools, library and auditorium facilities of the entire Division, laboratory, clinical and research units of the School of Dentistry, the basic health sciences departments, and laboratories and offices of the

Departments of Pediatrics and Psychiatry. The first units were occupied in January, 1949, and the rest of the building was occupied in the autumn of that year.

The Health Sciences Building was designed to provide space for present teaching and research activities and maximum flexibility for future needs. Because interior walls are not supporting structures, redesign of areas within the building can be readily accomplished when changing demands make it necessary. The present facilities represent an investment of more than \$20,000,000 in construction and equipment.

The second unit of the new University Hospital was completed in the spring of 1959 and the first patients were admitted May 4, 1959. This 320-bed unit includes the inpatient and outpatient facilities of the Hospital, the laboratories, X-ray facilities, the emergency department, a large new physical medicine and rehabilitation unit, the premature nursery, etc. This second unit is contiguous with the first unit of the Hospital which was completed in 1954 and which houses the teaching and research areas of the five clinical departments of the School of Medicine.

In addition, the Samuels Research Wing was completed in April, 1960. This wing houses additional laboratories of both the clinical and the basic health sciences departments. Completion of these closely integrated units provides the University with one of the finest plants in the United States.

Funds have been received from the Federal Government for a center for cancer research, a regional primate center, and Unit I of the biology complex, which will house the departments of biochemistry and genetics. These buildings will be an extension of the Health Sciences Building to the west. Construction will begin during the present biennium.

The Health Sciences Library, which serves the Schools of Medicine, Dentistry, and Nursing, and is used in much research work done in other sections of the University, has about 75,000 carefully selected volumes (with stack space for 40,000 more) and subscribes to more than 900 periodicals. All books and periodicals are on open shelves and are easily accessible. Library facilities include ten glass-paneled and soundproofed reading, study, and conference rooms, as well as adequate space for microfilm and microcard readers and special study groups. The University Library also is used by health sciences students; the interlibrary loan service is particularly valuable since it makes all the medical resources of the country available for research.

VETERANS

ADMISSION OF VETERANS

Veterans and children of deceased veterans should meet the general admission criteria and follow the general procedures outlined for all applicants. Applications for and questions about government aid should be addressed to the Veterans Administration Regional Office.

WORLD WAR I OR II VETERANS

Under certain conditions a veteran of World War I or II who is not eligible for Veterans Administration benefits is fully or partly exempt from tuition charges. See page 24.

KOREAN VETERANS

A Korean veteran under Public Law 550 should obtain admittance to the University prior to making application for a Certificate for Education and Training, thus eliminating the chance of obtaining a certificate valid for an incorrect degree. If the veteran has any questions regarding application for a certificate, he should consult the Veterans Division, Safety Division Building. Educational allowance payments are made directly to the veteran by the Veterans Administration after the veteran and institution submit a monthly attendance certification.

TRAINING ALLOWANCE

The rate of training allowance is on a full-time basis for dental students pursuing the regular prescribed dental curriculum. If further information is desired consult the Veterans Division, Safety Division Building.

TERMINATION OF TRAINING

A veteran *eligible* under Public Law 550 must complete his training by *eight* years after his release from active service or by January 31, 1965, whichever is earlier.

DISABLED VETERANS

A veteran with a disability under Public Law 894 should contact a training officer in the nearest Veterans Administration Office approximately four weeks prior to registration.

CHILDREN OF DECEASED VETERANS

Public Law 634 grants federal benefits to children of deceased veterans of World War I, World War II, or the Korean Conflict who died as a result of injury or disease incurred or aggravated while in the service. Information regarding eligibility under this law should be requested from a Veterans Administration Regional Office.

The Certificate for Education and Training, issued to those eligible persons by the Veterans Administration, is to be presented to the Veterans Division, Safety Division Building, on the date of registration.

STUDENT ACTIVITIES AND SERVICES**HOUSING**

Information and applications for residence in University-owned housing for single persons may be obtained by writing to the Manager, Men's Residence Halls, 1201 N.E. Campus Parkway, Seattle 5, or to the Manager, Women's Residence Halls, University of Washington, Seattle 5. Preference in assignment to vacancies is given to students under twenty-one years of age until August 1; thereafter assignments are made in the order of application. Prospective students may apply for the residence halls prior to their acceptance by the University but not before April 15.

University regulations require that women students under twenty-one who do not live at home must live in approved group residences such as the Women's Residence Halls, sororities, and church-sponsored living groups. Other types of living arrangements must be reported to the Dean of Women and be approved by the student's parents or guardian.

Information about fraternities or sororities may be obtained by writing to the Interfraternity Council or the Panhellenic Council, Student Union Building, University of Washington, Seattle 5.

The Office of Student Residences maintains listings of off-campus rooms, rooms with board, housekeeping rooms, apartments, and houses which are available to University students. These listings must, however, be consulted in person.

Teaching and research assistants and other part-time subfaculty personnel are given first priority for assignment to University-owned housing facilities for married students. Second preference for assignment to Union Bay Village or Sand Point Homes is given to graduate, medical, dental, and law students who have children. Prospective students are eligible to apply when they have been accepted for admission. Write to the Office of Student Residences, 23 Administration Building, for further information and application forms.

A complete statement of University housing policy appears in the *Student Handbook of University Rules and Regulations* and the *Housing Bulletin*.

PART-TIME EMPLOYMENT

The demands upon the time of students in the dental courses make it inadvisable for them to undertake any kind of part-time work during the school year.

MEDICAL EXAMINATION

A student entering the University for the first time, or returning to the University after an absence of more than one calendar year, or who has previously attended Summer Quarter classes but is entering regular University classes for the first time, is required to submit to the Student Health Service (Hall Health Center) a form containing his health history and a report of a physical examination by a physician. The form will be sent to new students by the Office of Admissions and to returning former students by the Registrar. This examination, which is required before a student may register, is taken at the student's expense. A chest X ray, also required of the above students, is given at the Student Health Service without charge.

With the exception of Canadian students, who will follow the above instructions, foreign students must take the required physical examination at the Student Health Service when they arrive on the campus.

ASSOCIATED STUDENTS

Membership in the Associated Students of the University of Washington, the central organization which conducts all student activities, is required of all regularly enrolled students. Through the ASUW Board of Control and its various committees and boards, students assume major responsibility in the government of student life. The ASUW helps finance the programs of athletics, debates, concerts, lectures, and many other activities and facilities, including the University of Washington *Daily* and the Student Union Building.



THE SCHOOL OF DENTISTRY

THE SCHOOL OF DENTISTRY

THE SCHOOL OF DENTISTRY offers a four-year program of courses leading to the degree of Doctor of Dental Surgery (D.D.S.); programs leading to the Master of Science in Dentistry for students in the Graduate School; and courses for practicing dentists. The four-year curriculum for the D.D.S. degree includes study in two main areas: Basic Sciences and Clinical Dental Sciences. Instruction in the basic sciences is provided by the Departments of Anatomy, Biochemistry, Microbiology, Pathology, Pharmacology, Physiology and Biophysics, and Preventive Medicine of the Health Sciences Division. In the clinical dental sciences the Departments of Dental Science and Literature, Dental Materials, Fixed Partial Dentures, Operative Dentistry, Oral Diagnosis and Treatment Planning, Oral Pathology, Oral Surgery, Endodontics, Orthodontics, Pedodontics, Periodontics, and Prosthodontics provide instruction in the fields of general dental practice and dental specialization.

PHILOSOPHY AND OBJECTIVES

The School of Dentistry seeks to provide a foundation for the student's future development. The program of instruction is designed to provide the student with the opportunity to learn fundamental principles which are significant to the entire body of dental knowledge. It is expected that the student will acquire habits of reasoning and critical judgment in order that he may use the fundamental principles wisely in solving problems of dental health and disease. The Dental School expects its students to learn the fundamentals of the basic health sciences, to master certain clinical skills, and to acquire a thorough understanding of professional and ethical principles. The four-year educational program encompasses these objectives.

The School of Dentistry is approved by the Council on Dental Education of the American Dental Association and is a member of the American Association of Dental Schools. It is a participating member of the Western Interstate Commission for Higher Education.

The Department of Dental Hygiene is an integral part of the School of Dentistry with the same basic objectives and offers courses of instruction leading to a Bachelor of Science degree with a major in Dental Hygiene or Public Health Dental Hygiene. For additional details regarding this area of instruction see pages 48-52.

ADMISSION TO THE UNIVERSITY AND THE SCHOOL

The Council on Dental Education of the American Dental Association has specified these minimum requirements for admission to an approved school of dentistry:

"... the successful completion of two full academic years of work in an accredited college of liberal arts and science. . . . The college course must include at least a year's credit in English, in biology, in physics, and in inorganic chemistry, and a half-year's credit in organic chemistry. All courses in science should include both class and laboratory instruction. . . ."

The Committee on Admissions of the School of Dentistry requires the following courses given at the University of Washington. Students taking pre dental work at other institutions may compare these courses with those given in their schools by checking the course descriptions given in the *University of Washington College of Arts and Sciences Bulletin*.

QUARTER CREDITS

English 101, 102, 103 (Composition).....	9
Chemistry 140, 150 and 151, 160 and 170 (General and Qualitative Analysis).....	14
Chemistry 231, 232, 241, 242 (Organic).....	10
Physics 101, 102, 103 and 107, 108, 109 (General and Lab.)	15
Zoology 111, 112 (General).....	10
Zoology 456 (Vertebrate Embryology).....	5
or 453-454 (Comparative Anatomy of Chordates).....	10

The Committee on Admissions recommends that pre dental students choose electives with the aim of broadening their background in human relationships and understanding. Laboratory drawing, sculpture, American literature, modern literature, music appreciation, speech, anthropology, economics, philosophy, psychology, and sociology are suggested, but students should survey the courses offered in their respective schools for other possible electives. Applicants from the University of Washington must have satisfied physical and health education requirements.

Students presenting evidence of scholastic attainment over the required minimum generally have the advantage at the time of selection.

APPLICATION PROCEDURE

Applications and all credentials should be sent to the Committee on Admissions. The final date on which applications for entrance in Autumn Quarter may be submitted is *March 1*. Prior to that date, each applicant must submit the following:

1. Formal application for admission on the form furnished by the University of Washington School of Dentistry.
2. Two official transcripts from *each* college attended, sent directly from the registrars of the institutions where preprofessional training was taken to the Committee on Admissions. Transcripts should show (a) a complete college record, with grades and credits; (b) subjects the applicant is taking or will take to complete his preprofessional training before entering the School of Dentistry (if this information is not shown on the transcript the applicant must forward a separate schedule.)
3. One official transcript from high school attended. (This does *not* apply to University of Washington students.)
4. At least four letters of recommendation, two of which must contain personal evaluation by science instructors (one letter if forwarded by the preprofessional committee of the school), and two from business or professional persons.
5. Physician's statement of physical examination.

PROCESSING OF APPLICATIONS

EVALUATION OF CREDENTIALS. The Committee on Admissions examines the credentials and bases its decision on the objective evaluation of these factors: preprofessional training, evidences of scholarship, residence of the applicant, dental

aptitude test rating, and personal evaluation of the student by predental instructors and members of the Committee on Admissions.

Washington participates in the student exchange program of the Western Interstate Commission for Higher Education, under which legal residents of certain Western states which do not have dental schools may pay the tuition and fees charged to legal residents of Washington rather than the higher nonresident rate. These states are Alaska, Arizona, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming. To be eligible for this program, the student must be certified by his home state. State eligibility requirements vary, and the number of students who can be included in the program each year depends on appropriations by the legislature. A student interested in this program must apply to the certifying officer in his home state, whose address may be obtained by writing to the Western Interstate Commission for Higher Education, Fleming Law Building, Boulder, Colorado.

DENTAL APTITUDE TEST. All predental students who apply for admission to the School of Dentistry are required to take the dental aptitude test given under the auspices of the Council on Dental Education of the American Dental Association. This test is given in October, January, and April, at the University of Washington and other schools throughout the country. Full information about the test is sent to all applicants for admission. It is advantageous for the applicant to participate in an early aptitude testing session.

PERSONAL INTERVIEW. After all material pertinent to the application has been received and reviewed, the candidate may be requested to appear for a personal interview. When an interview is required the applicant will generally participate in a special aptitude test conducted by the Committee on Admissions of the School of Dentistry.

NOTIFICATION OF ACCEPTANCE OR REJECTION. All candidates are given written notice of the acceptance or rejection of their applications as soon as possible after the Committee on Admissions has reached a decision. Applicants generally are informed of the Committee's decision sometime prior to June 30.

HONOR CODE. All students accepted by the School of Dentistry will be expected to indicate their willingness to participate in the School's Honor Code.

ACCEPTANCE OF APPOINTMENT. When a candidate has been notified that he is accepted in the School of Dentistry, he must deposit \$50.00 with the Comptroller of the University. This deposit is applied to the first quarter's tuition. It is refundable only in cases of withdrawal for bona fide illness, failure to complete basic predental requirements, induction into military service, or failure to pass the physical examination required of all students at the time of registration.

STUDENT ACHIEVEMENT AND PROMOTION

The School of Dentistry uses the University grade-point system: A=4, B=3, C=2, D=1, E=0. Calculation of the grade-point average is made by multiplying the grade point received in a course by the number of credits earned in the course, totaling these values, and dividing by the total number of credits earned.

Students are notified of their grades at the end of each quarter.

A student who has less than a 2.00 grade-point average in the courses for which he is registered during any given quarter is referred to the Executive Committee of the School. If the work in a course is incomplete or inadequate, a grade of I may be given. This Incomplete must be removed before September 15 if the student is to advance into the next year's class.

E signifies that the work is of failing grade. Students who receive an E in one major subject may be permitted to take additional work and a re-examination, if permission is granted by the instructor in the course, the Dean, and the Executive

Committee. If the additional work and re-examination are satisfactory, the student's grade may be raised from E to D and promotion may be granted if the remainder of the work justifies it. If students receive E in more than one major subject in one year, they may not make up these deficiencies. The Dean's Office notifies students of E grades.

At the end of each academic year the Executive Committee of the School of Dentistry evaluates the accomplishments of the student during the year and determines his fitness for promotion. When promotion is not recommended, the student is subject to dismissal from the School. The Dental School reserves the right to dismiss any student from the School for any reason it deems sufficient. Scholastic standing is not the only requirement for promotion. Students are advanced only when their general attitude, scholastic progress, and personal attributes are considered satisfactory.

CLASS SCHEDULES

The 1962-64 schedules may be found on pages 28-31.

FEES, EXTRA SERVICE CHARGES, AND RENTALS

All fees, extra service charges, and rentals are payable in United States dollars at the time of registration except that new students must submit a \$50.00 advance payment of fees at the time they are admitted to the University. This advance payment is applied against the total tuition and fees collected from the student. The University reserves the right to change any of its fees and charges without notice. *A table of charges for dentistry and dental hygiene students is on page 27.*

Resident students

A resident student is one who has been domiciled in the state of Washington for at least a year immediately prior to registration. The domicile of a minor is that of his parents or his legal guardian. The children of federal employees residing within the state of Washington and the children and spouses of staff members of the University are considered as residents for tuition purposes.

Nonresident students

Prospective students are classified as nonresidents when their credentials come from schools outside Washington. If they believe they are residents, they may petition the Residence Classification Office, 205A Administration Building, for a change of classification.

Veterans of World War I or II

Exemption from tuition charges is granted resident students who either (1) served in the United States Armed Forces during World War I and received honorable discharges or (2) served in the United States Armed Forces during World War II at any time after December 6, 1941, and before January 1, 1947, and received honorable discharges, but are no longer entitled to federal educational benefits or (3) are United States citizens who served in the armed forces of governments associated with the United States during World War I or II and received honorable discharges. Nonresident students who meet one of these requirements pay one-half the nonresident tuition. This exemption is not granted to Summer Quarter students.

Proof of eligibility should be met as follows:

- (1) World War I veterans should present copy of discharge papers to Comptroller's Office, 203 Administration Building.
- (2) World War II veterans with Korean service or who have suffered disability should present a letter from the Veterans Administration Regional Office to the Veterans Division, Safety Division Building, stating they are no longer eligible for any federal educational benefits. (Excepted are those veterans who have had both World War II benefits and Korean benefits and have expired those benefits at the University of Washington.)
- (3) World War II veterans who have not suffered any disability or served in the Korean Conflict should present an 8½-inch x 11-inch photostat of discharge papers to the Veterans Division, Safety Division Building.

Exemption must be cleared prior to student's appointment day for registration in order to prevent personal payment.

EXTRA SERVICE CHARGES

A registration service charge of \$15.00 is assessed those students: (1) eligible for Advance (mail) Registration who fail to participate; or (2) who, after the established application deadline, are granted Appointments or Permits to register by In-Person Registration by action of the Registration Appeal Board. A late registration charge of \$15.00 is assessed any student granted permission to register after the last registration day before the opening of Autumn, Winter, or Spring Quarters by action of the Registration Appeal Board. A charge of \$5.00 is made Autumn, Winter, and Spring Quarters 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.

<i>Removal of an Incomplete</i>	2.00
<i>Athletic Admission Ticket</i> (optional for ASUW members)	3.50-6.50
Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.	
<i>Quarterly Grade Report</i>	.50
One grade report is issued at the close of each quarter without charge; the charge, payable in advance, is made for each additional copy.	
<i>Transcripts</i>	1.00
One transcript is furnished without charge; the charge, payable in advance, is made for each additional copy.	
<i>Transfer Examination</i>	10.00
Transfer from other dental schools to School of Dentistry.	
<i>Bachelor of Science (Dental Hygiene) Diploma</i>	10.00
<i>Doctor of Dental Surgery Diploma</i>	10.00
<i>Master of Science in Dentistry Diploma</i>	5.00
<i>Postgraduate Certificate</i>	5.00

REFUND OF FEES, CHARGES, AND RENTALS

All fees will be refunded in full if complete withdrawal is made during the first three calendar days of the quarter; one-half the amount will be refunded if withdrawal is made during the first thirty calendar days. Fee refunds are not made to students withdrawing under discipline.

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

At least two weeks must elapse between payment and refund of fees, if payment was made by check.

TEXTBOOKS AND INSTRUMENTS

Textbooks pertinent to courses of instruction are assigned at the first meeting of classes. In order to insure that all students will have the necessary type and quality of instruments and supplies, kits are prepared by Dental Stores and sold directly to the student at the beginning of each academic year. To insure uniformity of supplies and instruments no substitutions are permitted from other sources.

	<i>1st Year</i>	<i>2nd Year</i>	<i>3rd Year</i>	<i>4th Year</i>
Supplies	\$600.00	\$1,400.00	\$500.00	\$50.00
Books	160.00	150.00	115.00	58.00
Total	\$760.00	\$1,550.00	\$615.00	\$108.00

ESTIMATE OF YEARLY EXPENSES*Tuition, Incidental, and Other Fees; Microscope, Dental Engine, and Laboratory Case Rental*

	<i>1st Yr.</i>	<i>2nd Yr.</i>	<i>3rd Yr.</i>	<i>4th Yr.</i>
Full-time residents	\$549.00	\$550.00	\$550.00	\$543.00
Full-time nonresidents	895.00	895.00	895.00	888.00

Health and Accident Insurance (optional) Three quarters \$17.25

Board and Room

Double room and meals in Men's Residence Halls	\$720.00
Room and meals in Women's Residence Halls	\$660.00-\$765.00
Room and meals in fraternity house (Including dues and social assessments.)	\$720.00-\$800.00
Room and meals in sorority house	\$780.00-\$855.00
Initial cost of joining is not included; this information may be obtained from the Interfraternity and Panhellenic Councils.	

Personal Expenses \$300.00

CLASS SCHEDULES

The School of Dentistry operates on the quarter system of the University. There are three eleven-week quarters in the school year. See pages 28-31.

TUITION AND FEES FOR STUDENTS OF DENTISTRY AND DENTAL HYGIENE

AUTUMN QUARTER <i>Class</i>	<i>Tuition</i>	<i>Incidental Fee</i>	<i>Other Fees†</i>	<i>Micro- scope Rental*</i>	<i>Dental Engine Rental*</i>	<i>Labora- tory Case Rental</i>	<i>Total</i>
FRESHMAN—Resident....	\$100.00	\$66.50	\$8.50	\$7.00	....	\$2.50	\$184.00
Nonresident..	165.00	116.50	8.50	7.00	....	2.50	299.50
SOPHOMORE—Resident...	100.00	66.50	8.50	....	3.50	2.50	181.00
Nonresident	165.00	116.50	8.50	....	3.50	2.50	296.00
JUNIOR—Resident.....	100.00	66.50	8.50	7.00	3.50	2.50	188.00
Nonresident....	165.00	116.50	8.50	7.00	3.50	2.50	303.00
SENIOR—Resident.....	100.00	66.50	8.50	....	3.50	2.50	181.00
Nonresident....	165.00	116.50	8.50	....	3.50	2.50	296.00
GRADUATE—Resident....	100.00	66.50	8.50	....	3.50	....	178.50
Nonresident..	165.00	116.50	8.50	....	3.50	....	293.50
DENTAL HYGIENIST— (Junior)—Resident....	100.00	66.50	8.50	....	....	2.50	177.50
Nonresident..	165.00	116.50	8.50	....	....	2.50	292.50
DENTAL HYGIENIST— (Senior)—Resident....	100.00	66.50	8.50	....	....	2.50	177.50
Nonresident..	165.00	116.50	8.50	....	....	2.50	292.50

WINTER QUARTER

FRESHMAN—Resident....	\$100.00	\$66.50	\$8.50	\$7.00	....	\$2.50	\$184.00
Nonresident..	165.00	116.50	8.50	7.00	....	2.50	299.50
SOPHOMORE—Resident...	100.00	66.50	8.50	7.00	3.50	2.50	188.00
Nonresident	165.00	116.50	8.50	7.00	3.50	2.50	303.00
JUNIOR—Resident.....	100.00	66.50	8.50	....	3.50	2.50	181.00
Nonresident....	165.00	116.50	8.50	....	3.50	2.50	296.00
SENIOR—Resident.....	100.00	66.50	8.50	....	3.50	2.50	181.00
Nonresident....	165.00	116.50	8.50	....	3.50	2.50	296.00
GRADUATE—Resident....	100.00	66.50	8.50	....	3.50	....	178.50
Nonresident..	165.00	116.50	8.50	....	3.50	....	293.50
DENTAL HYGIENIST— (Junior)—Resident....	100.00	66.50	8.50	3.50	....	2.50	181.00
Nonresident..	165.00	116.50	8.50	3.50	....	2.50	296.00
DENTAL HYGIENIST— (Senior)—Resident....	100.00	66.50	8.50	....	....	2.50	177.50
Nonresident..	165.00	116.50	8.50	....	....	2.50	292.50

SPRING QUARTER

FRESHMAN—Resident....	\$100.00	\$66.50	\$8.50	....	\$3.50	\$2.50	\$181.00
Nonresident..	165.00	116.50	8.50	....	3.50	2.50	296.00
SOPHOMORE—Resident...	100.00	66.50	8.50	....	3.50	2.50	181.00
Nonresident	165.00	116.50	8.50	....	3.50	2.50	296.00
JUNIOR—Resident.....	100.00	66.50	8.50	....	3.50	2.50	181.00
Nonresident....	165.00	116.50	8.50	....	3.50	2.50	296.00
SENIOR—Resident.....	100.00	66.50	8.50	....	3.50	2.50	181.00
Nonresident....	165.00	116.50	8.50	....	3.50	2.50	296.00
GRADUATE—Resident....	100.00	66.50	8.50	....	3.50	....	178.50
Nonresident..	165.00	116.50	8.50	....	3.50	....	293.50
DENTAL HYGIENIST— (Junior)—Resident....	100.00	66.50	8.50	3.50	....	2.50	181.00
Nonresident..	165.00	116.50	8.50	3.50	....	2.50	296.00
DENTAL HYGIENIST— (Senior)—Resident....	100.00	66.50	8.50	....	....	2.50	177.50
Nonresident..	165.00	116.50	8.50	....	....	2.50	292.50

SUMMER QUARTER

GRADUATE—Resident....	\$100.00	\$37.50	\$2.50	....	\$3.50	....	\$143.50
Nonresident..							

* Subject to change.

† Other fees consist of Student Activities, \$2.50; ASUW Bond Redemption, \$3.50; HUB Bond Redemption \$1.00; Building Fund. \$1.50.

FIRST YEAR SCHEDULE

Autumn Quarter

Hours	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8:30-MW 8:00-TThF	Anat. 328 (Gross Anat.)	Dental Mat. 131	Anat. 328 (Gross Anat.)	Dental Mat. 131	Oper. Dent. 132 (Oral Anat.)
9:30-12:20-MW 9-11:50-TThF	Gross Anat. Lab.	Dental Mat. Lab.	Micro. Anat. Lab.	Dental Mat. Lab.	Oral Anat. Lab.
2:30					
1:30-2:20	Oper. Dent. 132 (Oral Anat.)	Anat. 330 (Micro. Anat.)	Free	Anat. 328 (Gross Anat.)	Anat. 330 (Micro. Anat.)
2:30-3:20	Oral Anat. Lab.	Micro. Anat. Lab.		Gross Anat. Lab.	Gross Anat. Lab.
3:30-4:20					
4:30-5:00					

Winter Quarter

8-8:50	Dent. Sci. & Lit. 100 (Orientation)	Free	Free	Free	Oper. Dent. 133 (Oral Anat.)
9:30	Physiol. & Biophys. 126 (Human Physiol.)	Oral Path. 131 (Oral Histology & Embryology)		Oral Path. 131	Oral Anat. Lab.
10:30	Physiology Lab.	Oral Histology & Embryology Lab.		Oral Histology & Embryology Lab.	
11:30					
1:30-2:20	Anat. 331 (Neuroanat.)	Anat. 329 (Gross Anat.)	Physiol. & Biophys. 126	Physiol. & Biophys. 126	Anat. 329
2:30-3:20	Neuroanat. Lab.	Gross Anat. Lab.	Physiol. Lab.	Physiol. Lab.	Gross Anat. Lab.
3:30-4:20					
4:30-5:00					

Spring Quarter

8:30	Biochem. 361 (Biochemistry)	Biochem. 362 (Biochemistry) (Conf.)	Biochem. 361 (Biochemistry)	Biochem. 362 (Biochemistry) (Conf.)	Biochem. 361 (Biochemistry)
9:30	Prosth. 131 (Complete Denture Technic)	Biochemistry Lab.	Free	Biochemistry Lab.	Oper. Dent. 134
10:30	Prosth. Lab.		Oper. Dent. 134 Oral Anat.Lab.		Oral Anat. Lab.
11-11:50			Oper. Dent. 131.		Prosth. 131
1:30-2:20	Oper. Dent. 131	Prosth. 131 Lab.			
2:30-3:20	Operative Dent. Lab.		Operative Dent. Lab.	Prosth. Lab.	Prosth. Lab.
3:30-4:20					
4:30-5:00					

SECOND YEAR SCHEDULE

Autumn Quarter

Hours	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8:30-MW 8:00-TThF	Micro. 235	Oper. Dent. 231	Micro. 235	Oper. Dent. 231	Pedo. 200
9-9:50		Oper. Dent. Lab.		Oper. Dent. Lab.	Micro. 235 Lect.
10-10:50	Microbiology Lab.		Microbiology Lab.		
11-11:50	Fixed Partial Dentures 231	Prosthodontics Lab.	Free	Prosthodontics Lab.	Microbiology Lab.
1:30-2:20				Prosthodontics Lab.	Prosthodontics Lab.	Fixed Partial Dentures 231
2:30-3:20	Fixed Partial Dentures Lab.	Prosthodontics Lab.	Free	Prosthodontics Lab.	Fixed Partial Dentures Lab.
3:30-4:20					
4:30-5:00					

Winter Quarter

8-8:50	Prosthodontics Lab.	Oper. Dent. 232	Prosthodontics Lab.	Oper. Dent. 232	Dent. Sci. & Lit. 200 (Dent. Hist.)
9-9:50	Prosthodontics Lab.	Operative Dent. Lab.	Prosthodontics Lab.	Oper. Dent. Lab.	Oral Diag. & Treat. Plan. 216
10-10:50					Perio. 200
11-11:50	Fixed Partial Dentures 232	Path. 231 (General Path.)	Free	Path. 231	Pedo. 201
1:30-2:20					Fixed Partial Dentures 232
2:30-3:20	Fixed Partial Dentures Lab.	Pathology Lab.	Free	Pathology Lab.	Fixed Partial Dentures Lab.
3:30-4:20					
4:30-5:00					

Spring Quarter

8-8:50	Pharmacol. 234 (Gen. Pharm.) 8:30	Oper. Dent. 233	Pedo. 216	Oper. Dent. 233	Endo. 232
9:30	Oral Surgery 200	Oper. Dent. Lab.	Pedodontics Lab.	Oper. Dent. Lab.	Endodontics Lab.
10:30	Endo. 201				
11:30	O.D.T.P.* 217, O.S. 200, Perio. 231 11:00-12:30	O.D.T.P. 217, O.S. 200, Perio. 231	Pharmacol. Lab. 234 1:00	Pharmacol. 234 1:30	Fixed Partial Dentures 233
1:30-2:20	Fixed Partial Dentures 233				
2:30-4:30	Fixed Partial Dentures Lab.	O.D.T.P. 217, O.S. 200, Perio. 231	Pharmacol. Lab. 234 1:00	O.D.T.P. 217, O.S. 200, Perio. 231	Fixed Partial Dentures Lab.

* Oral Diagnosis and Treatment Planning

THIRD YEAR SCHEDULE

Autumn Quarter

Hours	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8-8:50	Prosth. 300	Oper. Dent. 300	O.D.T.P. 300	Oral Surgery 300	Free
9-9:50	Pedo. 300	Perio. 300	Endo. 304	Fixed Partial Dentures 300	Perio. 300
10-12:30	CLINIC	CLINIC	CLINIC	CLINIC	CLINIC
1:30-2:30	CLINIC 2:00	Oral Pathology 331	CLINIC 2:00	Oral Pathology 331	CLINIC 2:00
2:30-4:30		Oral Pathology Lab. 2:30-5:00		Oral Pathology Lab. 2:30-5:00	

Winter Quarter

8-8:50	Prosth. 301	Prosth. 303	Free	Fixed Partial Dentures 301	Free
9-9:50	O.D.T.P. 301	Oper. Dent. 301	Pedo. 301	Oral Surgery 301	Perio. 301
10-12:30	CLINIC	CLINIC	CLINIC	CLINIC	CLINIC
2:00-4:30	CLINIC	CLINIC (Oper. Block 1:00)	CLINIC	CLINIC 2:00	CLINIC (Oper. Block 1:00)

Spring Quarter

8-8:50	Prosth. 302	Dent. Sci. & Lit. 302 (Tech. Composition)	Oper. Dent. 302	Dent. Sci. & Lit. N300 (Dent. Medicine)	Dent. Sci. & Lit. 302
9-9:50	Orthodontics 300	Prosth. 304	Fixed Partial Dentures 302	Oral Surgery 302	Dent. Sci. & Lit. N301
10-12:30	CLINIC	CLINIC	CLINIC	CLINIC	CLINIC
2-4:30	CLINIC	CLINIC (Oper. Block 1:00)	Oral Surgery 303 1:00-2:00 (General Anesthesia)	CLINIC	CLINIC
			Oral Surgery 331 Lab. 2:00-3:00—3:00-5:00		

FOURTH YEAR SCHEDULE

Autumn Quarter

Hours	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8-8:50	Oral Surgery 400	Orthodontics 400	Dent. Sci. & Lit. 403 (Jurisprudence)	Dent. Sci. & Lit. 431 (Dent. Ethics & Office Mgmt.)	O.D.T.P. 400
9-9:50		Fixed Partial Dentures 400	Oper. Dent. 400		Prosthodontics 400
10-12:30	CLINIC	CLINIC	CLINIC	CLINIC	CLINIC
2-4:30					

Winter Quarter

8-8:50	Oral Surgery 401	Orthodontics 401	O.D.T.P. 401	Oral Surgery 403 (Maxillofacial Surgery)	Dent. Sci. & Lit. 432 (Dent. Ethics & Office Mgmt.)
9-9:50	Dent. Sci. & Lit. 401 (Applied Dental Science)	Prosthodontics 402	Oper. Dent. 401	Dent. Sci. & Lit. 401 (Applied Dental Science)	F.P.D. 401
10-12:30	CLINIC	CLINIC	CLINIC	CLINIC	CLINIC
2-4:30					

Spring Quarter

8-8:50	Periodontics 400	Prosthodontics 401	Oral Surgery 404	Conjoint (Dent.) 402 (Applied Ther. & Prescrib.)	O.D.T.P. 402
9-9:50	Dent. Sci. & Lit. 433 (Dent. Ethics & Office Mgmt.)	Prosthodontics 401 Oral Surgery 402	Operative 402		Pedodontics 400
10-12:30	CLINIC	CLINIC	CLINIC	CLINIC	CLINIC
2-4:30					

AWARDS

MOSBY BOOK AWARDS. The Mosby Company provides awards for five senior theses representing the most significant contribution to dental literature. These awards are \$30.00 certificates entitling the students to a choice of dental books.

THE AMERICAN SOCIETY OF DENTISTRY FOR CHILDREN. This award is presented by the Department of Pedodontics to the two senior dental students who have shown the most outstanding interest and achievement in clinical pedodontics. The award consists of a certificate of merit, one year's membership in the American Society of Dentistry for Children, and a one-year subscription to the *Journal of Dentistry for Children*.

THE AMERICAN ACADEMY OF PERIODONTOLOGY AWARD. For exceptional interest and ability in the field of periodontics, the American Academy of Periodontology awards two senior students a one-year subscription to the *Journal of Periodontology*.

THE AMERICAN ACADEMY OF DENTAL MEDICINE AWARD. A five-year subscription to the *Journal of Dental Medicine* is presented to the senior student demonstrating unusual excellence in this phase of dentistry.

DEPARTMENT OF PROSTHODONTICS AWARD. A one-year subscription to the *Journal of Prosthetic Dentistry* is presented to the senior student who has demonstrated unusual ability in this phase of clinical dentistry.

WASHINGTON STATE DENTAL ASSOCIATION AWARD. This certificate is presented to the senior student who has demonstrated character and leadership, together with the highest scholastic achievement during the four-year dental course.

AMERICAN ACADEMY OF GOLD FOIL OPERATORS. A plaque is awarded each year to the most deserving graduating students for gold foil excellence.

THE ALPHA OMEGA SCHOLARSHIP AWARD. This plaque is presented to the senior student with the highest scholastic average for his four years of dental studies.

WASHINGTON STATE DENTAL HYGIENISTS' ASSOCIATION AWARD. A one-year complimentary membership to the Washington State Dental Hygienists' Association is presented to the senior dental hygiene student whose activities have been outstanding, and who shows promise of those qualities of leadership necessary for the advancement of the profession.

OMICRON KAPPA UPSILON

Omicron Kappa Upsilon is the national dental honorary society which was founded in 1914. Sigma Sigma Chapter at the University of Washington was chartered in the spring of 1950 when the first class in Dentistry was graduated.

Each year the Chapter elects to membership 12 per cent of the graduating class in dentistry who have distinguished themselves in scholarship and character and who possess potential qualities for future professional growth and attainments.

SIGMA PHI ALPHA

Sigma Phi Alpha is the national dental hygiene honor society which was founded in 1958. Sigma Chapter at the University of Washington elects to membership each year 10 per cent of the graduating class in dental hygiene who have distinguished themselves in scholarship and character and who possess outstanding qualities for future professional growth.

SCHOLARSHIPS AND FELLOWSHIPS

BEN AND BETTY ZUKOR SCHOLARSHIP FUND. The annual income of a fund established in 1957 by Ben and Betty Zukor is available to a worthy dental student. The award is made upon recommendation of the University Scholarship Committee.

ORAL B. TOOTHBRUSH COMPANY SCHOLARSHIP. This scholarship, in the amount of \$500, will be awarded to the student who, upon completion of the junior year, was most worthy of the award in the opinion of the Dean and the Department heads concerned.

OMICRON KAPPA UPSILON SCHOLARSHIP. An annual award to the junior who has shown outstanding scholarship and character during his first three years in the study of dentistry. The award is of variable amount and selection is determined by members of Omicron Kappa Upsilon.

TACOMA DENTAL AUXILIARY SCHOLARSHIP. A gift of \$200 is awarded by the Tacoma District Dental Auxiliary to the junior student whose past scholastic and activities records show promise of future success in academic pursuits and who has need of financial assistance to complete her dental hygiene education.

WOMEN'S AUXILIARY TO THE WASHINGTON STATE DENTAL ASSOCIATION. An annual award of \$250 each to four second- or third-year dental students.

STUDENT PART-TIME RESEARCH FELLOWSHIPS. Awards in the amount of \$600 are available to a limited number of undergraduate dental students who are interested in undertaking research. The research may be on a part-time basis during the academic year or full time during the summer quarter. The grants are made upon the recommendation of the department heads concerned and the Dean. Funds for this purpose are provided on an annual basis by the Division of Research Grants, National Institutes of Health, and the United States Department of Public Health.

Information concerning other scholarships and fellowships for University students may be obtained from the Office of the Dean of Students.

RESEARCH GRANTS. Grants-in-aid for research and special projects in the School of Dentistry totaling approximately \$156,000 have been received during the past year. About \$151,000 was received from government agencies and private sources, and some \$5,000 from the state of Washington under Initiative 171.

FINANCIAL AID TO STUDENTS

Students enrolled in the School of Dentistry may obtain financial loans from the Hayden-Mackey Dental Student Loan Fund. The loan fund is administered by the Hayden-Mackey Memorial Dental Student Loan Fund Committee consisting of three faculty members and the Dean of Dentistry *ex officio*.

Loans to students shall be made under the following conditions:

Sec. I. Loans must be approved by a majority vote of the fund committee.

Sec. II. Loans shall be made only to the following recipients: Undergraduate or graduate students in the School of Dentistry, University of Washington, who may show just need of the loan and who have maintained a 2.00 grade-point average in the School of Dentistry and who will continue with the aid of the loan in their course of study in the School of Dentistry, University of Washington.

Sec. III. The loan agreement shall be as follows:

a) Short-term loans shall be repaid within one year after the loan is made. There shall be no interest rate.

b) Long-term loans shall be repaid in quarterly payments which begin one year following graduation.

c) Long-term loans shall carry an interest rate of 2 per cent and shall be repaid within four years following graduation.

d) No signer is required for a loan unless the fund committee so designates.

e) Extension of all loans will be granted at the discretion of the University Comptroller.

Students are urged to make application for loans by filling out a University Loan Fund application in triplicate. These application forms may be obtained from the Office of the Dean of Dentistry.

The W. K. Kellogg Foundation has provided a perpetuating revolving loan fund for undergraduate dental students.

AMERICAN DENTAL ASSOCIATION—FUND FOR DENTAL EDUCATION LOAN FUND. A perpetuating revolving loan fund for undergraduate dental students.

AMERICAN DENTAL TRADE ASSOCIATION SENIOR STUDENT LOAN FUND. A revolving loan fund administered by the American Dental Trade Association upon approval by the Dean of student application.

LEONA M. HICKMAN STUDENT LOAN FUND administered by the Main Office of the People's National Bank. Male residents of King County, Washington, under thirty years of age are eligible for a Hickman Loan. Application should be made directly to the People's National Bank.

WASHINGTON STATE DENTAL ASSOCIATION LOAN FUND administered by the Washington State Dental Association.

INTERNATIONAL COLLEGE OF DENTISTS LOAN FUND. A student loan fund of \$300 per year for use by a senior dental student. The loan to be repaid within three years after graduation.

Any gifts or memorial contributions to the Hayden-Mackey Memorial Dental Student Loan Fund will be gratefully received and acknowledged by the fund committee. Such gifts or contributions are tax exempt.

THE DEPARTMENTAL PROGRAMS

THE SCHOOL OF DENTISTRY offers courses leading to the degrees of Doctor of Dental Surgery (D.D.S.), Bachelor of Science, Master of Science in Dentistry, as well as Certificates in orthodontics, pedodontics, or restorative dentistry.

DEGREES

DOCTOR OF DENTAL SURGERY. Upon completion of the four-year curriculum of the School of Dentistry, the D.D.S. degree is awarded to candidates who have (1) given evidence of good moral character; (2) completed the last two years of dental training as regularly matriculated students in the School of Dentistry; (3) satisfactorily completed all the required work with a grade-point average of at least 2.00; (4) fulfilled all special requirements; and (5) discharged all indebtedness to the University.

Work leading to the following degrees is also offered in the School of Dentistry.

BACHELOR OF SCIENCE. The curriculum leading to this degree is given by the Department of Dental Hygiene. See page 48.

MASTER OF SCIENCE IN DENTISTRY. Work leading to this degree is available through the Graduate School. See page 53.

CERTIFICATE IN ORTHODONTICS, PEDODONTICS, OR RESTORATIVE DENTISTRY. Programs are not administered by the Graduate School; no thesis is required. See page 54.

The School also provides professional training in the areas of basic science, for which the Bachelor of Science degree may be awarded by the College of Arts and Sciences, upon completion of the requirements for a Major, and approval of the department concerned.

LICENSURE

Admission to the practice of dentistry in any state is conditional upon the candidate's meeting the requirements of the State Board of Dental Examiners. In the state of Washington admission to practice is dependent upon the candidate's having a D.D.S. or a D.M.D. degree and passing the examination conducted semi-annually by the State Board of Dental Examiners. The basic science examination may be waived if the candidate presents credentials showing he has successfully passed Part I of the National Board Dental Examination.

Further information about licensure requirements and time of examinations may be obtained from the State Department of Licenses, Professional Division, Olympia, Washington.

COURSES OF INSTRUCTION

BASIC SCIENCES

ANATOMY

Chairman: N. B. EVERETT, G511 Health Sciences Building

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 a degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*.

COURSES

Conjoint 317-318 Elementary Anatomy and Physiology (6-6) (See Conjoint Courses, School of Medicine Bulletin.)

328, 329 Gross Anatomy (6, 4)

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)

Lecture and laboratory work in microscopic anatomy. For dental students; others by permission.

331 Neuroanatomy (2)

Lecture and laboratory work in neuroanatomy. For dental students; others by permission.

404 Human Embryology (3)

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. **Blandau**

405-406 Microscopic and Submicroscopic Anatomy (4-4)

Essentials of microscopic, submicroscopic, and chemical anatomy. Required for first-year medical students. Prerequisite for nonmedical students, permission.

Conjoint 409 Basis of Neurology (3,5, or 8) (See Conjoint Courses, School of Medicine Bulletin.)

440 Special Topics in Dissection (1 or 2, maximum 6)

Individual work in dissection and study of selected regions of the body. Prerequisite, permission. **Bassett**

444 History of the Morphological Sciences (2-3)

Growth of animal morphology from antiquity through the nineteenth century, emphasizing development of biological ideas, methodology, and other influences contributing to modern disciplines. Prerequisite, permission. **Bodemer**

505 Advanced General Histology (3)

Comparative study of tissues in selected phyla of vertebrates and invertebrates. Prerequisite, 330, 405 or permission. **Roosen-Runge, Wood**

510 Cytochemistry (4)

The finer distribution of chemical substances in cells and tissues; methods of cytochemistry and their theoretical basis and validity. Prerequisite, permission.

515 Biological X-ray Structure Analysis (3)

Theory of X-ray diffraction, with emphasis on applications to biological systems. Prerequisite, permission. **Jensen**

518 Developmental Neurology (2)

Detailed consideration of the problems of development, growth, and regeneration of the nervous system and its functions. (Offered Winter Quarter, 1964.) Prerequisite, Zoology 456 or equivalent. **Bodemer**

521 Seminar in Molecular and Submicroscopic Anatomy (2)

The molecular and micellar basis of bodily structure. Prerequisite, permission. **Luft, Wood**

525 Brain Dissection (2)

A detailed consideration of the macroscopic anatomy of the human brain. Prerequisite, permission. **Everett**

530 Biological Tracer Techniques (2)

Techniques of using radioactive isotopes as tracers in biological research. Prerequisite, permission. **Everett, Rieke**

- 531, 532, 533, Electron Microscopy (2-5, 2-5, 2-5)** **Luft**
Theoretical and practical aspects of electron microscopy of biological material, including electron diffraction. Prerequisites, 405-406 or permission.
- 540 Embryology of the Heart (2)** **Blandau**
A detailed study of the embryology of the heart and great vessels during the first eight weeks of life. (Offered Winter Quarter, 1964.) Prerequisite, 404.
- 550 Biological Polarization Microscopy (4)**
Theory, technique, and application of polarization microscopy in biological studies. Prerequisite, permission.
- 555 Mammalian Reproduction (3)** **Blandau, Roosen-Runge**
Fundamental processes of reproductive anatomy and physiology of laboratory animals. Prerequisite, permission.
- 557 Seminar (1-3, maximum 9)**
Prerequisite, permission.
- Conjoint 585 Surgical Anatomy (2-4, maximum 12)**
(See Conjoint Courses, School of Medicine Bulletin.)

COURSES FOR GRADUATES ONLY

- 600 Research (*)**
Prerequisite, permission.
- 700 Thesis (*)**

BIOCHEMISTRY

Chairman: HANS NEURATH, C408 Health Sciences Building

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. The course of advanced study is designed to give each student a firm foundation upon which to base further professional progress. 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. The laboratories of the Department are excellently equipped for modern biochemical research. Students who intend to work towards a degree of Master of Science, or Doctor of Philosophy must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. They must present a bachelor's degree with a major in chemistry or its equivalent, and should have some background in biology. Applicants should communicate with the Chairman of the Department before registration.

COURSES

- 361 Biochemistry (3)**
An introductory one-quarter course in general biochemistry covering basic principles, including the structure and metabolism of biologically important compounds. For students in dentistry. Prerequisite, Chemistry 102 or 232.
- 362 Biochemistry Laboratory (3)**
Laboratory exercises and conferences. Certain experimental aspects of biochemistry of special interest to dental students are considered. For dental students. Prerequisite, 361, which may be taken concurrently.

MICROBIOLOGY

Chairman: CHARLES A. EVANS, G305 Health Sciences Building

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 and dental students, the Department of Microbiology offers programs in microbiology leading to bachelor's degrees in the College of Arts and Sciences. The purpose of the undergraduate degree is to prepare the individual to assume the responsibilities of a microbiologist upon graduation and to provide him with the background which will permit him to study for an advanced degree if his capabilities warrant it. Students who intend to work toward a degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. The fields of specialization for advanced degrees are general and medical bacteriology, immunology, parasitology, medical mycology, virology, and physiology of bacteria. Course requirements vary according to the field chosen.

COURSES

- 235 Microbiology for Students in Dentistry (7)** **Holland**
Lecture and laboratory introducing the student to the principles of microbiology. Infectious microorganisms and the flora of the mouth are emphasized. Required for second-year dental students. Students who have had previous training in microbiology may substitute a research problem for the laboratory work. Prerequisite, for nondental students, permission.
- 301 General Microbiology (5)** **Nester**
Microorganisms and their activities. For students of dental hygiene, pharmacy, nursing, home economics, education, and others interested in a one-quarter survey course, with minimal training in chemistry. Prerequisite, two quarters of general chemistry.

PATHOLOGY

Chairman: EARL P. BENDITT, D505 Health Sciences Building

Pathology is the study of disease processes. The functional manifestations of disease are the expression of underlying morphological and chemical aberrations. Hence, the study of disease involves the application of a wide variety of techniques such as electron microscopy, histo- and cytochemistry, and others, along with the use of advanced concepts of modern biological investigation.

Courses are offered for medical students, dental students, and other students of the health sciences. A program leading to the Doctor of Philosophy degree in the field of Experimental Pathology is offered through the Graduate School to qualified individuals. Postdoctoral training for qualified persons is also offered in Pathology.

A curriculum leading to the degree of Bachelor of Science in Medical Technology is provided in the Department of Pathology. This curriculum is offered through the College of Arts and Sciences.

COURSES

- 231 General Pathology (5)**
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 gross and microscopic anatomy, physiology, and biochemistry is essential to understand 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.

PHARMACOLOGY

Chairman: JAMES M. DILLE, F421 Health Sciences Building

Pharmacology deals with the mechanisms whereby modification of physiological function is produced by drugs, and with 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 a degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. They must present a bachelor's degree with a major in any of the sciences, such as zoology, chemistry, physics, pharmacy, psychology, or physiology. Applicants should communicate with the Chairman before registration.

COURSES

234 General Pharmacology (4)

The action of drugs on physiological functions, 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.

PHYSIOLOGY AND BIOPHYSICS

Chairman: THEODORE C. RUCH, G405 Health Sciences Building

Physiology deals with the processes, activities, and phenomena incidental to and characteristic of life and living organisms. Courses in this field are given for medical, dental, and nursing students and for graduate students.

In biophysics the emphasis is on the physical aspects of organs and systems, studied by the instruments and methods of thinking used by physicists. A bachelor's degree in physical science or equivalent is required for students specializing in biophysics.

Students who intend to work toward a degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. Students with a bachelor's degree in zoology, psychology, chemistry, engineering, physics or with an M.D. degree are accepted to work for Master of Science and Doctor of Philosophy degrees.

COURSES

126 Human Physiology (6)

Woodbury

Lectures, laboratories, demonstrations, and small group conferences in human physiology stressing applications to dentistry. For dental students.

CLINICAL DENTAL SCIENCES

DENTAL SCIENCE AND LITERATURE

Chairman: BERTON E. ANDERSON, B324 Health Sciences Building

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)

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, the critical point of view in the field, and the Code of Ethics of the American Dental Association.

131 Dental Materials (4)

Gilbert

Physical and chemical properties of dental materials.

200 Dental History (1)

Mehus

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)

Systemic 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)** **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 communication.
- 401 Applied Dental Science (2)**
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)** **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)** **Anderson**
Office location, arrangement, furnishings, equipment, and personnel; patient and financial records, taxes, patient-dentist relationships; credit, collections, and fees; banking and accounting; Code of Ethics of The American Dental Association and its application.

FIXED PARTIAL DENTURES

Chairman: K. N. MORRISON, A407 Health Sciences Building

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)** **Warnick**
Fixed partial denture fundamentals; construction of selected cases on technic models.
- 300, 301, 302 Fixed Partial Dentures (1,1,1)** **Vigg**
Lectures on various phases of typical crown and fixed partial denture construction.
- 346 Clinical Crowns and Fixed Partial Dentures (5)** **Morrison**
Construction of crowns and fixed partial dentures 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)** **Morrison**
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 (8)** **Morrison**
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)** **Morrison**
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.
- 562 Advanced Dental Ceramics (3)** **Morrison**
Baked porcelain as a substitute for lost tooth structure. Physical properties of the material; pyrochemical reactions in firing. Indications and contraindications in restorative dentistry. Color in dental ceramics; esthetics a major consideration; use of strains. Veneer crowns and inlays—variant preparations of the teeth. Methods of impression taking, die formations, and construction of matrices. Manipulation of the various porcelains; the factors involved. Variations in techniques of fabrication of restoration. Clinical considerations in respect to insertion and maintenance.
- 700 Thesis (*)** **Morrison**
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.

OPERATIVE DENTISTRY

Chairman: GERALD D. STIBBS, B404 Health Sciences Building

Operative Dentistry is primarily concerned with maintaining the natural dentition in good health. It has to do with preventing the ravages of dental caries and with restoring to health and function carious and mutilated teeth with various restorative materials and means.

In addition to the courses for undergraduate dental students, the Department of Operative Dentistry offers a major for students working toward the degree of Master of Science in Dentistry through the restorative dentistry graduate program.

COURSES

- 131 Elementary Operative Dentistry Technic (4)** **Haberman, Stibbs, Welk**
Fundamental principles of cavity preparation; training in digital skill.
- 132, 133, 134 Oral Anatomy (4,2,2)** **Schroeter**
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)** **Ostlund**
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.
- 300, 301, 302 Operative Dentistry (1,1,1)** **Alexander, Diepenheim, Merrill**
Lectures on the clinical application of knowledge acquired in lower-division technic courses, introduction to professional conduct and clinical demeanor.
- 346 Clinical Operative Dentistry (8)** **Stibbs**
Clinical procedures in all phases of operative dentistry; varied clinical experience under close supervision.
- 400, 401, 402 Advanced Operative Dentistry (1,1,1)** **Ellsperman, Smith, Stibbs**
Lectures on refinements in technical procedures, treatment of atypical cases, and problems in diagnosis and treatment planning.
- 446 Advanced Clinical Operative Dentistry (7)** **Stibbs**
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)** **Stibbs**
Metallography of silver-tin amalgams; physical properties of zinc oxyphosphate cements, siliceous cements, and acrylic resins. Postoperative history of teeth restored with plastic materials; relative service life 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)** **Stibbs**
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 preparations for foil: Black, Ferrier, Woodbury, True, etc. Procedures for condensation and finishing.
- 700 Thesis (*)**
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.

ORAL DIAGNOSIS AND TREATMENT PLANNING

Chairman: **FREDERIC L. JACOBSON, B309 Health Sciences Building**

The Department of Oral Diagnosis and Treatment Planning provides training in diagnostic techniques, such as interrogation, examination, and X ray. The student learns to correlate information gained in the various departments and to plan both ideal and practical treatment for the patient.

COURSES

- 216, 217 Oral Roentgenology (1,1)** **Jacobson**
Physical, clinical, and interpretative aspects of dental X-ray procedures, with practical application in the completion of acceptable full-mouth surveys on patients.
- 300, 301 Oral Diagnosis and Treatment Planning (1,1)** **Degering, Jacobson**
Fundamental procedures in oral diagnosis; preparation for advanced instruction.
- 346 Clinical Oral Diagnosis and Treatment Planning (1)**
Opportunity for examining, performing X-ray survey, and planning treatment for less involved patients. Students also participate in rendering diagnosis and emergency treatment.

- 400, 401, 402 Advanced Oral Diagnosis and Treatment Planning (1,1,1)** **Jacobson**
Treatment planning of cases and familiarization with the clinical detection of oral pathological conditions. Advanced X-ray interpretation.
- 446 Advanced Clinical Oral Diagnosis and Treatment Planning (1)**
Advanced instruction in diagnosis and in the handling of patients. Students are in block assignment. Morning sessions are devoted to seminar discussion. During afternoon sessions, students perform roentgenographic surveys and complete oral diagnosis and treatment plans for prospective patients.

COURSES FOR GRADUATES ONLY

- 500 Extraoral Radiology (1)** **Jacobson**
The purpose of this course is to familiarize the student with the various techniques necessary to produce diagnostic radiographic films of the jaws and their contiguous parts. This is done by means of seminar and clinical performance on patients.

ORAL PATHOLOGY

Chairman: LEO M. SREEBNY, B122 Health Sciences Building

Oral Pathology is that division of general pathology which is concerned with the understanding of the cause and mechanism of diseases of the oral cavity and associated structures.

In addition to the courses for undergraduate dental students, the Department of Oral Pathology offers a graduate program for students working toward the degree of Master of Science in Dentistry with a major in oral pathology.

- 131 Oral Histology and Embryology (4)** **Tamarin**
A lecture-laboratory course dealing with the development of the facial region with emphasis on the oral and nasopharyngeal structures. Histology of enamel, dentin, dental pulp, cementum, periodontal membrane, alveolar bone, oral mucous membrane, maxillary sinus and temporomandibular articulation. (Formerly Periodontics and Endodontics 131.)
- 331 Oral Pathology (5)** **Sreebny, Yamane**
The principles of pathologic processes as related to diseases of the mouth and adjacent structures. Required for third-year dental students.

COURSES FOR GRADUATES ONLY

- 520 Seminar in Oral Pathology (1-3, maximum 9)** **Sreebny**
Conferences, seminars, and round table discussions of advanced topics and recent literature in oral pathology. Prerequisite, permission.
- 531 Oral Pathology (5)** **Sreebny, Yamane**
The purposes of this course are to train the student so that he may intelligently interpret manifestations of pathology as they occur in the oral cavity and to stimulate an intellectual curiosity regarding the basic pathological mechanisms responsible for these changes.
- 600 Research (*)**
Prerequisite, permission.
- 700 Thesis (*)**

ORAL SURGERY

Chairman: JOHN D. GEHRIG, B348 Health Sciences Building

The Department of Oral Surgery provides training and clinical experience in the procedures used for all types of operations in the oral cavity.

In addition to the courses for undergraduate dental students, the Department of Oral Surgery offers a graduate program for students working toward the degree of Master of Science in Dentistry with a major in oral surgery.

COURSES

- 200 Local Anesthesia (1)** **Briscoe**
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 contraindications 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)** **Swenson**
General principles of oral surgery practice; history taking and the performance of the oral examination; principles of asepsis; armamentarium; surgical techniques for the extractions of complicated teeth, impactions, soft and hard tissue surgery; pre- and postoperative care of the patient; types, prevention, and control of hemorrhage; dental emergencies with the fundamentals of diagnosis, treatment, and prevention of shock; inflammation and surgical bacteriology; anatomy of the fascial spaces and planes of the head and neck with the progress of oral infection through the same, and the appropriate anti-infective therapy.
- 303 General Anesthesia (1)** **Hansen**
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.
- 331 Oral Surgery Laboratory (1)** **Gehrig**
An introduction to the theoretical and technical aspects of exodontia and associated minor oral surgery is offered. A collation of the lecture material with clinical experience is presented with special emphasis on the medical conditions influencing dental surgery. Various operations, such as: biopsy; incision and drainage; hyperplastic tissue trim; buried root recovery; simple and surgical extractions; alveolectomy; perforated antrum care; and finally, maxillary and mandibular immediate denture surgery are performed on mounted models. Additional soft tissue surgery is performed during the dog surgery session. Practical clinical procedures, such as blood pressure determination; cuff test; venipuncture; intramuscular injection of penicillin; oxygen administration; artificial respiration; and tracheotomy palpation are practiced during the course. TV demonstrations of each procedure are performed prior to the laboratory session.
- 346 Clinical Exodontia (2)** **Gehrig**
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)** **Gehrig**
Major oral surgery: including the diagnosis and treatment of fractures of the jaw; bone grafting; disturbances of the temporomandibular articulation; affections of the fifth and seventh nerve; differential diagnosis and treatment of benign and malignant oral tumors; diagnosis and treatment of cysts and major salivary gland pathology, developmental deformities of the maxilla and mandible such as, prognathia, retrognathia, apertognathia, and the rudiments of oral plastic procedures; and the legal aspects of oral surgery.
- 403, 404 Maxillofacial Surgery (1,1)** **Gehrig**
Neoplasms and oncologic surgery of the head and neck and the fundamentals of maxillofacial and plastic surgery as well as emergencies in dental practice.
- 446 Clinical Oral Surgery (2)** **Gehrig**
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.

COURSES FOR GRADUATES ONLY

- 500, 501, 502 Oral Surgery Seminar (2,2,2)** **Gehrig, Swenson**
A continuous weekly seminar devoted to oral surgery theory and literature and practical case reviews.
- 530, 531, 532 Clinical Pathology Conference (1,1,1)** **Gehrig, Swenson**
A clinical pathology conference of clinic patients presented by graduate students.
- 540, 541, 542 Advanced Oral Surgery Clinic (3,3,3)** **Gehrig, Swenson**
The clinical diagnosis and treatment of oral surgical conditions.
- 550 Anatomical Approaches to Head and Neck Surgery (2)** **Gehrig, Swenson**
A study and laboratory dissection of the anatomical structures as they are found in major oral surgery procedures. Prerequisite, permission.
- 600 Research (*)** **Gehrig, Swenson**
An investigative program in one of the basic or clinical sciences under the direction of the departmental faculty. Prerequisite, permission.
- 700 Thesis (*)** **Gehrig, Swenson**

ORTHODONTICS

Chairman: ALTON W. MOORE, B337 Health Sciences Building

The objective of orthodontics is the prevention and correction of malocclusion of the teeth.

In addition to the courses for undergraduate dental students, the Department of Orthodontics offers a graduate program for students working toward the degree of Master of Science in Dentistry with a major in orthodontics.

COURSES

- 300 Orthodontics (1)** **Kraus**
 Discussion of the main features of human evolution with particular reference to the dentition and cranial skeleton. Emphasis on the geologic timetable, the taxonomic system, the principles of biologic evolution, and the important paleontological evidence for hominid evolution. Discussion of comparative odontology among the primates and current theories concerning the evolution of the dentition.
- 400, 401 Advanced Orthodontics (1,1)** **Erickson, Moore**
 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. Prerequisite, 300.

COURSES FOR GRADUATES ONLY

- 500, 501, 502, 503, 504 Orthodontics Seminar (2,4,4,2,2)**
 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)**
 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 (*)**
 Prerequisite, permission.
- 700 Thesis (*)**
 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

Chairman: DAVID B. LAW, B343 Health Sciences Building

The objective of the Department of Pedodontics is to provide the student with a broad understanding of the growth and the development of the child and the principles of preventive dentistry plus a working knowledge of the skills necessary for the maintenance of optimal dental health.

In addition to the courses for undergraduate dental students, the Department of Pedodontics offers a graduate program for students interested in working toward the degree of Master of Science in Dentistry with a major in pedodontics.

COURSES

- 200, 201 Preventive Dentistry (1,1)** **Law, Moore**
 Etiology and control of dental caries. Physiology and composition of saliva, ecology of the mouth, chemical composition of teeth, degradation of carbohydrates, 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.
- 216 Pedodontics (2)**
 Operative technics applicable to primary and mixed dentitions; cavity preparations in primary teeth, construction of a functional space maintainer, and restoration of a fractured incisor.
- 300, 301 Pedodontics (1,1)** **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.
- 346 Clinical Pedodontics (3)**
 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)** **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)

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 (2,2,2,2,2)****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 (*,*,*,*,*)

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 (*)

Prerequisite, permission.

700 Thesis (*)

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.

PERIODONTICS AND ENDODONTICS

Chairman: JOHN I. INGLE, B410 Health Sciences Building

In this Department, students are taught the basic knowledge and technics necessary in diagnosing and treating diseases of the supporting structures and pulp of the teeth.

In addition to the courses for undergraduate dental students, the Department of Periodontics and Endodontics offers a graduate program for students working toward the degree of Master of Science in Dentistry with a major in periodontics or endodontics.

COURSES**PERIODONTICS****200 Introduction to Periodontics (1).****Stern**

A lecture series which surveys periodontics and links this field to dentistry in general.

231 Clinical Periodontics (0)**Ogilvie**

A clinical and seminar experience in relating both the normal and the abnormal periodontium to dental practice.

300 Periodontics (2)**Ogilvie**

A lecture program intended to facilitate the development of clinical confidence and proficiency in dentistry. Cause and effect in periodontal disease, the objectives of therapy, the interpretation of case data, the determination of prognosis, the indications for and applications of treatment procedures.

301 Periodontics (1)**Ogilvie**

A continuation of Periodontics 300 (see above).

346 Clinical Periodontics (3)

Treatment of periodontal disease. Emphasis upon diagnosis, treatment planning and non-surgical treatment procedures.

400 Periodontics (2)**Ingle**

The surgical aspects of therapy in periodontics, their rationale, their selection, their application.

446 Advanced Clinical Periodontics (3)

More complex cases of periodontal disease. The development of skill in treatment planning and execution by the individual student. Concrete experiences in surgical periodontics.

COURSES FOR GRADUATES ONLY**546, 547, 548 Clinical Periodontics (3,4,4)****Schluger**

The clinical diagnosis and treatment of periodontal disease.

549, 550, 551 Clinical Periodontics (3,4,4)**Schluger**

The clinical diagnosis and treatment of periodontal disease. Prerequisites, 546, 547, 548.

576, 577, 578 Periodontics Seminar (2,2,2)**Schluger**

A continuous weekly seminar devoted to review of periodontic and related literature and to discussion of teaching methods and philosophy of teaching and treatment.

- 579, 580, 581 Periodontics Seminar (2,2,2)** **Schluger**
A continuation of the weekly seminars devoted to review of periodontic and related literature and to discussion of teaching methods and philosophy of teaching and treatment. Prerequisites, 576, 577, 578.
- 582, 583, 584 Treatment Planning Seminar (2,2,2)** **Schluger**
A weekly seminar to discuss controversial treatment problems and difficult diagnostic cases.
- 585, 586, 587 Treatment Planning Seminar (2,2,2)** **Schluger**
A continuation of the weekly seminar to discuss controversial treatment problems and difficult diagnostic cases. Prerequisites, 582, 583, 584.
- 591, 592, 593 Clinical Practice Teaching (1,1,1)** **Ingle**
A closely supervised experience in teaching clinical periodontics to the undergraduate dental student. Prerequisites, 546, 547, 548, 576, 577, 578.
- 600 Research (*)** **Schluger**
An investigative program in one of the basic sciences under the direction of the departmental faculty. Prerequisite, permission.
- 700 Thesis (*)** **Schluger**
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 clinical application.

ENDODONTICS

- 201 Introduction to Endodontics (1)** **Ingle, Zeldow**
A lecture course dealing with the anatomic, microanatomic, microbiologic, and pathologic problems encountered with the pulpless tooth and its sequelae.
- 232 Endodontic Technic (2)** **Ingle**
A lecture-laboratory course in root canal therapy in terms of present-day concepts, with emphasis on a definite, simplified technic. Treatment of extracted teeth as practice for clinical cases.
- 304 Endodontics (1)** **Ingle, Zeldow**
A lecture course in which is presented the differential diagnosis of facial pain, problems in pulp anesthesia, periapical surgery, and systemic antibiotic therapy.
- 349 Clinical Endodontics (2)**
The student is required to complete the endodontic treatment on an anterior, bicuspid, and molar tooth.
- 449 Advanced Clinical Endodontics (2)**
In addition to filling several root canals, the student performs periapical surgery and at least three minor operations (pulp capping, pulpotomy, or bleaching).

COURSES FOR GRADUATES ONLY

- 546, 547, 548 Clinical Endodontics (3,4,4)** **Natkin**
The clinical diagnosis and treatment of the pulpless tooth.
- 549, 550, 551 Clinical Endodontics (3,4,4)** **Natkin**
The clinical diagnosis and treatment of the pulpless tooth. Prerequisites, 546, 547, 548.
- 576, 577, 578 Endodontic Seminar (2,2,2)** **Natkin**
A continuous weekly seminar devoted to review of endodontic and related literature and to discussion of teaching methods and philosophy of teaching and treatment.
- 579, 580, 581 Endodontic Seminar (2,2,2)** **Ingle**
A continuous weekly seminar devoted to review of endodontic and related literature and to discussion of teaching methods and philosophy of teaching and treatment. Prerequisites, 576, 577, 578.
- 582, 583, 584 Treatment Planning Seminar (2,2,2)** **Ingle**
A weekly seminar to discuss controversial treatment problems and difficult diagnostic cases.
- 585, 586, 587 Treatment Planning Seminar (2,2,2)** **Ingle**
A continuation of the weekly seminar to discuss controversial treatment problems and difficult diagnostic cases. Prerequisites, 582, 583, 584.
- 591, 592, 593 Clinical Practice Teaching (1,1,1)** **Ingle**
A closely supervised experience in teaching clinical endodontics to the undergraduate dental student. Prerequisites, 546, 547, 548, 576, 577, 578.
- 600 Research (*)** **Zeldow**
An investigative program in one of the basic sciences under the direction of the departmental faculty. Prerequisite, permission.
- 700 Thesis (*)** **Zeldow**
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 clinical application.

PROSTHODONTICS

Chairman: **HARRY A. YOUNG, C404 Health Sciences Building**

The Department of Prosthodontics offers instruction in the construction and fitting of artificial dentures.

In addition to the courses for undergraduate dental students, the Department of Prosthodontics offers a major for students working toward the degree of Master of Science in Dentistry through the restorative dentistry graduate program.

COURSES

- 131 Complete Denture Technic (8)** **Bolender**
Theories, principles, and technics of constructing complete dentures.
- 231, 232 Removable Partial Denture Technic (4,4)** **Wykhuis**
Theories, principles, and technics of constructing removable partial dentures.
- 300, 301, 302 Complete Denture Prosthodontics (1,1,1)** **Young**
Evolution of concepts and operative procedures employed in clinical complete denture treatments.
- 303, 304 Removable Partial Denture Prosthodontics (1,1)** **Wykhuis**
Evolution of clinical procedures and concepts; discussion of operative procedures employed in clinical removable partial denture treatments.
- 346 Junior Clinical Prosthodontics (8)**
Clinical treatment of edentulous and partial edentulous patients.
- 400, 401 Advanced Complete Denture Prosthodontics (1,1)** **Wykhuis**
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)** **Young**
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)**
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

- 560 Complete Dentures (4)** **Young**
A seminar-clinic course in complete 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.
- 561 Immediate Dentures (4)** **Young**
A seminar-clinic course in immediate 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)** **Young**
A seminar-clinic course 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.
- 563 Obturators and Speech Appliances (2)** **Beder**
A lecture-seminar and laboratory course dealing with the theories, principles, and technics of clinical treatments, the construction and application of remedial appliances related to congenital and acquired defects of the palate and contiguous tissue. Clinical experience will be incorporated when suitable cases are available.
- 564 Definitive and Adjunctive Maxillofacial Appliances (2)** **Beder**
A lecture-seminar and laboratory course dealing with the theories, principles, technics of clinical treatment; the construction and application of vehicular, protective, and remedial appliances related to somato defects, osteotomized and osteotomized mandibles, irradiation therapy, stents, splints, and cranial defects. Clinical experience will be incorporated when suitable cases are available.
- 700 Thesis (*)** **Kydd**
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.

MAXILLOFACIAL PROSTHESIS CLINIC

Director: OSCAR E. BEDER, B134 Health Sciences Building

This clinic is a service clinic available to the public and all departments of the University for treatment falling in the maxillofacial field of prosthodontics. Treatment usually consists of constructing and fitting planned remedial and restorative appliances for losses or defects in the oral or facial regions. Expedient prosthodontic appliances are fabricated for losses and defects of other body areas and for adjunctive therapy of patients. Assistance is also rendered in developing special devices used for research and teaching by various departments.

PROSTHODONTIC LABORATORY

WALTER NAEVE, Chief Technician KENNETH MIFFLIN, Technician

This laboratory furnishes prosthodontic technician services to undergraduate students of the department and for the department's maxillofacial section. The laboratory furnishes its services to other Departments of the school and graduate students when requested.

CONJOINT COURSES

Conjoint courses are offered cooperatively by departments in the School of Dentistry. They are designed to integrate clinical training in two or more fields.

N361. Clinical Orientation (0)

Merrill

A course for third year students prior to the beginning of Autumn Quarter. It is designed to familiarize the student with clinical equipment and procedures and initiates the transition of thought from technical and laboratory methods to clinical application of them. It includes student exercises on each other in prophylaxis, rubber dam applications, and local anesthetic injections in preparation for treatment of patients.

402 Applied Therapeutics and Prescribing (2)

Zeldow

A lecture course designed to reacquaint the senior student with the pharmacologic action and therapeutic use of the antibiotics, analgesics, sedatives and tranquilizing agents. Lecturers from the Departments of Microbiology, Pharmacology, Medicine, Oral Surgery, and Periodontics and Endodontics present the background and clinical application of drugs in this fast-moving field.

532, 533, 534 Basic Science (3,4,4)

Ogilvie, Sreebny, Zeldow

Seminars on clinical pathologic phenomena with their basic causal factors discussed from inter-disciplinary viewpoints.

DENTAL HYGIENE

Director: MARTHA H. FALES, B214-B Health Sciences Building

Two years of pre-dental hygiene courses in the College of Arts and Sciences, followed by a two-year program in dental hygiene, lead to a Bachelor of Science degree with a major in Dental Hygiene or Public Health Dental Hygiene. The educational program is approved by the Council on Dental Education of the American Dental Association.

Two curricula are offered. Undergraduate students take the basic curriculum, which provides a background in the educational and clinical skills required for the professional practice of dental hygiene. Students who have received certificates in dental hygiene from other schools take a curriculum to prepare them for specialized positions in Public Health Dental Hygiene or Dental Hygiene Education.

The dental hygiene student learns and practices her future role as a member of the dental health team. She learns to provide clinical and educational services that include the oral prophylaxis (cleaning and polishing of teeth), the taking and processing of dental X-ray surveys, the application of fluoride solutions for prevention of dental caries, and the teaching of dental health facts to children and adults. The program is planned to give the student the wide range of professional experience available in a health sciences center. The dental hygiene student is encouraged to develop habits, interests, and attitudes favorable to her continued professional growth.

ADMISSION REQUIREMENTS

ENTRANCE TO THE UNIVERSITY. An applicant must meet the requirements of the College of Arts and Sciences as outlined in the *College of Arts and Sciences Bulletin*.

PREDENTAL HYGIENE, BASIC CURRICULUM. The basic curriculum is open to women of good health between the ages of 18 and 35. The student must complete 90 quarter credits in an accredited college or university and satisfy the required quarters of physical education activity. The Committee on Dental Hygiene Admissions requires the following courses given at the University of Washington:

English 101, 102, 103.....	Composition	9
Biology 101J-102J	General Biology	10
Chemistry 101.....	General and Organic Chemistry.....	5
Chemistry 102.....	General and Organic Chemistry.....	5
Health Education 110.....	Health Education	2
Physics 170	Intro. to Health Sciences Physics.....	5
Psychology 100	General Psychology	5
Sociology 110	Survey of Sociology	5
Speech 220	Intro. to Public Speaking.....	5
Electives in Humanities		10
Electives in Social Sciences (Soc. 110 may be counted in this).....		20
Other electives of student's choice.....		9
Physical Education Activity courses		3

Students who are taking their preprofessional training at the University of Washington follow the two-year predental hygiene program offered in the College of Arts and Sciences (see the *College of Arts and Sciences Bulletin*). Students in other institutions should check the course descriptions given in the *Bulletin*, compare the above listed courses with those given in their schools, and seek the advice of the Registrar for course equivalents. It is recommended that students who anticipate transferring to the University of Washington request an evaluation of the credits obtained during their first year of study. This may be accomplished by writing directly to the Department of Dental Hygiene.

DENTAL HYGIENE APTITUDE TEST. All dental hygiene applicants are required to take the aptitude test given under the auspices of the American Dental Hygienists' Association. The test is given only twice each year and an applicant must plan to take the test prior to the March 1 application. Information about the test and the dates and places it is given may be obtained from the Department of Dental Hygiene in the School of Dentistry.

GRADUATE CURRICULUM. Admission requirements to the University and the predental hygiene requirements listed above are the same as those listed for the basic curriculum. In addition, the candidate must be a graduate of a school of dental hygiene approved by the American Dental Association, Council on Dental Education.

APPLICATION PROCEDURE

One class of dental hygiene students is admitted each spring. On or before March 1, each applicant must submit the following:

1. Formal application on the form provided by the Committee on Dental Hygiene Admissions, School of Dentistry.
2. Official transcripts of high school and college records. Transcripts must be sent directly to the Committee on Dental Hygiene Admissions, School of Dentistry, from the Registrar's office of each institution in which predental hygiene education was obtained.
3. A written list of subjects which the applicant is taking or will take to complete the requirements.

4. At least two letters of recommendation, one from a science instructor and one from a business or professional person.

Additional transcripts must be provided by the applicant to show courses completed during each subsequent quarter following application.

PROCESSING OF APPLICATIONS

EVALUATION OF CREDENTIALS. The Committee on Dental Hygiene Admissions reviews the credentials and bases its decision on the objective evaluation of preprofessional education, scholastic records, residence of the applicant, dental hygiene aptitude test rating, and personal characteristics of the applicant.

PERSONAL INTERVIEW. Eligible applicants are interviewed by the Committee on Dental Hygiene Admissions. The interview is held at the School of Dentistry and the applicant is notified of the date and time. The purposes of the interview are to acquaint the Committee with the applicant and to answer any questions the applicant may have regarding the program.

NOTIFICATION OF ACCEPTANCE OR REJECTION. Candidates are given written notice of acceptance or rejection of their application as soon as possible after the Committee on Admissions has reached a decision. Applicants are requested to reply in writing to indicate their acceptance of the appointment.

TUITION AND FEES

Students in the dental hygiene curriculum pay the regular tuition of the School of Dentistry (see page 27). Expenses for uniforms, instruments, and other equipment are additional to the tuition fee.

BASIC CURRICULUM

MAJOR IN DENTAL HYGIENE. This program includes specific courses in the Schools of Dentistry and of Medicine and the Colleges of Pharmacy and of 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: Conjoint (Medical) 317-318 (Elementary Anatomy and Physiology); Education 209 (Educational Psychology); Education 188 (Principles of Education); Education 405 (Problems of Adolescence); Home Economics 300 (Nutrition); Microbiology 301 (General Microbiology); Pathology 310 (General Pathology); Health Education 292W (First Aid and Safety); Pedodontics 200 (Preventive Dentistry); Pharmacy 352 (Pharmacy and Therapeutics for Dental Hygienists); Psychiatry 450, 451 (Principles of Personality Development); and Preventive Medicine 323 (Introduction to Public Health Principles and Practices), and 464 (Community Health Education Techniques).

A total of 180 academic credits is required for graduation.

GRADUATE DENTAL HYGIENISTS' CURRICULUM

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 preprofessional 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 preprofessional program and the basic curriculum. They must have a total of 36 to

46 credits in dental hygiene, including a minimum of 10 taken with this Department. When teaching in dental hygiene is the chosen goal, additional courses in the College of Education are selected.

MAJOR IN PUBLIC HEALTH DENTAL HYGIENE. Students must fulfill the requirements of the preprofessional program and the basic curriculum. Required credits include 36 to 46 in dental hygiene (a minimum of 10 taken with this Department); 36 in public health (to meet health education option requirements in the Department of Preventive Medicine in the School of Medicine); and 36 in biological and physical sciences (including those taken in the preprofessional program).

The Public Health Traineeship Program of the United States Public Health Service offers awards to dental hygienists for undergraduate public health training.

COURSES FOR UNDERGRADUATES

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| 300 Dental Procedures (3) | Hastings |
| Lectures and demonstrations in dental procedures, dental specialties; emphasis on the role of auxiliary personnel. | |
| 331 Dental Anatomy (4) | Hodson |
| Morphology of permanent and primary teeth; sketching and carving of essential units. | |
| 332 Dental Materials (2) | Gilbert |
| Survey of the physical and chemical properties of dental materials, with laboratory experience in their manipulation. | |
| 333 Oral Radiographic Technique (3) | Wells |
| Principles and procedures in radiographic technique with clinical experience. | |
| 334 Oral Histology (3) | Tamarin |
| Development and microscopic anatomy of structures of the oral cavity. | |
| 335 Oral Prophylaxis (2) | Wells |
| Objectives and principles of oral hygiene; instrumentation and procedure of oral prophylaxis, topical fluoride application, oral inspection, and dental health instruction. | |
| 349 Clinical Oral Prophylaxis (4) | Wells |
| Clinical experience in the performance of oral prophylaxis, topical application of fluoride, and dental health instruction for patients. | |
| 401 Office Procedure and Ethics (2) | Wells |
| Dental office and clinic procedure; dental and dental hygiene ethics, professional interrelationships. | |
| 402 Community Dental Health (3) | Fales, Hastings |
| Application of educational principles to dental health teaching; instruction in planning for community dental health programs including actual dental survey experience; evaluation of dental health teaching materials. | |
| 403, 404 Principles of Dental Hygiene Practice (1,1) | Fales, Hastings |
| Presentation and analysis of dental health problems, with emphasis on advanced dental health instruction; experience in presentation of dental health material to groups. | |
| 405, 406 Oral Pathology (1,1) | Sreebny, Yamane |
| Study of diseases and abnormalities of the hard and soft tissues of the oral cavity. Prerequisite, 405 for 406. | |
| 407, 408 Principles of Periodontology (1,1) | Bechlem |
| Classification, etiology, and principles of treatment of periodontal diseases and the relationship of these to dental hygiene practice. Prerequisite, 407 for 408. | |
| 446 Field Practice (2) | Hastings |
| Advanced dental hygiene practice, including work in the University Child Health Center, in a public health department, hospitals, clinics, and schools. | |
| 447 Dental Hygiene Practice (4) | Ryan |
| Clinical procedures in all phases of dental hygiene; varied clinical experiences under close supervision. | |
| 448 Dental Hygiene Practice (4) | Ryan |
| Continued clinical procedure with expansion to include dental hygiene services to patients requiring special considerations. | |
| 449 Dental Hygiene Practice (4) | Ryan |
| Supervised opportunity to attain experience, knowledge, and skill so that each student may develop operative dental hygiene techniques commensurate with her ability. | |
| 491 Seminar in Dental Hygiene (2) | Fales |
| 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) | Fales |
| 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)** **Fales, Ryan**
Problems for study directed toward increased understanding in the selected field of practice. Presentation of background, objectives, program, and evaluation.
- 494 Principles of Teaching in Dental Hygiene (2)** **Fales**
Application of principles of learning to teaching methods and techniques effective in dental hygiene, with opportunity for course planning, demonstration, and practice teaching.

OTHER COURSES REQUIRED FOR DENTAL HYGIENE STUDENTS

- Conjoint (Medical) 317-318 Elementary Anatomy and Physiology (6-6)** **Skahen**
Human physiology with anatomical demonstration. An elementary course integrating anatomy, histology, physiology, and biochemistry of the human body. Offered by the Departments of Anatomy, and of Physiology and Biophysics. For nursing and dental hygiene students.
- Education 188 Principles of Education (3)** **Boroughs**
Contemporary education is subjected to historical and philosophical analysis. Visitations are arranged for on the elementary, junior, and senior high school levels.
- Education 209 Educational Psychology (3)** **Salyer**
The psychological basis of education. Recent experimentation. Prerequisites, Psychology 100 and a course in child development.
- Education 405 Problems of Adolescence (5)** **Salyer**
A survey of the problems of adolescence with analysis and discussion of their educational and social complications.
- Home Economics 300 Nutrition (2)** **Crum**
Importance of food to the maintenance of health; nutritive values and human needs emphasized; ways of meeting human requirements at different cost levels. For nonmajors in home economics.
- Microbiology 301 General Microbiology (5)** **Church**
Microorganisms and their activities. For students of pharmacy, nursing, home economics, education, and others interested in a one-quarter survey course, with minimal training in chemistry. Prerequisite, two quarters of general chemistry.
- Pathology 310 General Pathology (2)** **Wiegenstein**
Study of causes, processes, and effects of important diseases. Lectures, demonstrations, and discussions. A reasonable knowledge of anatomy, histology, and physiology is required. For students of dental hygiene and medical technology; others by permission.
- Pedodontics 200 Preventive Dentistry (1)** **Lewis, Peterson**
Etiology and control of dental caries. Physiology and composition of saliva, ecology of the mouth, chemical composition of teeth, degradation of carbohydrates, systemic factors in the caries process, enzyme inhibitors, fluorides, and caries susceptibility tests.
- Pharmacy 352 Pharmacy and Therapeutics for Dental Hygienists (3)** **Hammerlund**
Principles of pharmacy; mathematics of pharmacy; pharmacological and therapeutic action of drugs pertaining to dentistry.
- Health Education 292W First Aid and Safety (3)**
The student may meet requirements for both standard and advanced American Red Cross first aid certification. Includes safety education in schools.
- Psychiatry 450 Principles of Personality Development (2)** **Kaufman**
Discussion of the principles of personality development and the problems most commonly met. Consideration will be given to the physiologic, psychologic, and cultural factors from infancy through adolescence. For nonmedical students. Not open to students who have taken 267.
- Psychiatry 451 Principles of Personality Development (2)** **Heilbrunn**
Continuation of 450. Consideration will be given to the physiological, psychological, and cultural factors from maturity through old age. For nonmedical students. Prerequisite, 450 or permission.
- Prev. Med. 323 Public Health Organizations and Services (3)** **Wilkie**
Public health organization and activities; introduction to health education. For public health majors and students of nursing and dental hygiene; others by permission.

CONTINUATION DENTAL EDUCATION

Director: Berton E. Anderson

B322 Health Sciences Building

To provide for the ever-expanding developments in method and related subject matter in dentistry, a number of short, intensive courses ranging from one day to two weeks or longer are offered at various times in each special area of dentistry. Instructors are chosen from national and international sources to provide this

service. Since these courses are highly specialized, no specific course content may be conveniently listed. A list of forthcoming courses may be procured from the Office of the Director.

GRADUATE STUDY IN THE SCHOOL OF DENTISTRY

Director: Saul Schluger
B322 Health Sciences Building

MASTER OF SCIENCE IN DENTISTRY

The School of Dentistry offers, through the Graduate School, course work leading to a Master of Science in Dentistry degree with a major in endodontics, oral pathology, oral surgery, orthodontics, pedodontics, periodontics, and restorative dentistry (fixed partial dentures, operative dentistry, prosthodontics).

ADMISSION

An applicant is eligible for admission to the Graduate School for work leading to a Master of Science in Dentistry degree provided he is a graduate of a School of Dentistry approved by the Council on Dental Education of the American Dental Association, or of a university dental school, located outside of the North American continent, whose curriculum and admission requirements are similar to those of the School of Dentistry, University of Washington. The candidate must also meet the admission requirements of the Graduate School of the University of Washington.

After a candidate has been declared eligible for admission to the Graduate School, his acceptance as a student must be approved by the Graduate Admissions Committee of the School of Dentistry. This approval will be based upon the availability of places in the various classes. A maximum of ten students can be accommodated each year in orthodontics, two in pedodontics, and varying numbers, not to exceed two, in each of the three phases of restorative dentistry, depending upon the availability of teaching and research staff members. There are five openings for majors in periodontics, two in endodontics, and one in oral surgery, commencing every Autumn Quarter.

RESIDENCE

A minimum of six consecutive quarters (18 months) of residence is required for the Master of Science in Dentistry degree with a major in orthodontics or pedodontics; eight quarters (24 months) in periodontics, endodontics, or oral pathology; three quarters (9 months) in restorative dentistry; three quarters (9 months) of residence for oral surgery, plus two-year hospital residency, combined academic and hospital work. Under the program for restorative dentistry, the student determines his major (operative dentistry, fixed partial dentures, or prosthodontics) by the electives he selects. No foreign language is required.

PROGRAMS

The programs are planned to prepare students to think independently, to evaluate their own services and the literature, and to develop their clinical operative skills to a level to permit the successful practice of their chosen specialty. Emphasis is placed on the basic principles of diagnosis and treatment, which comprise the clinician's most valuable armamentarium. The seminar method of teaching is generally used. The purpose of the programs is not only to train students in the art of their respective specialties, but also to encourage basic science research in the specialties on a graduate level in possible preparation for academic careers or for research. The research may be undertaken in the major department or in cooperation with other departments. The opportunity for collaborative research is excellent because of the close proximity of the other colleges and departments in the University.

CLASS SCHEDULES

The graduate programs of the School of Dentistry operate on the quarter system of the University. There are three 11-week quarters in the academic school year. In order for the graduate dental programs to be continuous, the Summer Quarter has also been made an 11-week quarter, or equivalent in length to the other quarters in the school year.

APPLICATION PROCEDURE

Applications are received and processed throughout the school year from candidates desiring to work for a Master of Science in Dentistry degree with a major in any one of the major fields previously listed. Applications for admission to the graduate dental curriculum, along with all necessary credentials, must be submitted on or before December 1 for consideration for entrance in the following Autumn Quarter. This applies to all new students seeking admission as graduates. It is imperative that students observe this deadline in order to insure prompt attention to credentials and replies to correspondence.

POSTGRADUATE INSTRUCTION: CERTIFICATES IN DENTISTRY

Requirements for admission to the postgraduate programs of study for dental certificates are similar to those for admission to graduate study for the master's degree. The postgraduate student is required to maintain the same academic standards as the graduate student. These programs are not administered by the Graduate School and no thesis is required. The course content may vary somewhat from the graduate program. This will depend upon the department in which the course is taken.

Following the successful completion of the prescribed courses during the required residency, a Certificate in orthodontics, pedodontics, periodontics, endodontics, or restorative dentistry will be granted to the postgraduate student by the School of Dentistry. The fees per quarter are the same as for graduate training and the residency requirements remain the same. For further information and particulars regarding graduate study in the School of Dentistry address: Director of Graduate Dental Education, School of Dentistry, University of Washington, Seattle 5, Washington.

DENTISTRY

The courses listed here are for graduate and certificate dental students only. These courses include subject material applicable to all phases of dentistry and may be applied toward the major requirement for the degree of Master of Science in Dentistry.

COURSES FOR GRADUATES ONLY

- | | | |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| 416 | Scientific Methodology in Dental Research (3) | Kraus |
| | Principles of scientific methodology and basic statistics. Problem definition. Principles of classification. Collection of data. Techniques of analysis. Formation of hypothesis. Search of the literature. Experimentation. Sampling techniques. Graphic presentation of material. Ordering of quantitative data. Phenomena of distributions of biological data. Tests of significance, and their interpretation. | |
| 417 | Scientific Methodology in Dental Research (3) | Kraus |
| | Advanced biometric techniques. Analysis of variance and co-variance. Linear and curvilinear regression. Multiple regression and analysis of variance. Orthogonal polynomials. Experimental designs: general principles, precision, replications. Randomized blocks and Latin squares. Incomplete block designs. | |
| 510 | Applied Osteology and Myology of the Head and Neck (2) | Moore |
| | Detailed study as a background for the study of the growth and development of the head and for cephalometric roentgenogram interpretation. (Department of Orthodontics) | |
| 511 | Roentgenographic Cephalometry (2) | Erickson, Moore |
| | Basic principles, history, and techniques of roentgenographic cephalometry. (Department of Orthodontics) | |

- 512, 513 Growth and Development (2,2)** **Moore**
Review of the various methods of studying human growth, with special emphasis upon growth of the head, and study of the development of the dentition from birth through maturity; analysis of the factors that produce normal occlusion and malocclusion. Prerequisite, 512 for 513. (Department of Orthodontics)
- 514 Genetics and Its Applications to Dental Problems (2)** **Kraus**
Genes and the nature of genic action. Significance of mitosis and meiosis. Hereditary syndromes involving cranial structures. Introduction to population genetics. Genetics of the blood groups and their medico-legal implications. Hereditary aspects of the human dentition.
- 515 Evolution of the Human Cranio-facial Complex (2)** **Kraus**
Darwinism and the genetic basis for biological evolution. Principles of evolution. Palaeontological evidence of human evolution. Evolution of the cranio-facial complex. Evolution of the dentition. Malocclusion from the genetic and phylogenetic perspectives. Variability in the craniofacial complex and its interpretation in terms of evolution.
- 518 Scientific Methodology in Dental Research (2)** **Kraus**
Critical review of dental literature. Application of principles learned in 416 and 417 to selected monographs and papers in dentistry and related fields of the basic sciences.
- 535 Oral Microbiology (3)** **Zeldow**
An advanced lecture-laboratory survey of the oral flora and diseases related to their activity.
- 563 Minor Tooth Movement (2)** **Moore**
A lecture-clinic course dealing with minor tooth movement necessary to successful periodontal therapy. Prerequisite, permission.
- 580 Gnathodynamics (2)** **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. (Departments of Orthodontics and Prosthodontics)
- 581 Restorative Treatment Planning (4)** **Morrison**
Coordinated application of knowledge gained from both graduate and undergraduate courses to the diagnosis and treatment of the more complicated cases. (Department of Operative Dentistry)
- 582 Cast Metal Restorations (4)** **Morrison**
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 techniques. Principles of cavity preparation that apply specifically to cast restorations. (Department of Fixed Partial Dentures.)
- 588, 589, 590 Seminar in Occlusion (2,2,2)** **Morrison**
Seminars in the physiology of occlusion. For other graduate course offerings see individual departmental listings.

COURSES INCLUDED IN SCHOOL OF DENTISTRY PROGRAMS

- Anatomy 405-406 Microscopic and Submicroscopic Anatomy (4-4)** **Bennett**
Essentials of microscopic, submicroscopic, and chemical anatomy. Required for first-year medical students. Prerequisite for nonmedical students, permission.
- Biochemistry 401, 402 Biochemistry (5,3)**
Lectures and conferences in the first quarter cover the fundamentals of biochemistry. The second quarter emphasizes metabolism in man. Laboratory exercises are introduced in the second quarter. Required for first-year medical students; open to a limited number of students with allied interests. Prerequisites, Chemistry 242 for 401; 401 for 402; and permission.
- Psychiatry 400 Human Personality Development and Behavior (*, maximum 3)**
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. Comparative personality development is illustrated by animal and human behavior.
- Psychiatry 430 Psychopathology (*)** **Ripley**
Abnormalities of behavior, thinking, and feeling, and the structural and psychological factors that produce them. Anxiety, depression, elation, withdrawal, repression, compensation, projection, and other personality reactions are discussed. Required for second-year medical students.
- Psychiatry 450 Principles of Personality Development (2)** **Kaufman**
Discussion of the principles of personality development and the problems most commonly met. Consideration will be given to the physiologic, psychologic, and cultural factors from infancy through adolescence. For nonmedical students. Not open to students who have taken Psychiatry 267.

For other graduate course offerings see individual departmental listings.

ROSTER OF STUDENTS IN DENTISTRY

CLASS OF 1963

ALLEN, Ronald Lloyd, Hyrum, Utah
Utah State University

ARMSTRONG, Jack S., Colfax
Whitman
Washington State College

BAKKEN, Gary Dan, Spokane
B.S., Whitworth College

BECHTOLD, Ronald Roy, Seattle
University of Washington

BRODERSON, William Edward, Spokane
B.S., University of Idaho

BROWN, Wallace, Salt Lake City
Brigham Young University

BULLOCK, Gerald Alvin, Welling,
Alberta, Canada
B.A., Brigham Young University

BURDETT, Jerry R., Seattle
University of Washington

CALDWELL, Clifton Ormond, Jr., Spokane
University of Washington

DAMON, Floyd Allen, Spokane
Washington State College

DAVIDSON, Thomas George, Mercer Island
University of Washington

DORIUS, Stanley Floyd, Harley, Idaho
Utah State

DUOOS, Richard Duane, Seattle
B.A., University of Washington

EASTHAM, Richard Milton, Ephrata
B.S., University of Washington

EVERETT, Gaither Bruce, Ashland, Oregon
Southern Oregon College

FORD, Richard Oleander, Pullman
Washington State College

GAGE, Ronald Lee, Boise, Idaho
Boise Junior College

HANSEN, Leland, Everett
University of Washington

HARMON, Ronald Earl, Seattle
B.A., Pacific Lutheran College

HORNBECK, Donald, Ellensburg
Central Washington College of Education

JANKELSON, Robert Reed, Seattle
University of Washington

JONES, Thomas Richard, Seattle
University of Washington

JONES, William Junis, Cut Bank, Montana
Montana State College

JOSS, Peter Alexander, Spokane
University of Washington

JUDYSKI, Nicholas, North Burnaby,
B.C., Canada
B.A., University of British Columbia

KENNEDY, Arthur Edward, Wenatchee
Gonzaga

KNAPP, Robert LeRoy, Jr., Tacoma
College of Puget Sound
Olympic College

KUTZ, Paul Leonard, Seattle
B.A., University of Washington

LESHGOLD, Richard Dean, Seattle
B.S., University of Washington

LLOYD, Aaron Doyle, Tacoma
B.A., University of Washington

MATICH, Joseph, Everett
B.A., Whittier

McDADE, Edward J., Centralia
A.A., Centralia Junior College

McKAY, Glenn Boyd, Prosser
University of Washington
Central Washington College of Education

MOCK, James Irwin, Kirkland
B.S., Washington State College

MOCK, Wilbur Dean, Seattle
B.A., Whitman

MOORE, Jack Lowell, Cut Bank, Montana
Montana State University

MYATT, Richard Glenn, Olympia
University of Washington

PATELLI, Lorenzo Peter, Seattle
Seattle University

PEARSON, Kenneth, Seattle
B.A., Central Washington College of
Education

PERINE, David Zane, Seattle
University of Washington

RICHARDS, William Gordon, Jr., Spokane
B.A., University of Washington

ROHN, Delbert, Eugene, Garfield
University of Idaho

ROSENDAHL, William Wellington, Seattle
Florida State
University of Washington

SASAI, Tarō, Seattle
A.A., East Los Angeles Junior College

SAVAGE, David Earl, Hamer, Idaho
B.S., Idaho State

SHEA, Stephen Frederick, Seattle
University of Washington

SMART, John Douglas, Seattle
University of Washington

SMITH, Richard H., Vernon, B.C., Canada
University of Washington

SODERBERG, Robert Carl, Salt Lake City
B.S., University of Washington

SORENSEN, William Lloyd, Driggs, Idaho
Brigham Young University

STROH, Stephen LaRaut, Mercer Island
University of Washington

TADLOCK, Robert Jerry, Seattle
A.A., Columbia Basin College

TANIGUCHI, Alvin Minoru, Hilo, Hawaii
University of Washington

TAYLOR, Ross Leroy, Oak Harbor
Washington State College

VENTO, James Theodore, Seattle
University of Washington

VOLZ, Wallace Carl, Jr., Seattle
University of Washington

WEST, Jay Reed, Spanish Fork, Utah
Utah State University

WIDMANN, Robert B., Longview
University of Washington

CLASS OF 1962

ADAMS, James L., Tacoma
University of Washington

BAKER, Duane, Enumclaw
University of Washington

BAKER, Eugene D., Buckley
Washington State College

BARDEN, Karl A., Newman Lake
University of Washington

BARKSDALE, John T., Morris, Illinois
B.A., Washington State College

BORGMAN, Charles A., Seattle
B.S., University of Washington

CHRISTEN, Fred, Seattle
A.A., Centralia Junior College

CULVER, Ralph, Bremerton
Olympic College
University of Washington

- DAHLQUIST, Maurice P., Kent
B.S., University of Washington
- DWORAK, David Arthur, Seattle
University of Washington
- ESHELMAN, James D., Tacoma
University of Washington
- FRERE, Jules T., Bellingham
University of Washington
- GORDER, Robert L., Longmont, Colorado
University of Colorado
University of Washington
- GREAVES, John William, Seattle
University of Washington
- HANSEN, Burdette R., St. Anthony, Utah
Ricks College
University of Utah
- HEINS, Paul J., Seattle
University of Washington
- HOOVER, Herbert H., Seattle
University of Washington
- HOOPE, Grover R., Provo, Utah
Brigham Young University
- JACOBS, Robert A., Bremerton
B.S., University of Washington
- JOHNSON, Ronald C., Seattle
Central Washington College of Education
- JOHNSTON, Neal Wesley, Langley
University of Washington
- KUMPF, Kenneth William, Casper, Wyoming
University of Wyoming
- LANDEEN, Donald V., Rock Spring,
Wyoming
B.S., University of Washington
- LEE, James L., Seattle
University of Washington
- LEONARD, Albert, III, Farmington
B.S., Washington State College
- LOUGHLIN, Danny M., Spokane
Gonzaga University
- LOVERCHECK, Wesley E., Centralia
Centralia Junior College
- MALKIN, Yale G., Vancouver, B.C., Canada
University of British Columbia
- McGWIRE, John T., Spokane
University of Washington
- MORASCH, Daniel H., Camas
Clark College
- MORRIS, Ted L., Ogden, Utah
Weber Junior College
Brigham Young University
- MOWRY, Richard H., Saratoga, Wyoming
University of Wyoming
- NOLAN, Don E., Seattle
University of Washington
- NORDQUIST, Gary G., Seattle
University of Washington
- OVERBY, Leif C., Seattle
B.A., University of Washington
- RICE, David R., Seattle
B.A., University of Washington
- RILEY, Peter P., Spokane
Gonzaga University
- SABALA, Clyde L., Reno, Nevada
University of Nevada
- SAHR, John R., Sunnyside
University of Washington
- SCHAFER, Darrell D., Odessa
Washington State College
University of Washington
- SIMKINS, Benjamin Rush, Seattle
University of Washington
- STERMER, Rudolph H., Spokane
Gonzaga University
- SWANSON, Gerald G., Centralia
Centralia Junior College
University of Washington
- TATE, Carl Robert, Boise
B.S., College of Idaho
- TIFFANY, John R., Othello
University of Washington
- VAN LOAN, Denis R., Brewster, Wyoming
Gonzaga University
- VITUMS, Vitolds C., Pullman
Washington State College
- WARREN, Emmett J., Phoenix, Arizona
B.S., Arizona State College
- WELK, Donald A., Anacortes
Seattle Pacific College
- YOST, Grant F., Richland
Utah State Agricultural College

CLASS OF 1961

Degree of Doctor of Dental Surgery Conferred June 10, 1961

- ALEXANDER, Richard Morgan, Seattle
University of Washington
- BECKER, George Albert, Twin Falls, Idaho
University of Washington
- BOWZER, Ralph J., Kirkland
University of Washington
- BRUNA, Robert L., Mica
College of William and Mary
- BUBNICK, Kenneth Martin, Aberdeen
University of Washington
- CAMPBELL, Falconer Everett, Jr.,
Los Angeles, B.S., University of
Southern California
- CAMPBELL, Robert Paul, Idaho Falls,
Idaho
B.S., Idaho State College
- DAVIS, John M., Wenatchee
University of Washington
- DODSON, Lance Clarey, Reno
University of Nevada
- ELLINGSEN, James Carl, Spokane
B.S., Washington State College
- ENG, Kai Hong, Seattle
B.A., University of Washington
- FARRELL, Donald Eugene, Ellensburg
B.A., University of Washington
Central Washington College of Education
- FILION, Willard James, Kennewick
University of Washington
- GALLAHER, Philip George, Seattle
University of Washington
- GALUTIA, Chester M., Seattle
B.S., University of Washington
- GROW, Ronald Edward, Grandview
B.S., Seattle Pacific College
- HALLOCK, B.B., Gene, Seattle
University of Washington
- HATCH, Alma Lloyd, Panguitch, Utah
B.A., Utah State University
- HILLE, Bruce Douglas, Ritzville
Washington State College
- HUDSON, Leland Edward, Everett
Washington State College
- HUNTON, Robert T., Spokane
Gonzaga University
- INGMAN, Robert E., Bremerton
University of Washington
- JOHNSON, Vern H., Jr., Longview
University of Washington
- JORDAL, David G., Tacoma
B.S., College of Puget Sound
- KLAPPER, Martin S., Seattle
B.S., University of Pittsburgh

LEDERMAN, Donald N., Seattle
University of Washington
LUST, Wayne Barry, Seattle
B.S., Linfield College
McALPINE, Robert Bruce, Vancouver, B.C.
University of British Columbia
McCOLLUM, John Bishop, Dillon, Montana
Montana State
McCOY, Richard Brian, Palouse
State College of Washington
MERRILL, Osmond Monte, Smithfield, Utah
B.S., Utah State University
MEYER, Roger Albert, Hoquiam
University of Washington
MILLER, Dale Edward, Sunnyside
University of Washington
NIENABER, Duane Edward, Puyallup
Pacific Lutheran College
NODTVEDT, Richard O., Tacoma
B.A., Pacific Lutheran College
PATTERSON, Walter Royal, Seattle
B.S., University of Washington
PEDDYCORD, Ted
University of Washington
RABER, Bert Franklin, Port Angeles
University of Alaska
ROBERTSON, Wallace Duncan, St. John
Central Washington College of Education

ROBINSON, Henry James, Gooding, Idaho
University of Washington
ROLLA, Richard R., Renton
B.S., University of Washington
RUEF, Darrell L., Bremerton
University of Washington
SANDIN, Frank Allan, Seattle
University of Washington
SCHRADER, Larry L., Seattle
B.S., Idaho State College
SCHWARTZ, Larry Jacob, Spokane
University of Washington
SNYDER, Arthur James, Seattle
University of Washington
SPRINGER, Kirk W., Tacoma
College of Puget Sound
STODDARD, James W., Seattle
University of Washington
THOMPSON, Jerry Lee, Cowiche
B.S., Washington State University
WAMBA, Jon Montgomery, Mercer Island
University of Washington
WEBBER, Charles Eric, Seattle
University of Washington
WILLIAMS, Lewis Harrigfeld, Boise
University of Idaho
WOLGAMOTT, Fred A., Aberdeen
Whitman College

GRADUATE SCHOOL ENTERED 1960

Orthodontics

AKAMINE, Jack S., Hawaii
D.D.S., Loyola, Chicago
ARMSTRONG, MacLay M., Ottawa, Illinois
D.D.S., Iowa State University
BAIRD, Frank P., Wenatchee
D.D.S., M.S., (Pedodontics)
University of Washington
DRYSCH, Allen I., Berwyn, Illinois
D.D.S., University of Illinois
HORTIN, Robert W., Panguitch, Utah
D.D.S., Washington University
LAMB, Mardon C., Mt. Carmel, Utah
D.M.D., University of Oregon

Pedodontics

NYEGAARD, Helga., Copenhagen, Denmark
D.D.S., Royal Dental College

Periodontics

BRADEN, B. E., Spokane
D.M.D., University of Oregon
CRUMLEY, Phillip J., Rippey, Iowa
D.D.S., State University of Iowa
DRENNAN, G. Alex., Vancouver, B.C.
D.D.S., University of Toronto
HALL, Walter B., Quincy, Mass.
D.D.S., University of Maryland

Endodontics

NATKIN, Eugene, Carmel, California
A.B., Columbia University
D.D.S., New York University

Restorative

SMITH, Dale E., Blain, Pennsylvania
D.D.S.; University of Pittsburgh

Degree of Master of Science in Dentistry Conferred August 18, 1960

Orthodontics

LAW, John R., Bethesda, Maryland
A.B., M.S., West Virginia University
D.D.S., Georgetown University

MENDEL, Robert A., Seattle
D.D.S., University of Washington
NYEGAARD, Johannes, Copenhagen,
Denmark
D.D.S., Royal Dental College
ROBBINS, Ronald F., Tacoma
D.D.S., University of Washington
WERLICH, Edwin P., Port Angeles
D.D.S., University of Washington
VAN DER LINDEN, Frans., Netherlands
D.M., Groningen University

O'TOOLE, Thomas J., Louisville, Kentucky
D.M.D., University of Louisville

HYMAN, Herbert M., Los Angeles,
California
B.A., Los Angeles State College
D.D.S., University of Southern California
KARREN, Keith O., Salt Lake City, Utah
D.D.S., University of Washington

Degree of Master of Science in Dentistry Conferred December 13, 1960**Periodontics**

SAXE, Stanley R., Boston, Massachusetts
D.M.D., Harvard University

Degree of Master of Science in Dentistry Conferred March 16, 1961**Orthodontics**

BOKSTROM, Peter, Haney, B.C.
D.D.S., University of Washington
GUM, Stanley W., San Jose, California
D.D.S., Marquette University

MULICK, James F., Woodland Hills,
California
D.D.S., College of Physicians and
Surgeons

OLER, Kenneth D., Shelley, Idaho
D.M.D., University of Oregon

PIACENTINI, Franklin D., Portland,
Oregon

D.M.D., University of Oregon

TAKANO, James H., Seattle

D.D.S., University of Washington

TODA, James M., Honolulu, Hawaii

B.A., University of Hawaii

B.S., D.D.S., University of Minnesota

Oral Pathology

TAMARIN, Arnold, San Anselmo,
California
B.S., D.D.S., University of Illinois

Pedodontics

AUSTIN, Lloyd B., Sparks, Nevada
B.S., University of Nevada
D.D.S., St. Louis University

DIETZ, Donald R., Yakima

D.D.S., University of Washington

Degree of Master of Science in Dentistry Conferred June 9, 1961**Orthodontics**

ROGERS, John R., Seattle
B.S., Coast Guard Academy (England)
D.D.S., Northwestern University
M.S. (Pedodontics), University of
Washington

Restorative

SWERDLOW, Herbert, Bethesda, Maryland
B.A., Brooklyn College
D.D.S., New York University

Pedodontics

PETERSON, John C., Jr., Seattle
B.S., Washington State College
D.M.D., University of Oregon

Degree of Master of Science in Dentistry Conferred August 18, 1961**Periodontics**

ITOKAZU, Harold H., Kauai, Hawaii
D.D.S., Columbia University

McFALL, Walter T., Jr., Chapel Hill,
North Carolina
D.D.S., University of North Carolina

JOHN, Robert, Salt Lake City, Utah
D.D.S., University of Washington

GRADUATE SCHOOL, ENTERED 1961**Orthodontics**

ARNOLD, Manfred L., Ephrata
D.D.S., University of Washington

DUGONI, Arthur A., San Mateo,
California
D.D.S., College of Physicians and
Surgeons

LINDQUIST, William G., Aledo, Illinois
D.D.S., Iowa State University

McNEAL, Warren F., Yakima
D.D.S., University of Washington

NEFF, C. Wayne, Salt Lake City, Utah
D.M.D., University of Oregon

PROFFIT, William R., Richmond, Virginia
D.D.S., University of North Carolina

SALTER, Ronald E., Garden Grove,
California
D.D.S., University of California

TAYLOR, David T., Sydney, Australia
B.D.S., University of Sydney

ZECH, Jerome M., Seattle
D.D.S., University of Washington

WILSKIE, Gene H., Odessa, Washington
D.D.S., University of Washington

Endodontics

RODRIGUEZ, Victor, Caracas, Venezuela
Universidad Central de Venezuela

YANKOWITZ, David, Brooklyn, New York
B.A., D.D.S., New York University

Periodontics

EASLEY, James R., Oak Park, Michigan
D.D.S., University of Michigan
KNIGHT, Melvin K., Park City, Utah
D.D.S., Northwestern

MENDELSON, Martin, Los Angeles, California
D.D.S., Columbia University
PAGE, Roy C., Union, South Carolina
D.D.S., Baltimore College

Oral Pathology

ROBINOVITCH, Murray R., Brandon, Manitoba
D.D.S., University of Minnesota

Oral Surgery

WEBBER, Charles E., Seattle
D.D.S., University of Washington

Pedodontics

McQUILLAN, Kathryn Ann, St. Louis, Missouri
D.D.S., Washington University

TIDSWELL, Bruce A., Adelaide, South Australia
B.D.S., University of Adelaide

Restorative

DUTTON, David A., Cleveland, Ohio
D.D.S., Ohio State
GOODMAN, Fredric, New York, New York
D.D.S., Harvard
GOWDA, Earl V., Edmonton, Alberta
D.D.S., University of Alberta

LIMA, Roberto M.A., São Paulo, Brazil
D.D.S., São Paulo
JORDAN, Ronald E., Winnipeg, Manitoba
B.A., University of Saskatchewan
D.D.S., University of Alberta

Degree of Master of Science in Dentistry Conferred December 12, 1961

Periodontics

BETZ, Peter K., St. Louis, Missouri
D.D.S., St. Louis University

Degree of Master of Science in Dentistry Conferred March 15, 1962

Orthodontics

AKAMINE, Jack S., Hawaii
D.D.S., Loyola, Chicago
ARMSTRONG, MacLay M., Ottawa, Illinois
D.D.S., Iowa State
HORTIN, Robert W., Panguitch, Utah
D.D.S., Washington University
LAMB, Mardon C., Mt. Carmel, Utah
D.M.D., University of Oregon

MENDEL, Robert A., Seattle
D.D.S., University of Washington
NYEGAARD, Johannes, Copenhagen, Denmark
D.D.S., Royal Dental College
WERLICH, Edwin P., Port Angeles, Washington
D.D.S., University of Washington

Pedodontics

NYEGAARD, Helga, Copenhagen, Denmark
D.D.S., Royal Dental College

O'TOOLE, Thomas J., Louisville, Kentucky
D.M.D., University of Louisville

Certificate in Orthodontics Conferred March 16, 1961

BOKSTROM, Peter, Haney, B.C.
D.D.S., University of Washington
BURNS, Arthur S., Jacksonville, Florida
D.D.S., Temple University
GUM, Stanley W., San Jose, California
D.D.S., Marquette University
HIGH, Edward A., High Spen, England
D.D.S., University of Durham
D.D.S., Dalhousie University
MULICK, James F., Woodland Hills, California
D.D.S., College of Physicians and Surgeons
OLER, Kenneth D., Shelley, Idaho
D.M.D., University of Oregon

PIACENTINI, Franklin D., Portland, Oregon
D.M.D., University of Oregon
ROGERS, John R., Seattle
B.S., Coast Guard Academy (England)
D.D.S., Northwestern University
M.S. (Pedodontics), University of Washington
TAKANO, James H., Seattle
D.D.S., University of Washington
TELFORD, Robert F., Tucson, Arizona
B.S., University of Wisconsin
D.D.S., Marquette University
TODA, James M., Honolulu, Hawaii
B.A., University of Hawaii
B.S., D.D.S., University of Minnesota

Certificate in Periodontics Conferred March 16, 1961

OLIVER, Gilbert V., Oswego, Oregon
D.M.D., University of Oregon

Certificate in Restorative Dentistry (Prosthodontics) Conferred June 9, 1961

SWERDLOW, Herbert, Bethesda,
Maryland
B.A., Brooklyn College
D.D.S., New York University

Certificate in Periodontics Conferred August 18, 1961

BETZ, Peter K., St. Louis, Missouri
D.D.S., St. Louis University

Certificate in Orthodontics Conferred March 15, 1962

AKAMINE, Jack S., Hawaii
D.D.S., Loyola, Chicago
ARMSTRONG, Maclay M., Ottawa, Illinois
D.D.S., Iowa State
BAIRD, Frank P., Wenatchee
D.D.S., M.S., (Pedodontics)
University of Washington
DRYSCH, Allen I., Berwyn, Illinois
D.D.S., University of Illinois
HORTIN, Robert W., Panguitch, Utah
D.D.S., Washington University

LAMB, Mardon C., Mt. Carmel, Utah
D.M.D., University of Oregon
MENDEL, Robert A., Seattle
D.D.S., University of Washington
NYEGAARD, Johannes, Copenhagen,
Denmark
D.D.S., Royal Dental College
ROBBINS, Ronald F., Tacoma
D.D.S., University of Washington
WERLICH, Edwin P., Port Angeles
D.D.S., University of Washington

Certificate in Periodontics Conferred March 15, 1962

BRADEN, B. E., Spokane
D.M.D., University of Oregon

STUDENTS IN DENTAL HYGIENE**CLASS OF 1963**

ANDREWS, Nancy E., Aberdeen
University of Washington
ASHE, Jacquelyn Cotten, Port Angeles
Pacific Lutheran
University of Washington
CROSETTO, Jessie Hamlin, Seattle
University of Washington
DROSOS, Elaine M., Everett
Western Washington College
Everett Junior College
University of Washington
KIMURA, Keiko, Japan
Japan Womens' College
Everett Junior College
University of Washington
KINGSTON, Molly E., Seattle
University of Washington

KOOGLE, Ellen C., Seattle
University of Washington
LUNDQUIST, Beverly, Raymond
Grays Harbor College
University of Washington
MAR, Mae, Seattle
University of Washington
ROSS, Mary J., Seattle
University of Washington
ROTHWELL, Diane Elaine, Spokane
University of Washington
WILLIAMS, Judith, Centralia
Centralia Junior College
University of Washington

CLASS OF 1962

CARROLL, Karen Lou, Ferndale
Western Washington College
University of Washington
DAHNNERS, Elene N., Philippines
University of Washington
FOLKESTAD, Sylvia Nancy, Seattle
University of Washington
HAWKINS, Norma F., Bellevue
University of Washington
HEALY, Patricia Ann, Tacoma
University of Washington
KAUTH, Geraldine, Seattle
University of Washington

LIEN, Mary Margaret, Edmonds
University of Washington
McMURRAY, JoEll L., Puyallup
University of Hawaii
University of Washington
RENNIE, Joann, Seattle
University of Washington
TAYLOR, Susan H., Seattle
University of Oregon
University of Washington
THOMAS, Sally McGee, Seattle
University of Washington
WATSON, B. Lailla, Spokane
University of Washington

GRADUATES IN DENTAL HYGIENE

CLASS OF 1961

Degree of Bachelor of Science Conferred June 10, 1961

BLACK, Sally Ann, Sunnyside
University of Washington

CARVER, Janet Sue Marx, Seattle
Montana State University

CONDY, Karen J., California
San Jose State College
Washington State University
University of Washington

FREIBERG, Carol S., Seattle
University of Washington

HAMPTON, Barbara M., Seattle
University of Washington

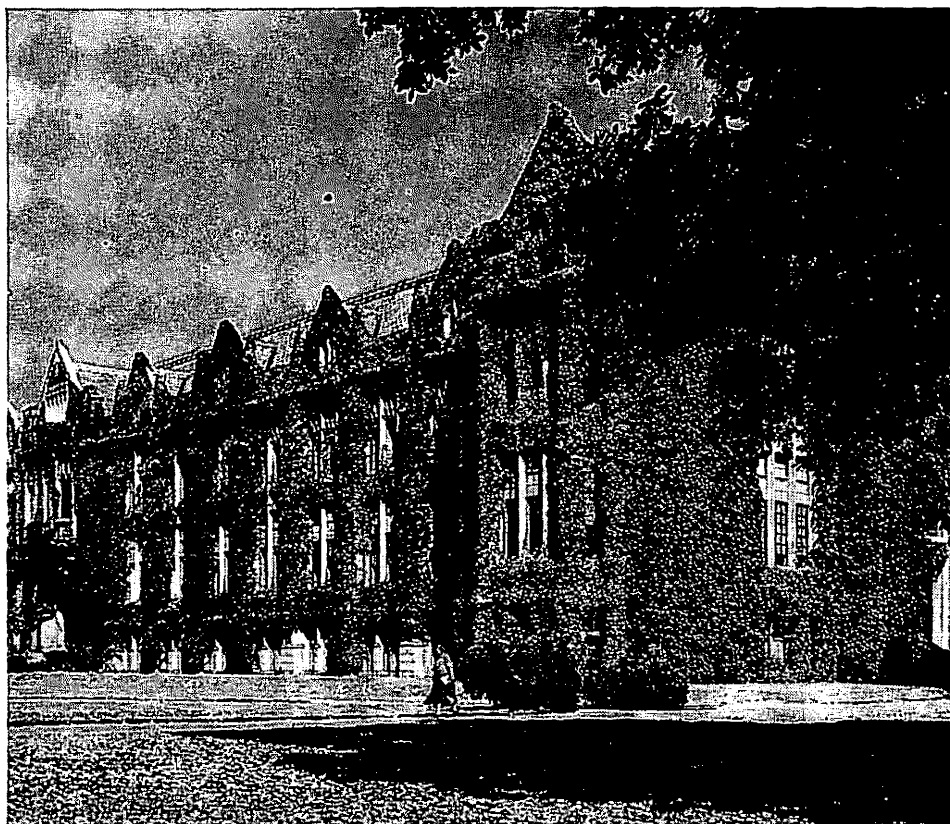
HARRISON, Colleen Compton, Kennewick
University of Washington

MADDEN, Susan J., Edmonds
University of Washington

MYERS, Sharon E., Montana
University of Washington

RENSHAW, Barbara Beck, Seattle
University of Washington

BULLETIN • UNIVERSITY OF WASHINGTON



COLLEGE OF EDUCATION

1962-1964

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes three general bulletins; bulletins of the colleges and schools; Summer Quarter bulletin; the bulletin of the Center for Graduate Study at Hanford; and bulletins of the Division of Correspondence Study and the Division of Evening Classes.

INTRODUCTION TO THE UNIVERSITY, one of the general bulletins, is especially prepared for new and prospective students. It lists all the University curricula, with their admission requirements, and presents information on other phases of student life, including services for students, student activities, and expenses. UNIVERSITY RULES AND REGULATIONS, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as registered students. HANDBOOK OF SCHOLARSHIPS, the third general bulletin, lists the various scholarships available.

Curricula, courses, and scholarship requirements in each field of study are described in the college and school bulletins. Each of these bulletins also discusses services, organizations, and expenses as they relate to students in the particular college or school.

Requests for copies of any of the bulletins should be addressed to the Addressograph Service.

General Bulletins

HANDBOOK OF SCHOLARSHIPS (RESTRICTED DISTRIBUTION)

INTRODUCTION TO THE UNIVERSITY

UNIVERSITY RULES AND REGULATIONS (FOR REGISTERED STUDENTS ONLY)

Bulletins of the Colleges and Schools

COLLEGE OF ARCHITECTURE AND URBAN PLANNING

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF BUSINESS ADMINISTRATION

SCHOOL OF DENTISTRY

COLLEGE OF EDUCATION

COLLEGE OF ENGINEERING

COLLEGE OF FISHERIES

COLLEGE OF FORESTRY

GRADUATE SCHOOL

SCHOOL OF LAW

SCHOOL OF MEDICINE

SCHOOL OF NURSING

COLLEGE OF PHARMACY

SCHOOL OF SOCIAL WORK

Other Bulletins

SUMMER QUARTER

CENTER FOR GRADUATE STUDY AT HANFORD

CORRESPONDENCE STUDY

EVENING CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON

General Series No. 985
July, 1962

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CALENDAR

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

AUTUMN QUARTER, 1962

REGISTRATION PERIOD

APR. 30-MAY 25	Advanced Registration only for students in residence Spring Quarter, 1962. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 10-27	In-Person Registration for students in residence Spring Quarter, 1962, who did not complete Autumn Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
SEPT. 10-27	In-Person Registration for former students not in residence Spring Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is September 1.</i>
JULY 15	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointments will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 11-27	In-Person Registration for ALL new students.
SEPT. 27	Last day to register for Autumn Quarter, 1962. Note application deadlines.
OCT. 1-5	Change of registration by appointment only.

ACADEMIC PERIOD

OCT. 1—MONDAY	Instruction begins
OCT. 5—FRIDAY	Last day to add a course
NOV. 1—THURSDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1963, due at Registrar's Office.
NOV. 12—MONDAY	State Admission Day holiday
NOV. 21—WEDNESDAY	Last day to submit applications for advanced credit examinations
NOV. 21-26	Thanksgiving recess (6:30 p.m. to 7:30 a.m.)
DEC. 8—SATURDAY	Advanced credit examinations
DEC. 12-18	Final examinations
DEC. 18—TUESDAY	Quarter ends

WINTER QUARTER, 1963**REGISTRATION PERIOD**

OCT. 29-Nov. 27	Advance Registration only for students in residence Autumn Quarter, 1962. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
JAN. 2-4	In-Person Registration for students in residence Autumn Quarter, 1962, who did not complete Winter Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
JAN. 2-4	In-Person Registration for former students not in residence Autumn Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 1.</i>
DEC. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
DEC. 20	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
JAN. 2-4	In-Person Registration for ALL new students.
JAN. 4	Last day to register for Winter Quarter, 1963. Note application deadlines.
JAN. 7-11	Change of registration by appointment only.

ACADEMIC PERIOD

JAN. 7—MONDAY	Instruction begins
JAN. 11—FRIDAY	Last day to add a course
FEB. 21—THURSDAY	Last day to submit applications for advanced credit examinations
FEB. 22—FRIDAY	Washington's Birthday and Founder's Day holiday
MAR. 9—SATURDAY	Advanced credit examinations
MAR. 15-21	Final examinations
MAR. 21—THURSDAY	Quarter ends

SPRING QUARTER, 1963**REGISTRATION PERIOD**

JAN. 28-FEB. 21	Advance Registration only for students in residence Winter Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
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MAR. 26-28	In-Person Registration for students in residence Winter Quarter, 1963, who did not complete Spring Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
MAR. 26-28	In-Person Registration for former students not in residence Winter Quarter, 1963. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is March 1.</i>
MAR. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
MAR. 15	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
MAR. 26-28	In-Person Registration for ALL new students.
MAR. 28	Last day to register for Spring Quarter, 1963. Note application deadlines above.
APRIL 1-5	Change of registration by appointment only.

ACADEMIC PERIOD

APRIL 1—MONDAY	Instruction begins
APRIL 5—FRIDAY	Last day to add a course
MAY 10—FRIDAY	Last day to submit applications for advanced credit examinations
MAY 25—SATURDAY	Advanced credit examinations
MAY 30—THURSDAY	Memorial Day holiday
JUNE 7-13	Final examinations
JUNE 9—SUNDAY	Baccalaureate Sunday
JUNE 13—THURSDAY	Quarter ends
JUNE 15—SATURDAY	Commencement

SUMMER QUARTER, 1963

REGISTRATION PERIOD

General In-Person Registration for ALL students (*by appointment only*):

June 6-10

June 17-21

New students. Admission to the University is a prerequisite for registration in Summer Quarter classes. Complete credentials must be filed with the Office of Admissions by May 15 to be considered for admission with *Regular* standing. See *Summer Quarter Bulletin* regarding admission as a *nondegree* candidate with status *Summer Quarter Only*. New (entering) students will be mailed Registration Appointments with their Official Notice of Admission.

Students in residence Spring Quarter, 1963:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates.....	Monday, April 22, 8 a.m. to 5 p.m.
Juniors.....	Tuesday, April 23, 8 a.m. to 5 p.m.
Sophomores.....	Wednesday, April 24, 8 a.m. to 5 p.m.
Freshmen.....	Thursday, April 25, 8 a.m. to 5 p.m.

Former Students not in residence Spring Quarter 1963:

Former Students not in residence Spring Quarter 1963 may obtain an Application for Appointment or Permit by writing to, or calling in person at, the Registrar's Office, Room 109, Administration Building, or telephoning LAkeview 4-6000, Extension 2551, beginning April 22 and preferably *no later than May 15*. Registration may be delayed by later application. Registration materials cannot be prepared until an application is received. The application deadline for term "a" and full Summer Quarter is June 17.

All students in the Schools of Law, Dentistry, and Medicine must file an Application for Registration Permit, although no appointment date is necessary.

ACADEMIC PERIOD

JUNE 24—MONDAY	Instruction begins
JUNE 25—TUESDAY	Last day to add a course for the first term
JUNE 28—FRIDAY	Last day to add a course for the full quarter
JULY 3—WEDNESDAY	Last day to submit applications for advanced credit examinations for first term
JULY 4—THURSDAY	Independence Day holiday
JULY 20—SATURDAY	Advanced credit examinations
JULY 24—WEDNESDAY	Final examinations and first term end
JULY 25—THURSDAY	Second term begins
JULY 26—FRIDAY	Last day to add a course for the second term
AUG. 2—FRIDAY	Last day to submit applications for advanced credit examinations for second term
AUG. 17—SATURDAY	Advanced credit examinations
AUG. 23—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1963**REGISTRATION PERIOD**

MAY 6-29	Advance Registration only for students in residence Spring Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 3-26	In-Person Registration for students in residence Spring Quarter, 1963, who did not complete Autumn Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin

SEPT. 3-26	In-Person Registration for former students not in residence Spring Quarter, 1963. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is September 1.</i>
JULY 15	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 4-26	In-Person Registration for ALL new students.
SEPT. 26	Last day to register for Autumn Quarter, 1963. Note application deadlines.
SEPT. 30-OCT. 4	Change of Registration by appointment only.

ACADEMIC PERIOD

SEPT. 30—MONDAY	Instruction begins
OCT. 4—FRIDAY	Last day to add a course
NOV. 1—FRIDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1964, due at Registrar's Office
NOV. 11—MONDAY	State Admission Day holiday
NOV. 22—FRIDAY	Last day to submit applications for advanced credit examinations
NOV. 27-DEC. 2	Thanksgiving recess (6:30 p.m. to 7:30 a.m.)
DEC. 7—SATURDAY	Advanced credit examinations
DEC. 11-17	Final examinations
DEC. 17—TUESDAY	Quarter ends

WINTER QUARTER, 1964

REGISTRATION PERIOD

OCT. 29-Nov. 22	Advance Registration only for students in residence Autumn Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
DEC. 30-JAN. 2	In-Person Registration for students in residence Autumn Quarter, 1963, who did not complete Winter Quarter, 1964, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
DEC. 30-JAN. 2	In-Person Registration for former students not in residence Autumn Quarter, 1963. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 1.</i>
DEC. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.

DEC. 20	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
DEC. 30-JAN. 2	In-Person Registration for ALL new students
JAN. 2	Last day to register for Winter Quarter, 1964. Note application deadlines above.
JAN. 6-10	Change of Registration by appointment only.

ACADEMIC PERIOD

JAN. 6—MONDAY	Instruction begins
JAN. 10—FRIDAY	Last day to add a course
FEB. 21—FRIDAY	Last day to submit applications for advanced credit examinations
FEB. 22—SATURDAY	Washington's Birthday and Founder's Day holiday
MAR. 7—SATURDAY	Advanced credit examinations
MAR. 13-19	Final examinations
MAR. 19—THURSDAY	Quarter ends

SPRING QUARTER, 1964**REGISTRATION PERIOD**

JAN. 27—FEB. 21	Advance Registration only for students in residence Winter Quarter, 1964. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
MAR. 24-26	In-Person Registration for students in residence Winter Quarter, 1964, who did not complete Spring Quarter, 1964, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
MAR. 24-26	In-Person Registration for former students not in residence Winter Quarter, 1964. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is March 1.</i>
MAR. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
MAR. 15	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

MAR. 24-26	In-Person Registration for ALL new students.
MAR. 26	Last day to register for Spring Quarter, 1964. Note application deadlines above.
MAR. 30-APRIL 3	Change of registration by appointment only.
ACADEMIC PERIOD	
MAR. 30—MONDAY	Instruction begins
APRIL 3—FRIDAY	Last day to add a course
MAY 8—FRIDAY	Last day to submit applications for advanced credit examinations
MAY 23—SATURDAY	Advanced credit examinations
MAY 30—SATURDAY	Memorial Day holiday
JUNE 5-11	Final examinations
JUNE 7—SUNDAY	Baccalaureate Sunday
JUNE 11—THURSDAY	Quarter ends
JUNE 13—SATURDAY	Commencement

For further information concerning subsequent quarters, inquire at the Registrar's Office.

OBSERVANCE OF UNIVERSITY RULES AND REGULATIONS

It is the University's expectation that a student will follow University rules and regulations as they are stated in the Bulletins. In instances where no appeal procedure is spelled out and the student is persuaded that a special set of circumstances makes appeal reasonable, he may appeal the application of specific rules or regulations to the Office of the Dean of the School or College in which he is enrolled in the case of an academic matter, or to the Office of the Dean of Students in the case of a nonacademic matter. These offices will either render a decision on the appeal or refer the student to the proper office for a decision.

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.

ADMINISTRATION

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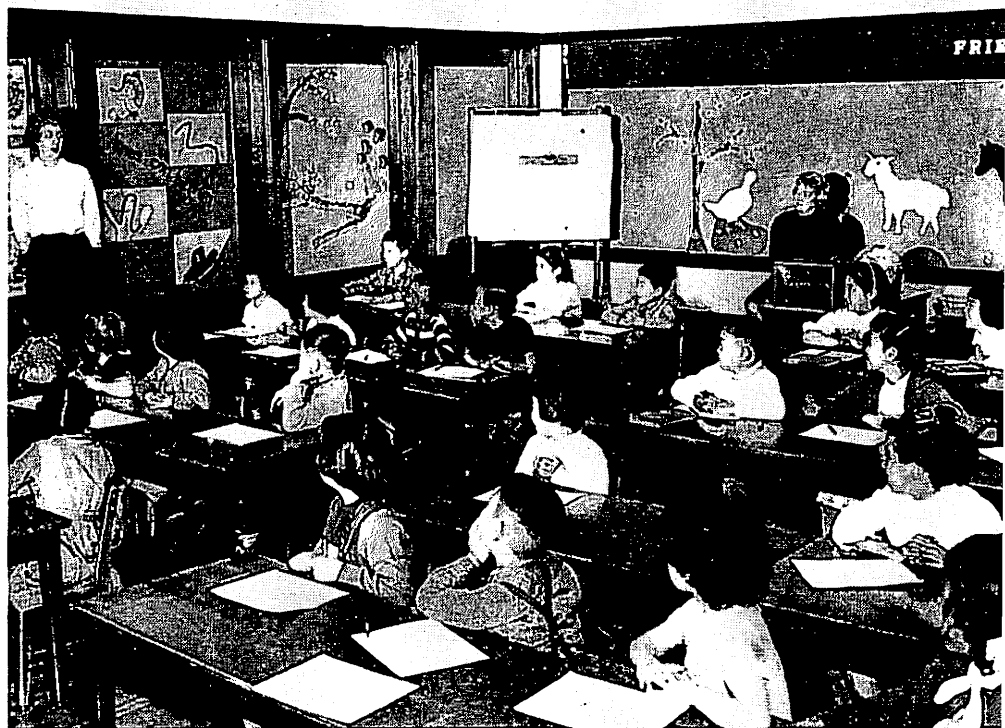
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CLAIRE F. JONES, B.A.	<i>Assistant to the Dean</i>



GENERAL INFORMATION

GENERAL INFORMATION

The first teacher training in the state of Washington was given at the University by President Alexander J. Anderson (1878-1882), who conducted courses in literature, mathematics, astronomy, surveying, psychology, and pedagogics. However, despite efforts of the Board of Regents and the Superintendent of Public Instruction, there was no development of a University program, and President Anderson himself finally urged establishment of a state normal school. When normal schools were established at Cheney and Ellensburg in 1890, and at Bellingham in 1893, teacher training at the University halted altogether.

The general growth of the University between 1898 and 1914, during the administrations of Presidents Frank P. Graves and Thomas F. Kane, brought a new beginning for teacher training. A small Department of Education was developed, and in 1913 the faculty voted to establish a School of Education coordinate with other schools and colleges of the University. Dr. Frederick E. Bolton was appointed dean. In 1914 the School of Education became the College of Education, the first such college in any state university.

In 1929 the College administration was instrumental in obtaining action by the State Board of Education toward establishment of the five-year plan for the normal diploma. By 1933 the plan was in operation.

PHILOSOPHY AND OBJECTIVES

The College of Education offers programs for the preparation of teachers and for advanced educational study which represent the close cooperation of the academic and professional faculties of the University. An extensive schedule of classroom observation and supervised practice teaching is made available through cooperative arrangement with the public schools in the Seattle-King County area.

In concert with staff members in other colleges of the University, the staff of the College of Education seeks to achieve broad training in the liberal arts and sciences by providing a general education program, designed to develop the knowledge, understanding, skills, and abilities characteristic of an educated person enjoying citizenship in a free democratic society.

The several programs offered by the College of Education present undergraduate and graduate courses designed to:

Help the prospective teacher develop competence and sophistication in one or more teaching fields, and, through study and practice, begin to develop proficiency in the actual teaching of those fields;

Introduce students to the study of education as a basic social institution and to the profession of teaching;

Insure the comprehension of growth and development in children, youths, and adults through research, observation, and direct experience;

Provide an understanding of the teaching and learning processes as they affect the selection, organization, presentation, and evaluation of curriculum materials and resources for various age levels and ability groups;

Promote and foster research and advanced study in the several branches of the field of education for which post-baccalaureate work is appropriate;

Assist each student in acquiring a workable philosophy of education and an appreciation of the ethical role of a professional educator in a free society.

Through the Bureau of School Services and Research, the College of Education provides a wide variety of professional services to the schools and communities of the state of Washington. Upon request, University faculty members from within and outside the College of Education are available for in-service training and to act in advisory capacities.

COLLEGE FACILITIES AND SERVICES

EDUCATION LIBRARY

The College of Education Library, the first departmental library on the campus (1913), is a branch of the University's Henry Suzzallo Library and contains a well-rounded collection of books and periodicals on education and its related fields. Of particular interest are a curriculum collection and sample textbooks; pamphlet, test, and thesis files; and an interlibrary loan service. The facilities of the library are available not only to students but to teachers throughout the Northwest.

PUBLICATIONS

The *College of Education Record* is published four times a year. In addition to book reviews, education news notes, and occasional College announcements, this journal contains articles on a variety of subjects for teachers and administrators.

Bulletins on the graduate degree program and the training of public school teachers keep students and educators acquainted with changes in these areas.

ASSOCIATION WITH PUBLIC SCHOOLS

The College of Education cooperates with the State Department of Public Instruction and with school districts throughout the state in the training program for the Standard Certificate through in-service work, individual visits, and conferences with beginning teachers and their administrators. There is also a special observation, research, and practice program in the public schools of the Seattle area and in other nearby districts in which students teach for one quarter, working with a master teacher in a public school.

PROGRAMS FOR TEACHERS AND ADMINISTRATORS

The College maintains an In-Service Teacher Training program in which University staff members cooperate with state school administrators and teachers in dealing with professional problems. Other services include curriculum workshops, held at the University during the summer and in some counties during the school year; informal help through letters, telephone calls, and visits.

ADMISSION TO THE UNIVERSITY AND TO THE COLLEGE

PRELIMINARY STATEMENTS

The Board of Admissions, which is appointed by the President, is responsible for the interpretation and administration of the regulations governing admission to the University.

The University recognizes high school diplomas, college credits presented for advanced standing, and college degrees earned in the following institutions: (1) high schools accredited by the Washington State Department of Public Instruction; (2) out-of-state high schools accredited by their state university and state department of public instruction, or by the regional accrediting association of the area; and (3) colleges and universities accredited by their regional accrediting association.

Resident. Defined for purposes of admission and/or assessment of fees as an individual who has been domiciled in the state of Washington for one year immediately prior to his registration. The domicile of a minor is that of his parents or his legal guardian.

Nonresident. An applicant whose credentials are received from a school or college located outside the state of Washington. An applicant who believes himself eligible for resident status may apply for reclassification through the Office of Residence Classification which has final authority in determining such status.

Qualified Student. One whose scholastic standing and preparation meet the standards for admission to the University.

Regular Student. One who fulfills the following requirements: (1) has been granted unqualified admission to a college or school of the University; (2) whose current program of studies is satisfactory to the dean of his college or school; (3) has received medical clearance from the Student Health Service and has completed all of the required steps for registration, including the payment of tuition and fees, the filing of class cards, and the depositing of registration materials at Sections.

Grade-point averages. These are based on a four-point system in which A=4, B=3, C=2, D=1, E=0. An adjustment to this system is made as necessary in the computation of grade-point averages earned at other institutions.

ADMISSION OF WASHINGTON RESIDENTS

ELIGIBILITY FOR ADMISSION WITH FRESHMAN STANDING

Undergraduate programs offered by the University lead to the baccalaureate degree; students, therefore, are admitted when, in the judgment of the University, they appear qualified to pursue a degree program with a reasonable probability of success. In making this judgment, the University's Board of Admissions considers the applicant's total record, including such factors as scholastic achievement in a college preparatory program, recommendations of the high school principal or counselor, rank in class, and scores on any nationally administered tests associated with college entrance.

Scholastic achievement is measured largely in terms of the criteria listed below. All students entering the University are expected to meet these criteria. Non-residents and students who enter with advanced standing will find additional admission criteria in subsequent sections.

SCHOLASTIC CRITERIA

1. Graduation with diploma from an accredited high school.
2. Achievement of an over-all high school grade-point average of at least 2.50 in courses completed after September, 1960, and a grade-point average of at least 2.00 in courses completed prior to September, 1960.

3. Completion of a college preparatory program of at least 16 units to include the following:

- | | |
|--------------------------------------|------------------|
| a. English | at least 3 units |
| b. One foreign language | at least 2 units |
| c. College preparatory mathematics | at least 2 units |
| d. One laboratory science | at least 1 unit |
| e. Social science | at least 2 units |
| f. Electives from the above subjects | at least 2 units |

Additional electives may be chosen from any subjects acceptable for high school graduation.

Students who desire to enter the College of Education should plan high school electives with considerable care both to lay the foundation for the general education requirements and to provide adequate preparation for beginning the study of the specific subject-matter fields elected. Students should also give considerable thought while on the secondary school level to the subject areas and academic levels within which they wish to specialize as teachers.

Junior High School Courses. The University recognizes college preparatory courses given in the junior high school and assigns them the same value as equivalent courses offered by the high school. Students who elect these subjects in the junior high may subsequently achieve a superior degree of competence in related subject areas in high school.

Accelerated, Honors, and Advanced Placement Courses. The University encourages qualified students to extend themselves academically by taking advantage of advanced, accelerated, and honors courses offered by their schools. Successful participation in such challenging opportunities assures superior academic preparation and serves to identify those students more likely to profit from University-level honors courses.

The University of Washington grants placement and/or credit, at the discretion of the University department concerned, on the basis of scores earned in College Entrance Examination Board Advanced Placement Examinations, and on the basis of placement examinations administered to entering students (see "Required Tests and Examinations," page 21).

ELIGIBILITY FOR ADMISSION WITH ADVANCED STANDING

A qualified student in good standing at an accredited institution may apply for admission with advanced standing. Such an applicant is expected to have the same high school preparation as the student who enters as a freshman, and to have a college grade-point average which meets the standards herein specified.

With fewer than 45 acceptable credits, an applicant must present a grade-point average of 2.50 in high school work completed after September, 1960; a 2.00 grade-point average in such work completed prior to this date; and a 2.00 cumulative average in all college work.

With 45 or more acceptable credits, an applicant is expected to present a cumulative and last-term grade-point average of at least 2.20.

The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted.

Regulations concerning the transfer of credit may be found on page 85.

ADMISSION OF SPECIAL STUDENTS AND AUDITORS

Non-high school graduates who are 21 or older and legal residents of Washington may apply to the Board of Admissions for admission with special standing. With their applications, they must submit all available records of secondary school and college study. Special students may register in and take for credit whatever courses the Dean of the College permits, but may not participate in student activities or receive degrees. By fulfilling conditions specified by the Board of

Admissions, special students may change their status to that of regular students and may receive degrees.

Persons 21 or older may register as auditors in nonlaboratory courses or the lecture sessions of laboratory courses by obtaining the consent of the Dean of the College and the instructors of the courses. Auditors do not participate in class discussion or laboratory work. They may receive credit for audited courses only by enrolling in them as regular students in a subsequent quarter.

ADMISSION OF NONRESIDENTS

ADMISSION OF NONRESIDENTS TO UNDERGRADUATE STANDING

Applications from nonresidents will be considered, but first preference is given legal residents of the state of Washington, and sons and daughters of University of Washington alumni residing outside the state.

Nonresident applicants are selected on the basis of their preparation and scholastic standing. In general, a freshman applicant must be eligible to enter the university of his own state, and satisfy the foregoing scholastic criteria with a 3.00 (B) grade-point average or place in the upper 25 per cent of his graduating class.

An applicant for admission with advanced standing with fewer than 45 college credits must have a cumulative grade-point average of at least 3.00 in standard college courses as well as a high school grade-point average of at least 3.00 or have been in the upper fourth of his class. An applicant presenting more than 45 credits for advanced standing must present a 2.70 grade-point average in standard college courses. For regulations on transfer of credit, see page 85.

Sons and daughters of University of Washington alumni are admitted according to resident standards but are required to pay the regular nonresident tuition fees. Applicants for admission to curricula in which the University serves on a regional basis will be accorded special consideration by the Board of Admissions.

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Applicants for admission with graduate or advanced undergraduate standing are expected to meet the same general requirements as nonresidents of Washington educated in American schools. However, they must file their credentials before March 1 to be considered for admission Autumn Quarter, or six months before the opening of another quarter in which they may wish to enroll. In addition, they must demonstrate a satisfactory command of the English language, and must have sufficient funds available in the United States to meet their expenses.

The official record of the Canadian student is the matriculation certificate or university admission certificate of his province. Canadian and foreign students who have been in university attendance must have official transcripts forwarded as required of all students. High school graduates and university transfer students must meet the scholarship requirements for nonresident students. See above.

UNDERGRADUATE ADMISSION, EXCEPTIONAL CASES

(See page 85.)

ADMISSION TO THE GRADUATE SCHOOL

Basic requirements for admission to the Graduate School are a bachelor's degree from an institution of recognized standing, a grade-point average of 3.00 in the junior and senior years of college work, approval of the Graduate School, and approval of the department in which the work is to be taken. For complete information, see the *Graduate School Bulletin*.

ADMISSIONS PROCEDURE

Requests for Application for Admission forms and correspondence regarding admission to any college or school of the University should be addressed to the Office of Admissions, University of Washington, Seattle 5, Washington. Graduates of high schools in the state of Washington may obtain this form from their principals.

Applications and required transcripts must be filed with the Office of Admissions prior to the following dates in order to be assured of consideration for admission to the quarter for which application is being made: July 15 for Autumn Quarter; December 1 for Winter Quarter; March 1 for Spring Quarter; May 15 for Summer Quarter.

All records become a part of the official file and can neither be returned nor duplicated for any purpose. Failure to submit complete credentials will be considered a serious breach of honor, and may result in permanent dismissal from the University.

A leaflet giving general information and instructions for registration is mailed with the Notice of Admission. In the event of a discrepancy, instructions in the leaflet supersede those found in earlier publications. *The University assumes no responsibility for applicants who come to the campus before they have been officially notified of their admission.*

The admissions credentials of applicants who do not register for the quarter to which they have been admitted are normally retained in the Office of Admissions for a period of one year from the date of application. At the end of this period, credentials on file are discarded unless the applicant has notified the Office of his continued interest in attending the University or of his enrollment in the Evening Classes program. Should a student wish to renew his application after the one-year lapse, he must submit new credentials in advance of the date given above for the quarter desired.

FOR FRESHMAN STANDING

An application form, obtained from the University's Office of Admissions or from a Washington high school, should be completed according to instructions appearing on the form and returned to the Office of Admissions.

Students may apply through their high schools on completion of the first semester of the senior year. Those who are qualified will be issued notices of early or conditional admission which become valid on graduation with a grade-point average of no less than 2.50 for the final semester. Others also will be notified of their admission status.

Scores on a nationally administered college aptitude test are not required. However, they may be helpful in evaluating a borderline student's probability of success.

FOR ADVANCED UNDERGRADUATE STANDING

An application form, obtained from the University's Office of Admissions or from a Washington junior college should be completed according to instructions appearing on the form and sent to the Office of Admissions. In addition, the applicant should request the principal of his high school and the registrar of each college he has attended to forward an official transcript of his record to the University's Office of Admissions. When these credentials have been evaluated, the applicant will be notified of his admission status.

FOR GRADUATE STANDING

An application form, obtained from the University's Office of Admissions, should be completed according to instructions appearing on the form and returned to the Office of Admissions. In addition an applicant should request the registrar of each college or university in which he has been enrolled as an undergraduate and/or graduate student to forward *two* official transcripts to the University's Office of

Admissions. When these credentials have been evaluated, the applicant will be notified of his admission status. The student will find it convenient to have an additional copy of the record for reference.

VETERANS

ADMISSION OF VETERANS

Veterans and children of deceased veterans should meet the general admission criteria and follow the general procedures outlined for all applicants. Applications for and questions about government aid should be addressed to the Veterans Administration Regional Office.

WORLD WAR I OR II VETERANS

Under certain conditions a veteran of World War I or II who is not eligible for Veterans Administration benefits is fully or partly exempt from tuition charges. See page 89.

KOREAN VETERANS

A Korean veteran under Public Law 550 should obtain admittance to the University prior to making application for a Certificate for Education and Training, thus eliminating the chance of obtaining a certificate valid for an incorrect degree. If the veteran has any questions regarding application for a certificate, he should consult the Veterans Division, Safety Division Building. (Regulations concerning the Certificate are listed on page 86.) Educational allowance payments are made directly to the veteran by the Veterans Administration after the veteran and institution submit a monthly attendance certification.

DISABLED VETERANS

A veteran with a disability under Public Law 894 should contact a training officer in the nearest Veterans Administration Office approximately four weeks prior to registration.

CHILDREN OF DECEASED VETERANS

Public Law 634 grants federal benefits to children of deceased veterans of World War I, World War II, or the Korean Conflict who died as a result of injury or disease incurred or aggravated while in the service. Information regarding eligibility under this law should be requested from a Veterans Administration Regional Office.

The Certificate for Education and Training issued to those eligible persons by the Veterans Administration is to be presented, along with the Program of Studies, to the Veterans Division, Safety Division Building, as soon as registration is completed.

Credit requirements for monthly subsistence for Public Law 634 students are the same as those listed for Public Law 550 students. However, Public Law 634 students may not be authorized for less than half-time subsistence.

REQUIRED TESTS AND EXAMINATIONS

Washington Pre-College Testing Program

This grade prediction test is required of all entering freshmen, including those transferring to the University with fewer than 45 credits. It is also required of transfer students who have not completed courses which are equivalent to English 101 (English composition). High school seniors are advised to arrange through their high schools to take this test in the spring when it is offered throughout the state of Washington. Nonresidents of Washington may take the test at the time of their registration according to instructions mailed with the notice of admission. Sample copies are not available. Special, foreign, blind students, and auditors are exempted.

The several parts of this test have been selected because of their proven value for the prediction of grades most likely to be earned by a student. Since the results of the test are used by departmental advisers as an aid in assigning students to appropriate sections in English composition and other subjects, it is advisable that the student bring a copy of the results with him when he comes for his first conference with his counselor or adviser.

Mathematics Placement Tests

One section of the Pre-College Test evaluates a student's mastery of intermediate algebra and plane geometry. A satisfactory score on this section qualifies a student to enroll in Mathematics 104 (Trigonometry) or Mathematics 105 (College Algebra). Those who fail to qualify and wish to proceed to the study of more advanced mathematics courses may choose one of the following alternative plans:

1. Pass Mathematics 101 and then take 104, or 105, or both. No credit is given for Mathematics 101 to students who have completed the third semester of high school algebra.
2. Pass Mathematics 103, in which the first four weeks are devoted to a review of intermediate algebra and the last six weeks to the study of plane trigonometry equivalent to Mathematics 104. The satisfactory completion of this course qualifies the student to enroll in Mathematics 105 (College Algebra).

Students who have studied trigonometry, fourth semester algebra, mathematical analysis, or similar subjects in high school, will be placed in the next appropriate course at the University according to their scores in additional placement tests given by the Department of Mathematics. It is advisable to review before taking these examinations.

Medical Examination

A student entering the University for the first time, or returning to the University after an absence of more than one calendar year, or who has previously attended Summer Quarter classes but is entering regular University classes for the first time, is required to submit to the Student Health Service (Hall Health Center) a form containing his health history and a report of a physical examination by a physician. The form will be sent to new students by the Office of Admissions, and to returning former students by the Registrar. This examination, which is required before a student may register, is taken at the student's expense. A chest X ray, also required of the above students, is given at the Student Health Service without charge.

With the exception of Canadian students, who will follow the above instructions, foreign students must take the required physical examination at the Student Health Service when they arrive on the campus.

REGISTRATION

PROCEDURE

ALL students, currently in school, who plan to register for a succeeding quarter (Summer Quarter excepted) must register by Advance Registration and pay fees by the stated deadline. Students are held responsible for knowing and observing registration procedures, dates, and deadlines which appear in the bulletins, in "Official Notices" in the *Daily*, and on campus bulletin boards.

New students are given appointments when they are notified of admission, and they receive complete directions for registering at the time of registration.

Students expecting to return to the University after an absence of a quarter or more (excluding Summer Quarter) must register by In-Person Registration. The required registration appointment may be obtained by writing to, calling at, or telephoning the Registrar's Office at the time specified in the Calendar, but in *no case* later than the stated deadline (see pages 4-10).

ADVISING

After notification of admission, and before registration, new students should visit the College of Education Advisory Office, 221 Miller Hall, for help in planning their course programs. All education students are advised by staff members who have had teaching experience and are familiar with the policies of the State Board of Education, the University, the College of Education, and the Graduate School.

REGISTERED CREDITS ALLOWED EACH QUARTER

Except with the consent of the Dean, no student may be registered for less than 12 credits (or the equivalent) or more than 16 credits (or the equivalent) or the number called for in the prescribed curricula, exclusive of physical education activity courses and lower-division military, naval, or air science courses. In no case may a student be registered for, or receive credit for, more than 20 credits (or the equivalent) of work, exclusive of physical education activity courses, and lower-division military, naval, or air science courses. Work taken in noncredit courses or to remove entrance deficiencies, or concurrently in evening classes, by correspondence study, or in another collegiate institution, must be included in the computation of the total registered credits allowed.

CHANGES OF REGISTRATION

After students have registered, they cannot change their schedules except with permission of the Dean of the College. No student is permitted to make a registration change that involves entering a new course after the first calendar week of the quarter. After that time, no student may register without the consent of the Dean and the instructor whose class the student wishes to enter.

WITHDRAWALS FROM COURSES OR FROM THE UNIVERSITY

(See page 87.)

BACHELOR'S DEGREES

Students working toward bachelor's degrees in the College of Education must meet certain general requirements of the University and the College as well as the particular requirements of their major department.

UNIVERSITY REQUIREMENTS

The University credit requirement for graduation is 180 academic credits (including Health Education 110 or 175) and the required quarters of physical education activity. At least 60 of the 180 credits must be in upper-division courses, those numbered 300 and above. Advanced ROTC courses do not count as upper-division credit, and no more than 18 credits in advanced ROTC courses may be counted toward graduation.

Military Training. Military programs are available to University Students on a voluntary basis.

The Departments of Air Science, Military Science, and Naval Science conduct the ROTC programs under agreements between the University and the United States Air Force, Army, and Navy. At the University, these programs are coordinated by the Dean of the College of Engineering. Complete descriptions of the military training program may be found on page 87.

Physical Education Activity Courses. Students who enter the University as freshmen are required to complete one physical education activity course each quarter for the first three quarters of residence. In fulfilling the foregoing requirement, all students must pass a swimming test or satisfactorily complete one quarter of swimming. In fulfilling the three-quarter requirement, no activity course may be repeated for credit. Regulations concerning activity courses may be found on page 88.

Health Courses. All students who enter the University as freshmen are required to take Health Education 110 (women) or 175 (men) within the first three quarters

of residence. The health education course requirement may be satisfied by passing a health-knowledge examination. Successfully passing this test exempts the student from the requirement but does not grant credit for Health Education 110 (women) or 175 (men). Veterans with one year or more of active service are exempt from this requirement.

COLLEGE REQUIREMENTS

Scholarship. Students in the College of Education must maintain a 2.20 grade-point average. A cumulative 2.20 average is required for the Provisional Certificate and degrees. Grade points are awarded on the following basis: a grade of A earns 4 points per credit; B, 3 points; C, 2 points; D, 1 point. The grade of E signifies failure and the grade point is 0. The grade-point average is computed by multiplying the grade point received in a course by the total number of credits the course carries, totaling these values, and dividing by the total number of credits for which the student registered.

General Course Requirements. The College of Education requires that 9 credits in English 101, 102, and 103 (English Composition) and a minimum of 9 credits in education courses be included in the total for a degree. At least 60 of the 180 credits must be in upper-division courses, those numbered 300 and above. Advanced ROTC courses do not count as upper-division credit, and no more than 18 credits in advanced ROTC courses may be counted toward graduation.

Group Requirements (See page 32). Students who transfer from other institutions may be required to earn at least 10 credits in their major subject in this College.

Grades earned at other institutions cannot be used to raise the grade-point average at the University of Washington.

SENIOR-YEAR RESIDENCE

Senior standing is attained when 135 credits, plus the required quarters of ROTC and physical education, have been earned. Of the work of the senior year (45 credits), at least 35 credits must be earned in three quarters of residence. The remaining 10 credits may be earned either in residence or in this University's evening classes or correspondence courses.

ESTIMATE OF YEARLY EXPENSES

The figures given below are minimum estimates for an academic year, which includes Autumn, Winter, and Spring Quarters. Living costs and personal expenses vary widely with the needs of the individual student.

Tuition, Incidental, and ASUW Membership

Full-time resident student	\$300.00
Full-time nonresident student	600.00

<i>Athletic Admission Ticket (optional)</i>	6.50
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<i>Health and Accident Insurance (optional)</i>	17.25
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<i>Extra Service Charges and Rentals</i>	38.50
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Military uniform deposit, breakage ticket, and locker charges.

<i>Books and Supplies</i>	90.00
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Board and Room

Room and meals in Men's Residence Halls	720.00
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Room and meals in Women's Residence Halls	660.00-765.00
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Room and meals in fraternity or sorority house (Including dues and social assessments.)	670.00-760.00
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Initial cost of joining is not included; this information may be obtained from the Interfraternity Council or Panhellenic Council.

<i>Personal Expenses</i>	300.00
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FEES, EXTRA SERVICE CHARGES, AND RENTALS

All fees, extra service charges, and rentals are payable in United States dollars at the time of registration. The University reserves the right to change any of its fees and charges without notice.

The fee schedules for resident and nonresident students, appearing on pages 90 and 91, apply to the academic year (Autumn, Winter, and Spring Quarters). Summer fees are listed in the *Summer Quarter Bulletin*.

STUDENT ACTIVITIES AND SERVICES

ASSOCIATED STUDENTS

Membership in the Associated Students of the University of Washington, the central organization which conducts all student activities, is required of all regularly enrolled students. Through the ASUW Board of Control and its various committees and boards, students assume major responsibility in the government of student life. The ASUW helps to finance the programs of athletics, debates, concerts, lectures, and many other activities and facilities, including the University of Washington *Daily* and the Student Union Building.

FINANCIAL AIDS

The University offers a number of awards for outstanding academic achievement. Some are given by the University and others are supported through the generosity of friends and alumni. Information concerning the list of current awards and loans may be obtained from the Office of the Dean of Students or by referring to the *Handbook of Scholarships*. See also page 92.

Short- and long-term loan funds, including the National Defense Student Loan fund, are administered by the Office of the Dean of Students. Full-time students who are making normal and satisfactory progress are eligible to apply.

Departmental Assistantships

Application for the position of teaching assistant or graduate teaching fellow should be made to the Dean of the College of Education. A limited number is available, depending on enrollment.

EDUCATION CLUB

Membership in the Education Club is open to all students in the College of Education. Club meetings provide opportunities for students to become better acquainted with each other and with their instructors, and to hear guest speakers discuss topics of interest in the educational field.

PROFESSIONAL ORGANIZATIONS

Phi Delta Kappa, for men, and Pi Lambda Theta, for women, are national professional organizations for education students. Upper-division and graduate students who maintain high scholarship and show outstanding professional promise may be invited to join one of these organizations.

OFFICE OF THE DEAN OF STUDENTS

The Office of the Dean of Students is concerned with the general welfare of students and welcomes correspondence and conferences with both parents and students. This Office works closely with the advisory system of the colleges and schools of the University; it directs students to faculty advisers, the Counseling Center, and other persons and agencies offering information and assistance with personal and social problems.

The Foreign Students Office operates through the Office of the Dean of Students.

The Foreign Student Adviser and his staff offer guidance on all nonacademic problems to students from other countries. Questions about immigration regulations, housing, social relationships, personal problems, finances, minimum course requirements, and employment should be referred to this Adviser. Students who are interested in study abroad may obtain from him information about schools in other countries and about Fulbright and other scholarships.

COUNSELING CENTER

The Counseling Center in Lewis Hall Annex offers vocational and educational counseling to students who need help in their adjustments to college. The staff of the Center, including vocational counselors and psychologists, works closely with other student services and supplements the academic advisory program. The services of the Center are available to any registered student who desires vocational counseling and to students referred by academic advisers for individual interpretations of their college aptitude scores. Additional tests may be given to determine special interests and aptitudes when necessary.

HOUSING

Information and applications for residence in University-owned housing for single persons may be obtained by writing to the Manager, Men's Residence Halls, 1201 N.E. Campus Parkway, Seattle 5, or to the Manager, Women's Residence Halls, University of Washington, Seattle 5. Until August 1, preference in assignment to vacancies is given to students under twenty-one years of age; thereafter, assignments are made in the order of application. Prospective students may apply for the residence halls prior to their acceptance by the University but not before April 15.

University regulations require that women students under twenty-one who do not live at home must live in approved group residences such as the Women's Residence Halls, sororities, or church-sponsored living groups. Other types of living arrangements must be reported to the Dean of Women and be approved by the student's parents or guardian.

Information about fraternities or sororities may be obtained by writing to the Interfraternity Council or the Panhellenic Council, Student Union Building, University of Washington, Seattle 5.

The Office of Student Residences maintains listings of off-campus rooms, rooms with board, housekeeping rooms, apartments, and houses which are available to University students. These listings must, however, be consulted in person.

Teaching and research assistants and other part-time subfaculty personnel are given first priority for assignment to University-owned housing facilities for married students. Second preference for assignment to Union Bay Village or Sand Point Homes is given to graduate, medical, dental, and law students who have children. Prospective students are eligible to apply when they have been accepted for admission. Write to the Office of Student Residences, 23 Administration Building, for further information and application forms.

A complete statement of University housing policy appears in the *Student Handbook of University Rules and Regulations* and the *Housing Bulletin*.

HEALTH SERVICES

The University maintains a health service and infirmary to help guard against infectious diseases and incipient ill health.

The infirmary receives bed patients at any hour and provides nursing care, medicines, and the attendance of a staff doctor up to one week each quarter free of charge. For a period longer than one week a charge of \$2.00 a day is made. At their own expense, infirmary patients may consult any licensed physician in good standing.

Health and accident insurance for students is available at the time of registration.

EMPLOYMENT

The College of Education maintains an Office of School and College Placement to help qualified students and graduates find teaching and administrative positions. Those who wish to use this service should register with the Bureau, 113 Miller 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.

Part- and full-time work off campus may be obtained through the University Placement Office. Applications are accepted from students or graduates of the University, and from the wives or husbands of University students. Application must be made in person after residence has been established in Seattle. Placement in jobs on the campus is handled by the Personnel Department and the ASUW Personnel Office.



THE PROGRAMS IN EDUCATION

THE PROGRAMS IN EDUCATION

THE COLLEGE OF EDUCATION offers curricula leading to public school certification on the elementary and secondary levels, and to the degrees of Bachelor of Arts, Bachelor of Science, Bachelor of Arts in Elementary Education, and Bachelor of Science in Home Economics 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 in collaboration with the Graduate School.

BACHELOR'S DEGREES

Students working toward bachelor's degrees in education must meet certain general requirements of the University and the College as well as the particular course requirements for one degree. General requirements for the bachelor's degree include military training, physical and health education, scholarship and minimum credits, course requirements, and senior-year residence.

Students should apply for bachelor's degrees during the first quarter of the senior year. If no more than ten years have elapsed since the date of a student's entry into the school or college in which he is to graduate, he may choose to graduate under the requirements set out in either the bulletin published by the appropriate school or college most recently prior to the date of his entry, or that published most recently prior to his anticipated date of graduation; provided that when, in the opinion of the faculty of the school or college or a departmental executive officer or a dean acting for such faculty, substantial changes have been made in the curriculum since the student's entry, the student's choice shall be subject to the approval of the appropriate faculty, executive officer, or dean. Disapproval of the student's choice shall be faculty action and subject to the procedure of the Faculty Code. All responsibility for fulfilling graduation requirements shall rest with the student concerned. No student whose standing is in any way provisional can have an application for degree accepted.

BACHELOR OF ARTS. To obtain the Bachelor of Arts degree, education students may major in anthropology, art, business education, chemistry, civics, drama, economics, English, French, geography, German, health education, history, industrial education, journalism, Latin, mathematics, music, physical education, political science, Russian, sociology, Spanish, speech, or speech and hearing therapy. The requirements for each degree major are included in the appropriate teaching major in that subject (see pages 37-60).

BACHELOR OF SCIENCE. To obtain the Bachelor of Science degree, students may major in biology, geology, health education, physics, or psychology. The requirements for each degree major are included in the appropriate teaching major in that subject (see pages 37-60).

BACHELOR OF ARTS IN ELEMENTARY EDUCATION. Students who wish to emphasize elementary school teaching choose the major in elementary education. A minimum of 36 credits in elementary education is required for this major. Courses include Education 188, 209, 370E, 371K or 371E, 374E, 375S, 376, 377X-377Y, 378C, 378D, 379, or approved substitutes.

BACHELOR OF SCIENCE IN HOME ECONOMICS EDUCATION. The requirements for a major for this degree are the same as those listed for the major academic field in home economics (see page 47). The program is intended for prospective Smith-Hughes (vocational) home economics teachers.

GROUP REQUIREMENTS

Academic 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. Health Education 110 and 175, English 101, 102, and 103, and courses taken to meet entrance criteria may not be used to fulfill group requirements.

The subjects included in these groups are:

<i>I. Humanities</i>	<i>II. Social Sciences</i>	<i>III. Sciences</i>
Art	Anthropology	Anatomy 301
Classics	Economics	Astronomy
Communications	Far Eastern Institute	Biochemistry
Drama	courses	Biology
English	Geography	Botany
Far Eastern languages and	History	Chemistry
literature	Home economics	Conjoint 317-318
General and comparative	Philosophy	Genetics
literature	Physical and health education	Geology
Germanic languages and	Political science	Mathematics
literature	Psychology	Meteorology and
Humanities 101, 102, 103, 201	Social science 101, 102, 103	climatology
Journalism	Sociology	Microbiology
Liberal arts		Oceanography 101
Librarianship		Physics
Music		Zoology
Radio-Television		
Romance languages and literature		
Scandinavian languages and		
literature		
Slavic languages and literature		
Speech		

ADVANCED DEGREES

The advanced degree programs in Education are designed to further the knowledge of candidates in various specialized professional areas and to offer opportunities for advanced study and research appropriate to the goal of the individual. Qualifications for acceptance include a solid undergraduate training and successful teaching experience. In addition to opportunities for specialized training, candidates are required to have training in the conduct and application of research procedures and the development of communication skills.

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate School*

Bulletin as well as the general departmental requirements listed below. The Department of Education requires candidates for advanced degrees to 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 continuously successful teaching or administrative experience are required for admission to doctoral candidacy.

MASTER OF ARTS. The requirements are: 24 credits in education, including Education 591 and 10 credits in each of two fields in education; and 12 credits of approved course work in a department other than education. The fields in education in which work may be taken for the M.A. degree are: curriculum, educational administration and supervision, educational methods, educational psychology, educational sociology, elementary education, guidance and counseling, higher education, history and philosophy of education, and remedial and special education. Students must pass a written final examination and present an acceptable thesis on an approved topic.

Master's candidates enrolled in other departments who are taking a minor in education must present a minimum of 12 approved credits in education courses.

MASTER OF EDUCATION. The requirements are: 27 credits in education, including Education 591 and a minimum of 5 credits in each of four fields in education; and 15 credits in two departments other than education, including 5 credits in courses numbered above 500. The fields in education from which work may be taken for the M.Ed. degree are: audio-visual education, business education, comparative education, curriculum, educational administration, educational methods, educational psychology, educational sociology, educational supervision, elementary education, guidance and counseling, higher education, history and philosophy of education, industrial education, remedial and special education, secondary education, and tests and measurements. Students must pass a written final examination over the selected four fields in education and present an acceptable thesis on an approved topic.

DOCTOR OF EDUCATION. The requirements are: 60 credits in education, including Education 490 or 491, 587 and 588 or 589, 591, a minimum of 12 credits in one field in education, a minimum of 9 credits in each of three other fields in 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. The fields in education from which prospective Ed.D. candidates may elect work are: curriculum, educational administration and supervision, educational methods, educational psychology, educational sociology, elementary education, guidance and counseling, higher education, history and philosophy of education, and remedial and special education. Normally, it is expected that students who plan to enter upon doctoral work will have maintained a grade-point average of 3.50 or better in their work for the master's degree.

DOCTOR OF PHILOSOPHY. The requirements are: 70 credits in education, including Education 490, 587 and 588 or 589, 591, and approximately 15 credits in each of three fields in education; and either 35 credits in one department other than education, or 20 credits in each of two departments other than education. The fields in education in which prospective Ph.D. candidates may specialize are: curriculum, educational administration and supervision, educational methods, educational psychology, elementary education, guidance and counseling, higher education, history and philosophy of education, and remedial and special education. Normally, it is expected that students who plan to enter upon doctoral work will have maintained a grade-point average of 3.50 or better in their work for the master's degree.

Doctoral candidates who are taking a minor in education must present a minimum of 35 approved credits in education courses.

TEACHER CERTIFICATION

The State Board of Education, charged by law with the responsibility for regulating and enforcing the licensure of teachers for the public schools of Washington, has delegated to the teacher training institutions the authority to specify the particular requirements for teaching certificates. Within broad guidelines set by the state, the College of Education of the University of Washington has established the programs outlined below for the Provisional and the Standard Certificate.

A cumulative grade point of 2.20 or above is required for all certification courses and to obtain a degree or any type of an original certificate from the University of Washington. After a transfer student has spent three quarters at the University of Washington, his grade-point average is based on grades received at this institution and must meet the 2.20 requirement if he is to qualify for a teaching certificate and a bachelor's degree.

Transfer students who have been graduated from an approved four-year teacher-training institution in the state of Washington must meet all the professional undergraduate requirements before a teaching certificate is issued by the University of Washington. Claims for exemption from specific requirements are made by petition and passed upon by the Registrar and by the Dean of the College of Education. Transfer students working toward an original certificate through the University of Washington must earn a minimum of 9 credits in education courses; 10 credits in the major, and 5 credits in the minor may be required at this University.

Requirements for a teaching certificate shall be those currently in force at the time the certificate is granted.

PROVISIONAL CERTIFICATE

The Provisional Certificate, based on satisfactory completion of a four-year pre-service program, is valid for a three-year period and is renewable once for a three-year period upon completion of 12 quarter credits of the fifth college year and a year of successful teaching. The Provisional Certificate will show the majors and minors, or the areas of competency, and the level on which the teacher is trained. School districts are to assign beginning teachers to the elementary, junior high, or senior high school level and to teaching fields in accordance with the teacher's preparation as recommended by teacher education institutions.

Requirements for the Provisional Certificate:

- I. Evidence of such general scholarship and personal and moral qualities as give promise of success; signed oath of allegiance as a citizen of the United States; health examination within six months before the certificate is granted.
- II. Cumulative grade-point average of 2.20 or above; an average of "C" or above in all Education courses, with a "C" or above in Education 371; and an average of "C" or above in each major and minor academic field.
- III. Academic work to total a minimum of 180 academic credits, plus 3 credits in physical education activity courses, including a degree of Bachelor of Arts, Bachelor of Science, Bachelor of Arts in Elementary Education, or Bachelor of Science in Home Economics Education.
- IV. Basic certificate requirements:
 - A. Elementary level, kindergarten through grade six:
 1. Major in elementary education, for the degree of Bachelor of Arts in Elementary Education—minimum of 36 credits in approved elementary education courses which are included in items 3 and 4.

2. One major academic field for elementary education majors selected from the following: anthropology, art education, biology, business education, chemistry, civics, drama, economics, English, French, geography, geology, German, health education, history, home economics, industrial education, journalism, Latin, mathematics, music, physical education for men, physical education for women, physics, political science, psychology, Russian, Spanish, sociology, speech education, speech and hearing therapy.

3. Required related courses:

COURSES	CREDITS
Art (Education 376) Art in the Elementary School. Prerequisite, Education 370E.....	5
Geography 100 Introduction to Geography, <i>or</i>	5
Geography 207 Economic Geography.....	5
History 241 Survey of the History of the United States.....	5
**History 464 History of Washington and the Pacific Northwest.....	5
*Library 451 Children's Books, <i>or</i>	3
*Library 452 Storytelling.....	3
Mathematics (Education 379) Arithmetic for Elementary Teachers. Prerequisite, permission.....	3
Music (Education 377X-Y) Music for Elementary Teachers. Prerequisites, Music 104 and Education 370E.....	6
*Physical Education (Education 378C-D) Physical Education for the Elementary School. Prerequisite, Education 370E.....	6
Psychology 100 General Psychology.....	5
*Preventive Medicine 461 School and Community Health Programs. Prerequisite, Education 370E.....	5
Science (Education 375S) Improvement of Teaching: Elementary School Science. Prerequisite, permission.....	3
Speech 100 Basic Speech Improvement.....	5
TOTAL	56

*May be taken during the fifth year but *must* be completed *before* the candidate is recommended for the Standard Certificate.

**May be taken by examination at the office of the County Superintendent. Student must pass certificate of Successful Completion.

4. Professional education courses:

a. Required:

COURSES	CREDITS
Education 188 Principles of Education.....	3
Education 209 Educational Psychology. Prerequisites, Psychology 100, Education 188, and sophomore standing.....	3
Education 370E Elementary School Methods. Prerequisite, 209.....	3
Education 371E or K Directed Teaching, Kindergarten or Elementary. Prerequisites, 374E, 376, 377X-Y.....	12
Education 374E Fundamentals of Reading Instruction: Elementary. Prerequisite, 370E.....	3
*Education 402 Child Study and Development. Prerequisite, permission, <i>or</i>	3
*Psychology 306 Developmental Psychology.....	5

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b. Electives. Two courses selected from the following:

Education 360 Curriculum Development. Prerequisite, permission, <i>or</i>	3
Education 461 Elementary School Curriculum. Prerequisite, permission.....	3
Education 390 Evaluation in Education. Prerequisite, permission.....	3
Education 401 Advanced Educational Psychology. Prerequisite, permission.....	3
Education 404 Education of Exceptional Children. Prerequisite, permission.....	3
Education 408 Mental Hygiene for Teachers and Administrators. Prerequisite, permission.....	3
Education 410 Educational Sociology. Prerequisite, permission.....	3
Education 447 Principles of Guidance. Prerequisite, permission.....	3
Education 455 Auditory and Visual Aids in Teaching. Prerequisite, permission, <i>or</i>	3
Education 456 Auditory and Visual Aids in Teaching. Prerequisite, 455 or permission.....	3
Education 475H Improvement of Teaching: Language Arts. Prerequisite, permission.....	3
TOTAL	33-35

*May be taken during the fifth year but *must* be completed *before* the candidate is recommended for the Standard Certificate.

B. Secondary level, grades seven through twelve:

1. Major academic field, which includes major requirements for the degree of Bachelor of Arts, Bachelor of Science, or Bachelor of Science in Home Economics Education, chosen from the following: anthropology, art education, biology, business education, chemistry, civics, drama, economics, English, French, geography, geology, German, health education, history, home economics, industrial education, journalism, Latin, mathematics, music, physical education for men, physical education for women, physics, political science, psychology, Russian, Spanish, sociology, speech education.
2. Minor academic field. In addition to fields listed under paragraph one, Far Eastern and Slavic Languages and Literature and Librarianship.

3. Required related courses:

COURSES	CREDITS
*Art 100 Introduction to Art (or substitute)	2-5
**History 464 History of Washington and the Pacific Northwest	5
*Music 107 Survey of Music (or substitute)	2-5
Psychology 100 General Psychology	5
*Preventive Medicine 461 School and Community Health Programs. Prerequisite, junior standing	5
Speech 100 Basic Speech Improvement. (Substitutes for Speech 100 should be evaluated and approved by the Speech Department before the student registers.)	5
TOTAL	24-30

*May be taken during the fifth year but *must* be completed *before* the candidate is recommended for the Standard Certificate.

**May be taken by examination at the office of the County Superintendent. Student must present certificate of successful completion.

4. Professional education courses:

a. Required:

COURSES	CREDITS
Education 188 Principles of Education	3
Education 209 Educational Psychology. Prerequisites, Psychology 100, Education 188, and sophomore standing	3
Education 370S Secondary School Methods. Prerequisite, 209	3
Education 371X or S Directed Teaching, Junior High School or Senior High School, Prerequisites, 370S, and special methods	12
*Education 405 Problems of Adolescence. Prerequisite, 209	3
Special methods in a secondary school subject. Prerequisite, 370S	2
	26

b. Electives. Two courses selected from the following:

Education 360 Curriculum Development. Prerequisite, permission	3
Education 374S Fundamentals of Reading Instruction: Secondary. Prerequisite, permission	3
Education 390 Evaluation of Education. Prerequisite, permission	3
Education 401 Advanced Educational Psychology. Prerequisite, permission	3
Education 408 Mental Hygiene for Teachers and Administrators. Prerequisite, permission	3
Education 410 Educational Sociology. Prerequisite, permission	3
Education 445V Principles and Objectives of Vocational Education. Prerequisite, permission	3
Education 447 Principles of Guidance. Prerequisite, permission	3
Education 455 Auditory and Visual Aids in Teaching. Prerequisite, permission, <i>or</i>	3
Education 456 Auditory and Visual Aids in Teaching. Prerequisites, 455 or permission	3
Education 475H Improvement of Teaching: Language Arts. Prerequisite, permission	3
Special methods in a minor field	3
TOTAL	32

*May be taken during the fifth year but *must* be completed *before* the candidate is recommended for the Standard Certificate.

MAJOR AND MINOR FIELDS

Following is a listing of the major and minor academic fields for elementary and secondary teachers. It is the responsibility of the student to consult the department in which he plans to take his work to verify the requirements.

ANTHROPOLOGY

MAJOR ACADEMIC FIELD. The requirements are 45 credits, including the following:

COURSES	CREDITS
Anthropology 201 Physical Anthropology: Man in Nature	5
Anthropology 202 Cultural Anthropology: Comparison and Analysis	5
Anthropology 203 Archaeology: The Dawn of Tradition	5
Anthropology 210 North American Indians, <i>or</i>	3
Anthropology 211 Oceania, <i>or</i>	3
Anthropology 213 Africa, <i>or</i>	3
Anthropology 215 Native Peoples of South America, <i>or</i>	3
Anthropology 311 Indian Cultures of the Pacific Northwest, <i>or</i>	3
Anthropology 315 Peoples of the Far North, <i>or</i>	3
Anthropology 415 The Character of Eskimo Life	3
Anthropology 272 Prehistoric Cultures of North America, <i>or</i>	3
Anthropology 274 Prehistoric Cultures of South America	3
Anthropology 332 The Religions of Primitive Peoples, <i>or</i>	3
Anthropology 432 Magic, Religion, and Philosophy, <i>or</i>	3
Anthropology 433 Primitive Art, <i>or</i>	3
Anthropology 435 Primitive Economic Systems, <i>or</i>	3
Anthropology 436 Peasant Economic Systems, <i>or</i>	3
Anthropology 437 Primitive Political Institutions	3
Anthropology electives chosen after consultation regarding the special field of interest	21

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are the same as those for the Major Academic Field.

MINOR ACADEMIC FIELD. The requirements are 40 credits, including the following:

COURSES	CREDITS
Anthropology 201 Physical Anthropology: Man in Nature	5
Anthropology 202 Cultural Anthropology: Comparison and Analysis	5
Anthropology 203 Archaeology: The Dawn of Tradition	5
Anthropology electives after consultation regarding the special field of interest	25

ART EDUCATION

MAJOR ACADEMIC FIELD. The requirements are 72 credits in art and 5 credits in related fields, including the following:

COURSES	CREDITS
Art 105, 106, 107 Drawing	9
Art 109, 110, 111 Design	9
Art 129 Appreciation of Design	2
Art 201 Ceramic Art	3
Art 205 Lettering	3
Art 212, 213, 214 History of Western Art through the Renaissance	6
Art 253, 254, 255 Design and Materials	9
Art 256 Painting	3
Art 258 Water Color	3
Art 261 Elementary Interior Design	2
Art 272 Sculpture	3
Art 290, 291, 292 Art Education (craft)	6
Art 300 Design in Leather	2
Art 302 Bookbinding	2
Art 350 Introduction to Printmaking, <i>or</i>	3
Art 357 Metal Design, <i>or</i>	3
Art 358 Jewelry Design	3
Art 360 or 361 or 362 Life	3
Art 367 Commercial Design	3
Art 463 or 464 or 465 Composition	3
Humanities 102 The Arts	5

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are 40 credits in art and 5 credits in education, including the following:

COURSES	CREDITS
Art 105, 106, 107 Drawing	9
Art 109, 110, 111 Design	9
Art 212, 213, 214 History of Western Art through the Renaissance	6
Art 253, 254, 255 Design and Materials (3,3,3)	to total 6
Art 256 Painting	3
Art 258 Water Color	3
Art 290 or 291 or 292 Art Education (craft)	2
Art 302 Bookbinding	2
Education 376 Art in the Elementary School	5

MINOR ACADEMIC FIELD. This program should be planned in consultation with an adviser.

BIOLOGY

MAJOR ACADEMIC FIELD. The requirements are 60 credits. An entering student may begin his program with the 10-credit sequence Biology 101J-102J General Biology (10), and continue his elementary training with Botany 112 and 113 Elementary Botany (5,5) and Zoology 112 General Zoology (5). Or he may begin with either Botany 111 Elementary Botany (5) or Zoology 111 General Zoology (5) and continue his program as if he had completed General Biology.

Beyond the elementary program the required courses include:

COURSES	CREDITS
Botany 371 Elementary Plant Physiology, <i>or</i>	5
Botany 472 Plant Physiology	5
Zoology 208 Elementary Human Physiology	5
Zoology 458 Vertebrate Physiology, <i>or</i>	6
Zoology 400 General Physiology	5
Zoology 330 Natural History of Marine Invertebrates, <i>or</i>	5
Zoology 433, 434 Invertebrate Zoology, <i>or</i>	10
Zoology 444 Entomology, <i>or</i>	5
Biology 472 Principles of Ecology	3
Zoology 362 Natural History of Vertebrates, <i>or</i>	5
Zoology 463 Natural History of Amphibia and Reptiles, <i>or</i>	5
Zoology 464 Natural History of Birds (Ornithology), <i>or</i>	5
Zoology 465 Natural History of Mammals	5
Microbiology 301 General Microbiology	5
Biology 451 Genetics	3
Biology 451L Genetics Laboratory	2

Depending upon the sequence selected, the student will complete 50 to 60 credits in this program. If 10 more credits are needed, he normally must elect them from the following approved courses:

COURSES	CREDITS
Botany 201 and 202 Plant Propagation, <i>or</i>	2, 2
Botany 331 Ornamental Plants	3
Biology 401 Cytology	3
Zoology 433, 434 Invertebrate Zoology	10
Zoology 456 Vertebrate Embryology	5
Biology 473 Limnology	5

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are 45 credits, including:

COURSES	CREDITS
Botany 111, 112, 113 Elementary Botany	15
Zoology 111, 112 General Zoology	10
Twenty credits, including at least 5 credits in botany and 10 credits in zoology, from the following:	
Botany 201 Plant Propagation	2
Botany 202 Plant Propagation	2
Botany 203 Plant Propagation	2
Botany 331 Ornamental Plants	3
Botany 371 Elementary Plant Physiology	5
Zoology 330 Natural History of Marine Invertebrates	5
Zoology 362 Natural History of Vertebrates	5
Zoology 118 Survey of Physiology	5

MINOR ACADEMIC FIELD. The requirements are 30 credits, including either (1):

COURSES	CREDITS
Botany 111 Elementary Botany.....	5
and 10 credits selected from:	
Botany 112 Elementary Botany.....	5
Botany 113 Elementary Botany, or.....	5
Botany 371 Elementary Plant Physiology.....	5

or (2):

Biology 101J-102J General Biology.....	5-5
Botany 112 Elementary Botany, or.....	5
Botany 113 Elementary Botany.....	5
Botany 371 Elementary Plant Physiology.....	5

In addition, either (1):

Zoology 111 General Zoology.....	5
Zoology 112 General Zoology.....	5
and any 5-credit upper-division laboratory course in zoology;	

or (2):

Biology 101J-102J General Biology.....	5-5
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); and any recommended courses to complete the field.	

BUSINESS EDUCATION

MAJOR ACADEMIC FIELD. The requirements are 60 credits, consisting of the courses listed plus 9 additional credits in Secretarial Studies, Accounting, Economics, or Marketing. Upon consultation with Business Education staff, the 60-credit requirement may be reduced because of previous study in Gregg shorthand. (Note: Education 324 and 325, Teachers' Course in Business Education: Bookkeeping and General Business and Teachers' Course in Business Education: Typewriting, Shorthand, Transcription, and Business Communications also are required—see professional education course requirements.)

COURSES	CREDITS
Secretarial Studies 111 Secretarial Studies.....	2
Secretarial Studies 112 Secretarial Studies.....	2
Secretarial Studies 115 Office Machines.....	3
Secretarial Studies 120-121 Gregg Shorthand.....	6
Secretarial Studies 122 Advanced Gregg Shorthand.....	3
Secretarial Studies 320 Secretarial Practice.....	5
General Business 101 Business: An Introductory Analysis.....	5
Accounting 210, 220 Fundamentals of Accounting.....	6
Accounting 230 Basic Accounting Analysis.....	3
Business Law 201 Legal Factors in the Business Environment.....	3
Business Communications 301 Written Business Communications.....	3
Marketing 301 Marketing, Transportation, and International Business: An Integrative Analysis.....	5
Economics 200 Introduction to Economics.....	5

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are 34 credits as listed below. Upon consultation with Business Education staff, the 34-credit requirement may be reduced because of previous study in Gregg shorthand.

COURSES	CREDITS
Secretarial Studies 111 Secretarial Studies.....	2
Secretarial Studies 112 Secretarial Studies.....	2
Secretarial Studies 120-121 Gregg Shorthand.....	6
Secretarial Studies 122 Advanced Gregg Shorthand.....	3
Secretarial Studies 320 Secretarial Practice.....	5
General Business 101 Business: An Introductory Analysis.....	5
Accounting 210, 220 Fundamentals of Accounting.....	6
Economics 200 Introduction to Economics.....	5

MINOR ACADEMIC FIELD. The requirements are 24 credits as listed below. Upon consultation with Business Education staff, the 24-credit requirement may be reduced because of previous study in Gregg shorthand.

COURSES	CREDITS
Secretarial Studies 111 Secretarial Studies.....	2
Secretarial Studies 112 Secretarial Studies.....	2
Secretarial Studies 120-121 Gregg Shorthand.....	6
Secretarial Studies 122 Advanced Gregg Shorthand.....	3
Secretarial Studies 320 Secretarial Practice.....	5
Accounting 210, 220 Fundamentals of Accounting.....	6

CHEMISTRY

MAJOR ACADEMIC FIELD. The requirements are 36 credits, including the following, one year of college physics, and mathematics through Mathematics 124 (Calculus with Analytic Geometry). Grades of C or above must be obtained in all chemistry courses counted to meet the minimum requirements for a major or minor academic field.

COURSES	CREDITS
Chemistry 140 General Chemistry	3
Chemistry 150 General Chemistry	3
Chemistry 151 General Chemistry Laboratory	2
Chemistry 160 General Chemistry	3
Chemistry 170 Qualitative Analysis	3
Chemistry 221 Quantitative Analysis	5
Chemistry 231, 232 Organic Chemistry	6
Chemistry 241, 242 Organic Chemistry Laboratory	4
Chemistry 350 Physical Chemistry	5

Approved Chemistry electives selected from 358, 395, 425, or other electives chosen in consultation with the Department.

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are the same as those for the Major Academic Field.

MINOR ACADEMIC FIELD. The requirements are 27 credits, including the following, one year of high school or college physics, and any recommended courses to complete the field.

COURSES	CREDITS
Chemistry 140 General Chemistry	3
Chemistry 150 General Chemistry	3
Chemistry 151 General Chemistry Laboratory	2
Chemistry 160 General Chemistry	3
Chemistry 170 Qualitative Analysis	3
Chemistry 221 Quantitative Analysis	5
Chemistry 231, 232 Organic Chemistry	6
Chemistry 241 Organic Chemistry Laboratory	2

CIVICS

MAJOR ACADEMIC FIELD. The requirements are 50 credits, as indicated below. Students must maintain a 2.25 grade average in the courses required for an academic major in civics.

COURSES	CREDITS
Economics 200 Introduction to Economics	5
Sociology 310 General Sociology	5
History 241 Survey of the History of the United States	5
Political Science 376 State and Local Government and Administration	5

Two courses selected from the following:

Political Science 202 American Government and Politics	5
Political Science 351 The American Democracy	5
Political Science 370 Government and the American Economy	5
Political Science 375 Problems of Municipal Government and Administration	5
Political Science 450 Political Parties and Elections	5
Political Science 470 Introduction to Public Administration	5

Two courses selected from the following:

Political Science 201 Modern Government	5
Political Science 328 The United Nations and Specialized Agencies	5
Political Science 346 Governments of Western Europe	5
Political Science 336 National Power and International Politics	5
Political Science 441 Political Institutions of the Soviet Union	5

One course selected from the following:

Political Science 360 The American Constitutional System	3
Political Science 411 The Western Tradition of Political Thought	5
Political Science 412 American Political Thought	5
Political Science 413 Contemporary Political Thought	5
Political Science 460 Introduction to Constitutional Law	5
Political Science electives	5 or 7

MINOR ACADEMIC FIELD. The requirements are 30 credits, including the following, and any recommended courses to complete the field.

COURSES	CREDITS
Political Science 201 Modern Government	5
Political Science 202 American Government and Politics	5
Economics 200 Introduction to Economics, or	5
Sociology 310 General Sociology	5
Political Science electives	15

DRAMA

MAJOR ACADEMIC FIELD.

COURSES	CREDITS
Drama 101 Introduction to the Theater	2
Drama 146, 247 Stage Speaking: Theory and Practice	3, 2
Drama 151, 152, 253 Acting	9
Drama 201 Introduction to Children's Drama	2
Drama 248 Stage Speaking: Theory and Practice	2
Drama 300 Fundamentals of Stagecraft	5
Drama 349 Advanced Stage Speaking	2
Drama 405 Historic Costume and Movement	3
Drama 406 Theatrical Make-up	2
Drama 421, 422 Advanced Acting	6
Drama 441 History of World Theater and Drama: Classic and Oriental	5
Drama 442 History of World Theater and Drama: Medieval and Renaissance	5
Drama 443 History of World Theater and Drama: Modern	5
Drama 481 Theory and Fundamentals of Directing	2
Drama 481L Directing Laboratory	1
Drama 497 Theater Organization and Management	2
Senior Comprehensive Examination	

Requirements in Related Fields:

Art 100 Introduction to Art, or	5
Music 107 Survey of Music	5
Humanities 102 The Arts, or	5
Liberal Arts 111 Introduction to the Study of the Fine Arts	5
English 264 English Masterpieces: Beginnings through Shakespeare (to 1600)	5
English 265 English Masterpieces: Donne Through Blake (1600-1800)	5
English 324 Shakespeare	5
English 325 Shakespeare	5

5 credits elected from following:

Classics 427 Greek and Roman Drama in English	3
French 417 Racine and Moliere in English	3
German 462 Goethe in English	3
Japanese 423 Studies in Japanese Drama in English	5
Philosophy 445 Philosophy of Art	5
Russian 422 Russian Plays in English	5
Scandinavian 382 Twentieth-Century Scandinavian Drama in English	2
Scandinavian 480 Ibsen and his Major Plays in English	2
Scandinavian 481 Strindberg and his Major Plays in English	2

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are 40 credits, including the following:

COURSES	CREDITS
Drama 101 Introduction to the Theater	2
Drama 201 Introduction to Children's Drama	2
Drama 146, 247 Stage Speaking: Theory and Practice	3, 2
Drama 151, 152 Acting	6
Drama 300 Fundamentals of Stagecraft	5
Drama 335 Children's Theater	3
Drama 338 Creative Dramatics	3
Drama 405 Historic Costume and Movement	3
Drama 406 Theatrical Make-up	2
Drama 435, 435L Children's Theater Directing and Laboratory	2, 1
Drama 438, 438L Creative Dramatics	2, 1
Drama 479 Special Studies	3

MINOR ACADEMIC FIELD. The requirements are 26 credits, including the following:

COURSES	CREDITS
Drama 101 Introduction to the Theater	2
Drama 201 Introduction to Children's Drama	2
Drama 151, 152 Acting	6
Drama 146 Stage Speaking: Theory and Practice	3
Drama 300 Fundamentals of Stagecraft	5
Drama 405 Historic Costume and Movement	3
Drama 406 Theatrical Make-up	2
Drama 426 High School Play Direction	3

ECONOMICS

MAJOR ACADEMIC FIELD. The requirements are the specific courses listed below plus 25 additional credits in economics, other social sciences, or business administration, to be approved by an adviser in the Department of Economics.

COURSES	CREDITS
Economics 200 Introduction to Economics	5
Economics 201 Principles of Economics	5
Economics 300 Intermediate Economics	5
Economics 301 National Income Analysis	5
Economics 320 Money and Banking, <i>or</i>	5
Economics 340 Labor in the Economy, <i>or</i>	5
Economics 370 Economic Principles of Foreign Trade, <i>or</i>	5
Economics 390 Comparative Economic Systems	5
Accounting 210 Fundamentals of Accounting	3
Accounting 230 Basic Accounting Analysis	3
Business Statistics 201 Statistical Analysis, <i>or</i>	3
Mathematics 281 Elements of Statistical Method, <i>or</i>	3
Psychology 301 Statistical Methods, <i>or</i>	5
Sociology 223 Social Statistics	5

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are 45 credits chosen from the courses required for the Major Academic Field.

MINOR ACADEMIC FIELD. The requirements are 25 credits, including the following, and two upper-division courses from two different fields of specialization and any recommended courses to complete the field.

COURSES	CREDITS
Economics 200 Introduction to Economics	5
Economics 201 Principles of Economics	5

ENGLISH

MAJOR ACADEMIC FIELD. The requirements for specialization in advanced writing are 49 or 51 credits in English and 10 credits in education and speech, including the following, and recommended courses in advanced writing, literature, and related courses to complete the field.

COURSES	CREDITS
English 257 Introduction to Poetry	5
English 264 English Masterpieces: Beginnings through Shakespeare (to 1600)	5
English 265 English Masterpieces: Donne through Blake (1600-1800)	5
English 271 Expository Writing. (plus 3 additional credits in advanced writing)	3
English 324 Shakespeare	5
English 341 Romantic Poets (Blake, Wordsworth, Coleridge) <i>or</i>	5
English 342 Romantic Poets (Byron, Shelley, Keats) <i>or</i>	5
English 344 Victorian Poets (Tennyson, Arnold, Hopkins)	5
English 345 Victorian Poets (The Brownings, Rossetti, Swinburne)	5
English 347 Nineteenth-Century Prose	5
English 361 American Literature: Beginnings to 1840	5
English 362 American Literature: 1840-1860	5
English 363 American Literature: 1860-1900	5
English 387 English Grammar, <i>or</i> 447 History of the English Language, <i>or</i>	5
English 449 English Prose Style	5
English 417, 418, 419 The English Novel	5
English 430 English Literature: 1900-1930 <i>or</i>	5
English 431 English Literature: Since 1930 <i>or</i>	5
English 434 American Literature: 1900-1930	5
English 435 American Literature: Since 1930	5

English majors in the College of Education are required to have, in addition to the above requirements, Speech 140 (5) and Education 326 (5).

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are 45 credits, including the following, and any recommended courses to complete the field.

COURSES	CREDITS
English 271 Expository Writing	3
English 257 Introduction to Poetry	5
English 264 English Masterpieces: Beginnings through Shakespeare (to 1600)	5
English 265 English Masterpieces: Donne through Blake (1600-1800)	5
English 267 American Masterpieces: Beginnings to 1900	5
English 324 Shakespeare	5
English 387 English Grammar, <i>or</i> 447 History of the English Language, <i>or</i>	5
English 449 English Prose Style	5
English 341 Romantic Poets (Blake, Wordsworth, Coleridge) <i>or</i>	5
English 342 Romantic Poets (Byron, Shelley, Keats) <i>or</i>	5
English 344 Victorian Poets (Tennyson, Arnold, Hopkins)	5
English 345 Victorian Poets (The Brownings, Rossetti, Swinburne)	5
English 347 Nineteenth-Century Prose	5
English 417, 418, 419 The English Novel	5

English 430	English Literature: 1900-1930 <i>or</i>	5
English 431	English Literature: Since 1930 <i>or</i>	5
English 434	American Literature: 1900-1930	5
English 435	American Literature: Since 1930	5
English electives	2 hours or more	2

MINOR ACADEMIC FIELD. The requirements are 31 credits, including the following, and any recommended courses to complete the field.

COURSES		CREDITS
English 265	English Masterpieces: Donne through Blake (1600-1800)	5
English 266	English Masterpieces: Wordsworth through Hardy (1800-1900)	5
English 267	American Masterpieces: Beginnings to 1900	5
English 271	Expository Writing	3
English 324	Shakespeare	5
English 387	English Grammar	3
English 430	English Literature: 1900-1930 <i>or</i>	5
English 431	English Literature: Since 1930 <i>or</i>	5
English 434	American Literature: 1900-1930	5
English 435	American Literature: Since 1930	5
English minors in the College of Education are required to have, in addition to the above requirements, Speech 140 (5) and Education 326 (5).		

FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE

MINOR ACADEMIC FIELD. The requirements are 18 credits, including the following, and any recommended courses to complete the field. A 2.20 grade-point average is required in Far Eastern courses.

COURSES		CREDITS
Far Eastern 110	The Far East in the Modern World <i>or</i>	5
Far Eastern 310	The Far East in the Modern World	5
Far Eastern 240	Chinese Civilization <i>or</i>	5
Far Eastern 242	Korean Civilization	3
Far Eastern 243	Russian Civilization <i>or</i>	5
Far Eastern 314J	Peoples of Central and Northern Asia <i>or</i>	3
Far Eastern 316	History of Southeastern Asia <i>or</i>	5
Far Eastern 443	Chinese Social Institutions	5
Far Eastern 423J	Recent Russian History <i>or</i>	5
Far Eastern 447	Modern Chinese History <i>or</i>	5
Far Eastern 453J	Modern Japanese History <i>or</i>	5
Approved electives carrying Far Eastern credit		3 or 5

FRENCH

MAJOR ACADEMIC FIELD. The requirements are proficiency in French and knowledge of the literature and culture of France, as outlined in a syllabus obtainable from the Department.

Credit 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 the departments in which he is studying. Summer study abroad is encouraged.

The candidate's program of study, supervised by an adviser in the Romance Languages and Literature Department, should normally include the following courses, beyond French 101-102, 103 Elementary (5-5,5), or beyond the second high school year:

COURSES		CREDITS
French 201, 202	Intermediate (or third high school year)	10
French 222	Introduction to French Literature	5
French 301	French Stylistics	3
French 304, 305, 306	Survey of French Literature	15
French 327 or 328 or 329	Advanced Conversation <i>or</i>	2
French 330	Conversational French	2
French 409	Advanced Phonetics	3
Electives in Romance Languages and Literature Department courses numbered above 400, with additional directed reading in the B.A. syllabus of French literature		12
Romance 401	Introduction to Romance Linguistics	3
Education 329	Teachers' Course in French (included in professional education requirements)	2

MINOR ACADEMIC FIELD (for secondary school teachers). The Department of Romance Languages and Literature requires completion of an approved program of study under the supervision of a Department adviser, normally including 26 credits French, beyond French 101-102, 103 Elementary (5-5,5) or beyond the second high school year, plus Romance 401 Introduction to Linguistics (2) and Education 329 Teachers' Course in French (2).

MINOR ACADEMIC FIELD (for elementary school teachers). Students preparing to teach French in the elementary schools should complete, under the supervision of a Department adviser, a program of study beyond French 101-102, 103 (5-5,5), or beyond the second high school year, which would include at least the following courses:

COURSES	CREDITS
French 201, 202 Intermediate (or third high school year)	10
French 222 Introduction to French Literature	5
French 409 Advanced Phonetics	3
Education 329 Teachers' Course in French	2

GEOGRAPHY

MAJOR ACADEMIC FIELD. The requirements are 50 credits, including the following, and any recommended courses to complete the field.

COURSES	CREDITS
Geography 100 Introduction to Geography	5
Geography 205 Physical Geography	5
Geography 207 Economic Geography	5
Geography 258 Maps and Map Reading	2
Geography 302 The Pacific Northwest	3
Geography 325 Historical Geography of America	3
Additional upper-division courses	27

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are 45 credits, including the following, and any recommended courses to complete the field.

COURSES	CREDITS
Geography 100 Introduction to Geography	5
Geography 205 Physical Geography	5
Geography 207 Economic Geography	5
Geography 302 The Pacific Northwest	3
Geography 258 Maps and Map Reading	2
Geography 325 Historical Geography of America	3
Additional upper-division courses	22

MINOR ACADEMIC FIELD. The requirements are 26 credits, including the following, and any recommended courses to complete the field.

COURSES	CREDITS
Geography 100 Introduction to Geography	5
Geography 205 Physical Geography	5
Geography 302 The Pacific Northwest	3
Geography 325 Historical Geography of America	3
Geography 370 Conservation of Natural Resources	5
One additional geography course on the 400-level	5

GEOLOGY

MAJOR ACADEMIC FIELD. The requirements are 36 credits, including the following, and any recommended courses to complete the field.

COURSES	CREDITS
Geology 205 Physical Geology	5
Geology 206 Elements of Physiography	5
Geology 207 Historical Geology	5
Geology 412 Physiography of the United States	5

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are the same as those for the Major Academic Field.

MINOR ACADEMIC FIELD. The requirements are 20 credits, including the following, and approved electives and any recommended courses to complete the field.

COURSES	CREDITS
Geology 101, 102 General Geology (for nonscience majors)	10
Geology 205 Physical Geology	5
Geology 206 Elements of Physiography	5

GERMANIC LANGUAGES AND LITERATURE

MAJOR ACADEMIC FIELD. The requirements are a minimum of 50 credits beyond the first year of German, including Education 330 Teachers' Course in

German (2), and German 405 Linguistic Analysis of German (3). The required senior-year sequence includes:

COURSES	CREDITS
German 401, 402, 403, Grammar and Composition	6
German 410, 411, 412 Survey of Modern German Literature and Culture	9
Additional electives are:	
German 404 History of the German Language	5
German 416 Nineteenth-Century Drama	3
German 417 Nineteenth-Century Prose	3
German 434 Goethe I	3
German 435 Goethe II	3
German 438 Schiller	3
German 531 Lessing	3

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are the same as for the Major Academic Field.

MINOR ACADEMIC FIELD. The requirements are 35 credits beyond the first year of German, that is, the second- and third-year sequence of courses plus Education 330 and German 405.

Teachers of foreign languages in elementary schools need the 15 credits of the second-year sequence, plus the Language Methods course and German 405, or a total of 20 credits.

HEALTH EDUCATION (PUBLIC HEALTH EMPHASIS)

MAJOR ACADEMIC FIELD. The requirements are 47 credits including the following. Electives during the preprofessional period should be selected from the recommended social and physical sciences. The program of study is supervised by an adviser in the Department of Preventive Medicine, School of Medicine.

COURSES	CREDITS
Health Education 291 Personal and General Hygiene	3
Health Education 429 Methods in Teaching First Aid and Safety	3
Health Education 453 Methods and Materials in Health Teaching	3
Home Economics 300 Nutrition	2
Preventive Medicine 323 Public Health Organizations and Services	3
Preventive Medicine 420 Introduction to Epidemiology and Biostatistics	3
Preventive Medicine 422 Introduction to Environmental Health	3
Preventive Medicine 424 Public Health Problems	3
Preventive Medicine 461 School and Community Health Programs (included in required related courses)	5
Preventive Medicine 464 Community Health Education Techniques	3
Preventive Medicine 482 Field Practice in Public Health	6
Psychiatry 450 Principles of Personality Development <i>or</i>	2
Education 408 Mental Hygiene for Teachers and Administrators	3
Zoology 208 Elementary Human Physiology <i>or</i>	5
Zoology 118, 118L Survey of Physiology, Elementary Physiology Laboratory	6

Recommended Preprofessional Courses:

Anatomy 301 General Anatomy	4
Anthropology 100 Introduction to the Study of Man	5
Biology 101J-102J General Biology	10
Chemistry 100 Chemical Science <i>or</i>	5
Chemistry 101 General Chemistry	5
Chemistry 102 General and Organic Chemistry	5
Home Economics 356 Family Relationships	3
Microbiology 301 General Microbiology	5
Physics 100 Survey of Physics	5

MINOR ACADEMIC FIELD. The requirements are 24 credits, including the following, and any recommended courses to complete the field. Students with major fields in home economics, biology, physical and health education, and social sciences are encouraged to take this minor field.

COURSES	CREDITS
Health Education 291 Personal and General Hygiene	3
Health Education 429 Methods in Teaching First Aid and Safety	3
Health Education 453 Methods and Materials in Health Teaching	3
Psychiatry 450 Principles of Personality Development <i>or</i>	2
Education 408 Mental Hygiene for Teachers and Administrators	3
Home Economics 300 Nutrition	2
Preventive Medicine 323 Public Health Organizations and Services	3
Preventive Medicine 422 Introduction to Environmental Health	3
Preventive Medicine 461 School and Community Health Programs (included in required related courses)	5

HEALTH EDUCATION (SCHOOL OF PHYSICAL AND HEALTH EDUCATION)

MAJOR ACADEMIC FIELD. The requirements are the following and any recommended courses to complete the field.

General Education Requirements

COURSES	CREDITS
Biology 101J-102J General Biology	10
English 101, 102, 103 Composition	9
Health Education 110 Health Education (Women)	2
Home Economics 300 Nutrition	2
Physical Education Activities	3
Psychology 100 General Psychology	5
Sociology 110 Survey of Sociology	5
Speech 100 Basic Speech Improvement	5

Professional Requirements

Anatomy 301 General Anatomy	4
Chemistry 100 Chemical Science <i>or</i>	5
Chemistry 140 General Chemistry	3
Chemistry 120 General and Organic Chemistry	5
Health Education 291 Personal and General Hygiene	3
Health Education 292 First Aid and Safety <i>or</i>	3
Health Education 429 Methods in Teaching First Aid and Safety	3
Health Education 453 Methods and Materials in Health Teaching	3
Health Education 465 The School Environmental Health Program	3
Microbiology 301 General Microbiology (or approved substitute)	5
Psychiatry 267 Introduction to Mental Hygiene <i>or</i>	2
Psychiatry 450 Principles of Personality Development <i>or</i>	2
Education 408 Mental Hygiene for Teachers and Administrators	3
Preventive Medicine 323 Introduction to Public Health Principles and Practices	3
Preventive Medicine 420 Introduction to Epidemiology and Biostatistics	3
Preventive Medicine 422 Introduction to Environmental Health	3
Preventive Medicine 424 Public Health Problems	3
Preventive Medicine 464 Community Health Education Techniques	3
Sociology 453 Social Factors of Marriage <i>or</i>	3
Home Economics 356 Family Relationships	3
Zoology 118, 118L Survey of Physiology, Elementary Physiology Laboratory <i>or</i>	6
Zoology 208 Elementary Human Physiology	5
Approved Electives in Health Education or related fields	8

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are 45 credits and group requirements in science to be selected from the same courses as listed for the Major Academic Field in Health Education (School of Physical and Health Education). Selection of courses for the Major Academic Field (for elementary education majors) should be made with guidance from a health education adviser in the School of Physical and Health Education.

MINOR ACADEMIC FIELD. The requirements are the following and any recommended courses to complete the field.

COURSES	CREDITS
Health Education 291 Personal and General Hygiene	3
Health Education 292 First Aid and Safety, <i>or</i>	3
Health Education 429 Methods in Teaching First Aid and Safety	3
Health Education 453 Methods and Materials in Health Teaching	3
Home Economics 300 Nutrition	2
Preventive Medicine 461 School and Community Health Programs (included in required related courses)	5
Electives approved by department	6-7

Recommended electives:

Nursing 298, 299 Introduction to Normal Growth and Development <i>or</i>	4
Conjoint 496 Concept of the Child <i>or</i>	3
Psychology 320 Directed Observation of Early Childhood Development	3
Health Education 465 The School Health Environmental Program	3
Microbiology 301 General Microbiology	5
Preventive Medicine 323 Introduction to Public Health Principles and Practices	3
Preventive Medicine 420 Introduction to Epidemiology and Biostatistics	3
Preventive Medicine 422 Introduction to Environmental Health	3
Preventive Medicine 424 Public Health Problems	3
Preventive Medicine 463 Community Organization for Health Education	3
Preventive Medicine 464 Community Health Education Techniques	3
Psychiatry 267 Introduction to Mental Hygiene <i>or</i>	2
Psychiatry 450 Principles of Personality Development, <i>or</i>	2
Education 408 Mental Hygiene for Teachers and Administrators	3
Sociology 453 Social Factors of Marriage, <i>or</i>	3
Home Economics 356 Family Relationships	3

HISTORY

MAJOR ACADEMIC FIELD. The requirements are 50 credits, including the following, and any recommended upper-division courses to complete the field. A 2.50 grade-point average is required in the history courses taken at the University of Washington.

COURSES	CREDITS
History 101 Medieval European History	5
History 102 Modern European History or	5
Social Science 101 History of Civilization: The Great Cultural Traditions	5
Social Science 102 History of Civilization: The Western Tradition in World Civilization	5
Social Science 103 History of Civilization: The Contemporary World	5
History 201-202 Ancient History	10
History 241 Survey of the History of the United States	5
History 464 History of Washington and the Pacific Northwest	5

MINOR ACADEMIC FIELD. The requirements are 30 credits, including the following, and any recommended upper-division courses to complete the field.

COURSES	CREDITS
History 101 Medieval European History	5
History 102 Modern European History or	5
Social Science 101 History of Civilization: The Great Cultural Traditions	5
Social Science 102 History of Civilization: The Western Tradition in World Civilization	5
Social Science 103 History of Civilization: The Contemporary World	5
History 241 Survey of the History of the United States	5
History 464 History of Washington and the Pacific Northwest	5

HOME ECONOMICS

MAJOR ACADEMIC FIELD. The requirements are 60 credits, including the following, and prerequisites (Art 109, Chemistry 100 or high school chemistry, Chemistry 101 and 102) and any recommended courses to complete the field. Students who plan to teach homemaking in Washington high schools follow this prescribed curriculum which meets the course requirements for the Provisional Secondary Certificate.

COURSES	CREDITS
Home Economics 125 Textiles	3
Home Economics 134 Clothing	3 or 5
Home Economics 148 The Home, Its Equipment, and Management	3
Home Economics 216 Food Preparation and Meal Management	1-3
Home Economics 234 Costume Design	3
Home Economics 307 Nutrition	3 or 5
Home Economics 315 Advanced Food Selection and Preparation	5
Home Economics 316 Demonstration Techniques	3
Home Economics 338 Clothing for the Family	3
Home Economics 347 Home Furnishing	5
Home Economics 348 Home-Management House	3
Home Economics 354 Family Economics and Finances	5
Home Economics 356 Family Relationships	3
Home Economics 457 Child Nutrition and Care	3

Home Economics elective to be selected from the following:

407 Advanced Nutrition	3
425 Advanced Textiles	3
434 Costume Design	3
447 Advanced Home Furnishing	3
454 Advanced Family Economics and Finances or	2
495 Special Problems in Home Economics	to total 2-3
Education 332 Teachers' Course in Home Economics (2 are Education credits; 3 count for Home Economics)	5
Psychology 320 Directed Observation of Early Childhood Development	3

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are 45 credits, including the following and a 2- or 3-credit elective in home economics, prerequisites (Art 109, Chemistry 100 or high school chemistry, Chemistry 101 and 102), and any recommended courses to complete the field.

COURSES	CREDITS
Home Economics 125 Textiles	3
Home Economics 134 Clothing	3 or 5
Home Economics 148 The Home, Its Equipment, and Management	3
Home Economics 216 Food Preparation and Meal Management	1-3
Home Economics 234 Costume Design	3
Home Economics 307 Nutrition	3 or 5
Home Economics 315 Advanced Food Selection and Preparation	5
Home Economics 347 Home Furnishing	5
Home Economics 354 Family Economics and Finances	5
Home Economics 356 Family Relationships	3
Home Economics 457 Child Nutrition and Care	3

MINOR ACADEMIC FIELD. The requirements are 15 credits. Students may select one of three sequences.

Requirements for specialization in textiles, clothing, and art:

COURSES		CREDITS
Home Economics 125	Textiles	3
Home Economics 134	Clothing	3 or 5
Home Economics 234	Costume Design	3
Home Economics 347	Home Furnishing	5
<i>Suggested electives:</i>		
Home Economics 321	Applied Design	2
Home Economics 322	Applied Design	2
Home Economics 329	Hand Weaving	2
Home Economics 334	Costume Design	3
Home Economics 338	Clothing for the Family	3
Home Economics 432	433 History of Costume and Textiles	8
Home Economics 434	Costume Design	3

The requirements for specialization in foods, nutrition, and health are the following:

COURSES		CREDITS
Home Economics 110	Food and Nutrition, <i>or</i>	5
Home Economics 216	Food Preparation and Meal Management	1-3
Home Economics 148	The Home, Its Equipment, and Management	3
Home Economics 300	Nutrition	2
Home Economics 350	Managing Family Finances	3
Home Economics 457	Child Nutrition and Care	3

The requirements for specialization in family relationships and child welfare are the following:

COURSES		CREDITS
Home Economics 110	Food and Nutrition, <i>or</i>	5
Home Economics 216	Food Preparation and Meal Management	3
Home Economics 300	Nutrition	2
Home Economics 350	Managing Family Finances	3
Home Economics 356	Family Relationships	3
Home Economics 457	Child Nutrition and Care	3
Psychology 320	Directed Observation of Early Childhood Development	3

INDUSTRIAL EDUCATION

MAJOR ACADEMIC FIELD. The requirements are 54 credits, including the following, and any recommended courses to complete the field.

COURSES		CREDITS
Education 180	Mechanical Drawing for Industrial Education Teachers	3
Education 181	Mechanical Drawing for Industrial Education Teachers	3
Education 182	General Shop for Industrial Education Teachers	5
Education 280	Fundamentals of Woodwork for Industrial Education Teachers	3
Education 281	General Metalwork for Industrial Education Teachers	3
Education 380	Tools and Materials for Industrial Education Teachers	2
Education 383-384	Advanced Woodwork for Industrial Education Teachers	5
Education 386	Home Planning for Industrial Education Teachers	4
Education 388	Selection and Organization of Industrial Education Subject Matter	3
Mechanical Engineering 201	Metal Casting	1
Mechanical Engineering 202	Welding	1
Mechanical Engineering 203	Metal Machining	1
Mechanical Engineering 312	Machine Tool Fundamentals	3
Architecture 105	The House	2
Art 253 (Industrial Arts Section)	Design and Materials	3
Approved electives	.....	12

MINOR ACADEMIC FIELD. The requirements are 25 credits including the following, and any recommended courses to complete the field.

COURSES		CREDITS
Education 180	Mechanical Drawing for Industrial Education Teachers	3
Education 181	Mechanical Drawing for Industrial Education Teachers	3
Education 182	General Shop for Industrial Education Teachers	5
Education 280	Fundamentals of Woodwork for Industrial Education Teachers	3
Education 281	General Metalwork for Industrial Education Teachers	3
Education 388	Selection and Organization of Industrial Education Subject Matter	3
Mechanical Engineering 201	Metal Casting	1
Mechanical Engineering 202	Welding	1
Mechanical Engineering 312	Machine Tool Fundamentals	3

JOURNALISM

MAJOR ACADEMIC FIELD. The requirements are 45 credits, including those listed below.

All journalism courses must be scheduled by arrangement with the Director of the School of Communications through the curriculum adviser. A 2.50 minimum grade-point average must be maintained in all journalism courses, otherwise credits may be applied only toward a minor academic field.

COURSES	CREDITS
Advertising 226 Introduction to Advertising	3
Journalism 200 News Writing	3
Journalism 300 Laboratory Work on University Daily	3
Journalism 301 Copy Editing	3
Journalism 320 Legal Aspects of Journalism	3
Journalism 375J Teachers' Course in Journalism (included in professional education requirements)	3
Journalism 381 Graphic Arts	2
Communications 312 Communications Theory	3
Electives	22

At least 9 electives must be selected from the following:

Communications 402 Freedom of the Press and Communications Law	3
Communications 406 Press and Society	3
Communications 480 Propaganda	3
Communications 411 Introduction to Mass Communications Research	3
Communications 470 Theory and Criticism of Broadcasting	3
Journalism 413 Editorial Writing, Policies and Research	3

The remaining 13 electives may be selected from:

Advertising 340 Advertising Procedures	5
Communications 303 Public Relations	3
Communications 403 Problems in Public Relations	3
Journalism 291 Photographic Laboratory	3
Journalism 318 Reporting	3
Journalism 319 Reporting	3
Journalism 404 Magazine Article Writing	3

MINOR ACADEMIC FIELD. The requirements are 21 credits, including the following, and any recommended courses to complete the field.

COURSES	CREDITS
Advertising 226 Introduction to Advertising	3
Journalism 200 News Writing	3
Journalism 300 Laboratory Work on University Daily	3
Journalism 301 Copy Editing	3
Journalism 375J Teachers' Course in Journalism	3
Journalism 381 Graphic Arts	3

LATIN

MAJOR ACADEMIC FIELD. 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 and the following, and any recommended courses to complete the field.

COURSES	CREDITS
Classics 430 Greek and Roman Mythology	3
Classics 440 Greek and Roman Critics in English	3
History 201-202 Ancient History	10
History 403 The Roman Republic	3
History 404 The Roman Empire	3
Philosophy 320 History of Ancient Philosophy	5

MINOR ACADEMIC FIELD. The requirements are 20 credits in Latin courses numbered above 300, including the following, and any recommended courses to complete the field.

COURSES	CREDITS
Latin 309 Advanced Grammar and Composition	1-4

LIBRARIANSHIP

Elementary and secondary school librarians must have the following preparation, according to the *Recommended School Library Services and Standards*, January, 1960, approved by the State Board of Education:

- (1) For service in schools with enrollment up to 400, 18 credits;
- (2) For service in schools with enrollment of 400 or more, one year of preparation in an ALA accredited library school.

A high school librarian's certificate is required of all librarians in accredited high schools. Every applicant must hold a teaching certificate.

Courses listed below meet:

- (1) Recommendations for elementary, junior, and senior high school librarians in compliance with the Recommended *School Library Services and Standards*, and/or
- (2) Standards for the high school librarian's certificate, and/or
- (3) Requirements for an academic minor for secondary level, undergraduate teacher preparation.

The librarianship courses are offered by the School of Librarianship. In addition, a full program culminating in the Master of Librarianship degree is available. For details consult the *Announcement* of the School of Librarianship, obtainable in Room 111, Suzzallo Library.

COURSES	CREDITS
Education 455 Auditory and Visual Aids in Teaching	3
Librarianship 451 Children's Books	3
Librarianship 452 Storytelling	3
Librarianship 460 School Library Administration	3
Librarianship 461 School Library Materials	3
Librarianship 462 Reading of Young People	3
Librarianship 463 Elementary Classification and Cataloging	5
Librarianship 470 History of the Book	3

MATHEMATICS

MAJOR ACADEMIC FIELD. The requirements are 45 credits beyond College Algebra, including the courses listed below. Grades of C or higher and a grade-point average of at least 2.00 must be obtained in all mathematics courses taken.

COURSES	CREDITS
Mathematics 124 Calculus with Analytic Geometry	5
Mathematics 125 Calculus with Analytic Geometry	5
Mathematics 126 Calculus with Analytic Geometry	5
Mathematics 391 Elementary Probability	3
Mathematics 392 Elements of Statistics	3
Mathematics 411 Linear and Modern Algebra	3
Mathematics 412 Linear and Modern Algebra	3
Mathematics 413 Linear and Modern Algebra	3
Mathematics 444 Foundations of Geometry	3
Mathematics 445 Foundations of Geometry	3
Approved Mathematics electives	9

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are 30 credits beyond College Algebra. Courses recommended for this program are:

COURSES	CREDITS
Mathematics 124 Calculus with Analytic Geometry	5
Mathematics 125 Calculus with Analytic Geometry	5
Mathematics 126 Calculus with Analytic Geometry	5
Mathematics 411 Linear and Modern Algebra	3
Mathematics 412 Linear and Modern Algebra	3
Mathematics 413 Linear and Modern Algebra	3
Mathematics 444 Foundations of Geometry	3
Mathematics 445 Foundations of Geometry	3

MINOR ACADEMIC FIELD. The requirements are 24 credits beyond College Algebra. The following courses are recommended for this program:

COURSES		CREDITS
Mathematics 124	Calculus with Analytic Geometry	5
Mathematics 125	Calculus with Analytic Geometry	5
Mathematics 126	Calculus with Analytic Geometry	5
Mathematics 411	Linear and Modern Algebra	3
Mathematics 412	Linear and Modern Algebra	3
Mathematics 444	Foundations of Geometry	3

MUSIC

MAJOR ACADEMIC FIELD. The requirements of 80 credits include the following listed courses. Students are required to earn a grade-point average of 2.50 in music courses.

Every prospective music student is interviewed to determine: (a) his musical skill through performance as a vocalist or instrumentalist; (b) his basic knowledge of music fundamentals; (c) his ability to play on the piano all major and harmonic minor scales, a simple piece by Bach, an easy sonatina, an easy composition by a romantic or contemporary composer, and to read at sight music of moderate difficulty. If a student meets requirements a and b, but is unable to meet requirement c, he may begin his studies in music on condition that he enroll in Music 110A (Class Instruction: Piano) until he is able to satisfy this requirement.

Music 114, 115, 116 (Sight Singing) are required of all music students during the first three quarters of residence. Exemption is by examination only.

Every music student must become a member of one or more music ensembles during his four years. No credit can be earned for this experience during the freshman and sophomore years; credits to be earned during the junior and senior years are listed among the specific requirements. An instrumentalist must participate in vocal ensembles for at least one year.

Each music student must choose a primary performance field, either voice or instrument. During his senior year he will publicly demonstrate his ability in the chosen performance field, either as a soloist or as a member of a small ensemble.

Preparatory to registration in Music 344 (Elementary School Music) or 346J (Teachers' Course in Secondary School Music), an examination in piano and voice is given.

With the approval of the music teaching faculty, a student who has the necessary qualifications may be permitted to concentrate his studies in such a way as to permit some degree of specialization in either the choral or instrumental field. A student who wishes to specialize in one of these fields should file an application with his adviser in the School of Music, whereupon an approved course of study will be arranged.

COURSES		CREDITS
Mus.c 101, 102, 103	First-Year Theory	6
Mus.c 106	The Basis of Musical Expression	1
Mus.c 114, 115, 116	Sight Singing	3
Mus.c 202, 203	Second-Year Theory	6
Mus.c 207, 208	Music After 1750	4
Vocal or Instrumental Instruction (2-3, maximum 18)		
Mus.c 130	(major instrument or voice)	12
Mus.c 130A or 210A:	Piano	3
Mus.c 130C or 110C:	Voice	3
Mus.c 130	Vocal or Instrumental Instruction	6
Conducting		2
Mus.c 303	Keyboard Harmony	3
Mus.c 307, 308	Music Before 1750	4
Mus.c 347	Music in the United States	2
Mus.c Teaching,	Select from the following to total	10
Mus.c 344	Elementary School Music 3	
Mus.c 345	The General Music Class 2	
Mus.c 346J	Teachers' Course in Secondary School Music 3	
(2 credits in Education and 1 credit in Music)		
Mus.c 414	School Choral Materials 1, or	
Mus.c 424	School Instrumental Materials 1, or	
Mus.c 474	Undergraduate Research 2	
Mus.c Theory, upper division		3
Approved music electives		6
Ensemble		6

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are 45 credits, including the following:

COURSES	CREDITS
Music 101, 102, 103, 202 First-Year Theory, Second-Year Theory	9
Music 114, 115, 116 Sight Singing	3
Music 207, 208 Music After 1750	4
Music 110A Class Instruction: Piano (3) and Music 110C Class Instruction: Voice (3) and/or Music 130 Vocal or Instrumental Instruction (2-3, maximum 18) to total 12	12
Music 124-125 Instrumental Laboratory	2
Music 304 Choral Literature	1
Music 385 Choral Conducting	2
Music 414 School Choral Materials, <i>or</i>	1
Music 424 School Instrumental Materials	1
Education 377X-377Y Music for Elementary Teachers	6
Three years of music ensemble (no credit in freshman and sophomore years)	3

MINOR ACADEMIC FIELD. The requirements are 35 credits, including:

COURSES	CREDITS
Music 101, 102, 103 First-Year Theory	6
Music 114, 115, 116 Sight Singing	3
Music 207, 208 Music After 1750, <i>or</i>	4
Music 107 Survey of Music	5
Music 304 Choral Literature	1
Music 384 Instrumental Conducting, <i>or</i>	1
Music 385 Choral Conducting	2
Music 414 School Choral Materials, <i>or</i>	1
Music 424 School Instrumental Laboratory	1
Music 124-125 Instrumental Laboratory	2
Vocal and Instrumental Instruction	12
Three years of music ensemble (no credit in freshman and sophomore years)	3

PHYSICAL EDUCATION FOR MEN

MAJOR ACADEMIC FIELD. The requirements are 65 credits, including the following:

COURSES	HEALTH EDUCATION	CREDITS
Health Education 291	Personal and General Hygiene	3
Health Education 429	Methods in Teaching First Aid and Safety	3
Health Education 465	The School Environmental Health Program	3

COURSES	PHYSICAL EDUCATION	CREDITS
Physical Education 161	Skills and Materials in Aquatics	2
Physical Education 162	Skills and Materials in Gymnastics	2
Physical Education 163	Skills and Materials in Team Sports	2
Physical Education 190	Skills and Materials in Track and Field and Weight Training	2
Physical Education 264	Skills and Materials in Track and Field and Weight Training	2
Physical Education 265	Skills and Materials in Low-Organized Games	2
Physical Education 266	Skills and Materials in Individual Sports	2
Physical Education 293	Physiology of Muscular Exercise	3
Physical Education 309	The School Dance Program	2
Physical Education 322	Kinesiology	3
Physical Education 340	Administration of Intramural Sports	3
Physical Education 345	Principles of Physical Education	3
Physical Education 358	Methods of Teaching Gymnastics	2
Physical Education 361	Methods of Teaching Wrestling	2
Physical Education 363	Methods of Teaching Sports	2
Physical Education 364	Methods of Teaching Aquatics	2
Physical Education 447	Tests and Measurements	3
Physical Education 450	The School Physical Education Program	3
Physical Education 493	Problems in Athletics	3
Physical Education electives selected from 370 Coaching of Football (2), 371 Coaching of Basketball (2), 372 Coaching of Track and Field (2), 373 Coaching of Baseball (2)	to total 6	6

COURSES	RECREATION EDUCATION	CREDITS
Recreation Education 294	Introduction to Recreation	2
Recreation Education 324	Recreation Programs	3

COURSES	RELATED COURSES	CREDITS
Anatomy 301	General Anatomy	4
Psychology 100	General Psychology (included in required related courses)	5
Sociology 110	Survey of Sociology	5
Speech 100	Basic Speech Improvement (included in required related courses)	5
Biology 101J-102J	General Biology, <i>or</i>	10
Zoology 111, 112	General Zoology	10
Zoology 118, 118L	Survey of Physiology, Elementary Physiology Laboratory, <i>or</i>	6
Zoology 208	Elementary Human Physiology, <i>or</i>	5
Zoology 458	Vertebrate Physiology	6

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are a total of 50 credits, including the following:

COURSES	HEALTH EDUCATION	CREDITS
Health Education 292	First Aid and Safety	3
PHYSICAL EDUCATION		
Physical Education 161	Skills and Materials in Aquatics	2
Physical Education 162	Skills and Materials in Gymnastics	2
Physical Education 163	Skills and Materials in Team Sports	2
Physical Education 190	Introduction to Physical and Health Education	2
Physical Education 264	Skills and Materials in Track and Field and Weight Training	2
Physical Education 265	Skills and Materials in Low-Organized Games	2
Physical Education 266	Skills and Materials in Individual Sports	2
Physical Education 293	Physiology of Muscular Exercise	3
Physical Education 309	The School Dance Program	2
Physical Education 322	Kinesiology	3
Physical Education 340	Administration of Intramural Sports	3
Physical Education 345	Principles of Physical Education	3
Physical Education 358	Methods of Teaching Gymnastics	2
Physical Education 361	Methods of Teaching Wrestling, or	2
Physical Education 364	Methods of Teaching Aquatics	2
Physical Education 363	Methods of Teaching Sports	2
Physical Education 370	Coaching of Football	2
Physical Education 371	Coaching of Basketball	2
Physical Education 450	The School Physical Education Program	3
Physical Education 493	Problems in Athletics	3
RECREATION EDUCATION		
Recreation Education 324	Recreation Programs	3

MINOR ACADEMIC FIELD. The requirements are 27 credits, including the following:

COURSES	PHYSICAL EDUCATION	CREDITS
Physical Education 161	Skills and Materials in Aquatics	2
Physical Education 162	Skills and Materials in Gymnastics	2
Physical Education 163	Skills and Materials in Team Sports	2
Physical Education 264	Skills and Materials in Track and Field and Weight Training	2
Physical Education 265	Skills and Materials in Low-Organized Games	2
Physical Education 266	Skills and Materials in Individual Sports	2
Physical Education 345	Principles of Physical Education	3
Physical Education 358	Methods of Teaching Gymnastics, or	2
Physical Education 361	Methods of Teaching Wrestling, or	2
Physical Education 363	Methods of Teaching Sports, or	2
Physical Education 364	Methods of Teaching Aquatics	2
Physical Education 370	Coaching of Football, or	2
Physical Education 371	Coaching of Basketball, or	2
Physical Education 372	Coaching of Track and Field, or	2
Physical Education 373	Coaching of Baseball	2
Physical Education 450	The School Physical Education Program	3

RELATED COURSES

Zoology 118, 118L	Survey of Physiology, Elementary Physiology Laboratory, or	6
Zoology 208	Elementary Human Physiology, or	5
Zoology 458	Vertebrate Physiology	6

PHYSICAL EDUCATION FOR WOMEN

MAJOR ACADEMIC FIELD. Students who plan to complete a major academic field will follow the program listed below:

COURSE	GENERAL EDUCATION REQUIREMENTS	CREDITS
Anatomy 301	General Anatomy	4
Chemistry 100	Chemical Science or one year high school chemistry	5
English 101, 102, 103	Composition	9
Health Education 110	Health Education	2
Home Economics 300	Nutrition	2
Psychology 100	General Psychology	5
Physical Education Activities 121, 124, 157	Bowling, Fencing, Canoeing	3
Physics 170, 170L	Introduction to Health Sciences Physics and Laboratory	6
Sociology 110	Survey of Sociology	5
Speech 100	Basic Speech Improvement	5
Zoology 118, 118L	Survey of Physiology, Elementary Physiology Laboratory	6

COURSES	PROFESSIONAL REQUIREMENTS	CREDITS
Health Education 291	Personal and General Hygiene	3
Health Education 292	First Aid and Safety, <i>or</i>	3
Health Education 429	Methods in Teaching First Aid and Safety	3
Health Education 453	Methods and Materials in Health Teaching	3
Physical Education 181, 182, 183, 281, 282, 283, 284	Physical Education Backgrounds (or equivalent)	13
Physical Education 190	Introduction to Physical and Health Education	2
Physical Education 293	Physiology of Muscular Exercise	3
Physical Education 304	<i>or</i> 305-306 Officiating	2
Physical Education 322	Kinesiology	3
Physical Education 345	Principles of Physical Education	3
Physical Education 375	Methods in Physical Education I	7
Physical Education 376	Methods in Physical Education II	7
Physical Education 377	Methods in Physical Education III	6
Physical Education 435	Adapted Activities	3
Physical Education 450	The School Physical Education Program	2
Physical Education N466	Coaching (3 quarters)	0
Physical Education 480	Principles of Movement	3
Recreation Education 344	Organization and Administration of Camp Programs	3

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are 45 credits and the following courses to satisfy general University requirements. It is recommended that students confer with the Department concerning selection of appropriate activities before registering.

COURSES	CREDITS
Physical Education Activities	3
Zoology 118, 118L Survey of Physiology, Elementary Physiology Laboratory	6
Anatomy 301 General Anatomy	4
Major Academic field course requirements include:	
Education 378C-378D Physical Education for the Elementary School	6
Health Education 292 First Aid and Safety, <i>or</i>	3
Health Education 429 Methods in Teaching First Aid and Safety	3
Health Education 453 Methods and Materials in Health Teaching	3
Physical Education 181, 182, 281, 282 Physical Education Backgrounds	8
Physical Education 190 Introduction to Physical and Health Education	2
Physical Education 304 <i>or</i> 305-306 Officiating	2
Physical Education 375 Methods in Physical Education I	7
Physical Education 480 Principles of Movement	3
Approved Electives	11

Suggested electives:

Health Education 451	Workshop in Health Education for the Classroom Teacher	2½
Physical Education 183	Physical Education Backgrounds	2
Physical Education 283	Physical Education Backgrounds	2
Physical Education 284	Physical Education Backgrounds	1
Physical Education 293	Physiology of Muscular Exercise	3
Physical Education 304	<i>or</i> 305-306 Officiating	2
Physical Education 313	Elementary School Self-Testing and Individual Activities	2½
Physical Education 322	Kinesiology	3
Physical Education 351	Theater Dance	2
Physical Education 355	Modern Dance Workshop	2-6
Physical Education 376	Methods in Physical Education II, <i>or</i>	7
Physical Education 295	Functional Swimming and Water Safety	2
Physical Education 377	Methods in Physical Education III, <i>or</i>	6
Physical Education 309	The School Dance Program	2
Physical Education 450	The School Physical Education Program	2
Physical Education 459-460	Dance Production	4
Physics 170, 170L	Introduction to Health Sciences Physics and Laboratory	6
Recreation Education 344	Organization and Administration of Camp Programs	3

MINOR ACADEMIC FIELD. The requirements are 25 credits including the following and any recommended courses to complete the field, chosen in consultation with an adviser.

COURSES	CREDITS
Health Education 292 First Aid and Safety	3
Physical Education 181, 182, 183, 282 Physical Education Backgrounds (or equivalent)	8
Physical Education 309 The School Dance Program, <i>or</i>	2
Physical Education 377 Methods in Physical Education III	6
Physical Education 375 Methods in Physical Education I	7
Electives from list below	2-6

Suggested electives to complete minor in Physical Education:

Education 340	Teachers' Course in Health and Physical Education for Women	2
Physical Education Education 293	Physiology of Muscular Exercise	3
Physical Education 295	Functional Swimming and Water Safety	2

COURSES	CREDITS
Physical Education 304 Officiating	2
Physical Education 305-306 Officiating	2
Physical Education 322 Kinesiology	3
Physical Education 351 Theater Dance	2
Physical Education 355 Modern Dance Workshop	2-6
Physical Education 376 Methods in Physical Education II	7
Physical Education 450 The School Physical Education Program	2
Physical Education 459-460 Dance Production	2-2
Physical Education 480 Principles of Movement	3

and one of the following:

Physical Education 281 Physical Education Backgrounds	2
Physical Education 283 Physical Education Backgrounds	2
Physical Education 284 Physical Education Backgrounds	1

POLITICAL SCIENCE

MAJOR ACADEMIC FIELD. The requirements are 50 credits, including the following.

COURSES	CREDITS
Political Science 201 Modern Government, <i>or</i>	5
Political Science 203 International Relations	5
Political Science 202 American Government and Politics	5
Political Science 376 State and Local Government and Administration	5

One course selected from the following:

Political Science 328 The United Nations and Specialized Agencies	5
Political Science 324 Contemporary International Relations in Europe	5
Political Science 203 International Relations	5
Political Science 336 National Power and International Politics	5

Two courses selected from the following:

Political Science 370 Government and the American Economy	5
Political Science 450 Political Parties and Elections	5
Political Science 460 Introduction to Constitutional Law	5
Political Science 470 Introduction to Public Administration	5

One course selected from the following:

Political Science 411 The Western Tradition of Political Thought	5
Political Science 412 American Political Thought	5
Political Science 413 Contemporary Political Thought	5
Political Science electives	15

MINOR ACADEMIC FIELD. The requirements are 30 credits, including the following, and any recommended courses to complete the field.

COURSES	CREDITS
Political Science 201 Modern Government	5
Political Science 202 American Government and Politics	5
Political Science 360 The American Constitutional System, <i>or</i>	3
Political Science 450 Political Parties and Elections	5
Political Science 376 State and Local Government and Administration	5
Political Science electives ..	10 or 12

PSYCHOLOGY

MAJOR ACADEMIC FIELD. The requirements are 36 credits, including the following courses. Completion of 15 credits in psychology with minimum 3.00 grade-point average is required for admission to Department. Transfer students must complete at least 15 credits in this Department. A 2.50 cumulative grade-point average is required in psychology courses.

COURSES	CREDITS
Psychology 100 or 150 General Psychology <i>or</i>	5
Psychology 310-311 Survey of Psychological Problems	6
Psychology 301 Statistical Methods	5
Psychology 400 Psychology of Learning	5
Psychology 406 Experimental Psychology, <i>or</i>	5
Psychology 426 Animal Laboratory, <i>or</i>	5
Psychology 441 Perception, <i>or</i>	5

COURSES	CREDITS
Psychology 451 Laboratory in Social Psychology, <i>or</i>	5
Psychology 484 Laboratory in Child Behavior, <i>or</i>	5
Psychology 499 Undergraduate Research	1-3
Psychology electives	to total 15-18

Suggested electives:

Psychology 305 Abnormal Psychology	5
Psychology 308 Genetic Psychology	5
Psychology 345 Social Psychology	3
Psychology 405 Personality	5
Psychology 413 Tests and Measurements	5
Psychology 416 Animal Behavior	3
Psychology 427 Conditioning	5

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are the same as those for the Major Academic Field.

MINOR ACADEMIC FIELD. The requirements are 18 credits, including the following, and any recommended courses to complete the field.

COURSES	CREDITS
Psychology 100 or 150 General Psychology <i>or</i>	5
Psychology 301-311 Survey of Psychological Problems	6
Psychology 305 Abnormal Psychology	5
Psychology 308 Genetic Psychology, <i>or</i>	5
Psychology 306 Developmental Psychology	5

PHYSICS

MAJOR ACADEMIC FIELD. The requirements are 51 credits, including the following or approved substitutions. Grades of C or above must be obtained in all physics courses counted to meet the minimum requirements for a major or minor academic field.

COURSES	CREDITS
Physics 121, 122, 123 Physics for Science Majors	12
Physics 131, 132, 133 Science Majors Physics Laboratory	3
Physics 221, 222 Mechanics	6
Physics 225, 226 Electric Circuits	8
Physics 320 Introduction to Modern Physics	3
Physics 323 Introduction to Nuclear Physics	3
Physics 325, 326, 327 Electricity and Magnetism	10
Physics 371, 372 Properties of Matter	6

MINOR ACADEMIC FIELD. The requirements are 25 credits, including the following, or approved substitutions.

COURSES	CREDITS
Physics 121, 122, 123 Physics for Science Majors	12
Physics 131, 132, 133 Science Majors Physics Laboratory	3
Physics 221 Mechanics	3
Physics 225 Electric Circuits	4
Physics 320 Introduction to Modern Physics	3

RUSSIAN

MAJOR ACADEMIC FIELD. Study supervised by an adviser in the Department of Far Eastern and Slavic Languages and Literature. The requirements are 51-56 credits beyond the elementary level (Russian 110, 210 Intensive or 100-105, 200, 205 Non-Intensive), including the following courses:

COURSES	CREDITS
Russian 310 Russian, Intensive EF <i>or</i>	10
Russian 300, 305 Russian, Non-Intensive, E, Russian, Non-Intensive F.....	10
Russian 311, 312, 313 Intermediate Russian A,B,C,	15
Russian 361, 362, 363 Russian Readings A,B,C	9
Russian 451, 452 Advanced Russian Grammar and Composition	10
Education 341 Teachers' Course in Russian (included in required related courses)	2
Courses chosen from Electives for Background in Russian Studies (see list below)	5-10

MINOR ACADEMIC FIELD. Study supervised by an adviser in the Department of Far Eastern and Slavic Languages and Literature in cooperation with student's

major adviser. The requirements are 40-45 credits beyond the elementary level (Russian 110, 210 Intensive or 100-105, 200, 205 Non-Intensive), including the following:

COURSES	CREDITS
Russian 310 Russian, Intensive EF <i>or</i>	10
Russian 300, 305 Russian, E, Russian, F	10
Russian 311, 312, 313 Intermediate Russian A,B,C	15
Russian 361, or 362, or 363 Russian Readings A,B,C	3
Russian 451 or 452 Advanced Russian Grammar and Composition	5
Education 341 Teachers' Course in Russian (included in required related courses)	2
Courses chosen from Electives from Background in Russian Studies (see list below)	5-10

MAJOR ACADEMIC FIELD (for elementary education majors). Study supervised by an adviser in the Department of Far Eastern and Slavic Languages and Literature. The requirements are 40-45 credits beyond the elementary level (Russian 110, 210 Intensive or 100-105, 200, 205 Non-Intensive), including the same courses as those prescribed for a minor academic field above.

Elective for Background in Russian Studies:

COURSES	CREDITS
Far Eastern 110 or 310 The Far East in the Modern World	5
Far Eastern 333J The Soviet Union	5
Far Eastern 421J Kievan and Muscovite Russia, 850-1700	5
Far Eastern 422J Imperial Russia, 1700-1905	5
Far Eastern 423J Twentieth-Century Russia	5
Far Eastern 424J Modern Russian Intellectual History	5
Linguistics 400 Survey of Linguistic Method and Theory	3
Political Science 441 Political Institutions of the Soviet Union	3
Russian 320 Russian Literature in English	3
Russian 421 Contemporary Russian Literature in English	5
Russian 422 Russian Plays in English	5
Russian 426, 427 The Russian Novel in English	10
Russian 455 History of Russian Standard Language	5
Slavic 450 Introduction to Slavic Philology	3

SPANISH

MAJOR ACADEMIC FIELD. The requirements are proficiency in Spanish and knowledge of Hispanic literature and culture, as outlined in a syllabus obtainable from the Department.

Credit 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.

The candidate's program of study, supervised by an adviser in the Department of Romance Languages and Literature, should include the following courses (beyond Spanish 101-102, 103 First-Year Speaking Spanish, or beyond the second high school year):

COURSES	CREDITS
Spanish 201, 202, 203 Intermediate (or a third high school year)	9
Spanish 212 Modern Readings	2
Spanish 301, 302, 303 Advanced Composition and Conversation	9
Spanish 304, 305, 306 Survey of Spanish Literature	9
Spanish 327 or 328 or 329 Advanced Conversation, <i>or</i>	2
Spanish 330 Conversational Spanish	2½
Spanish 409 Phonetics, Pronunciation, Intonation	3
Electives in Romance Languages and Literature Department courses numbered above 400, with additional directed reading in the B.A. syllabus of Spanish literature	9
Romance 401 Introduction to Romance Linguistics	3
Education 343 Teachers' Course in Spanish	2

MINOR ACADEMIC FIELD (for secondary school teachers). The Department of Romance Languages and Literature requires completion of an approved program of study under the supervision of a Department adviser, normally including 26 credits in Spanish (beyond Spanish 101-102, 103 First-Year Speaking Spanish or beyond the second high school year) plus Romance 401 Introduction to Romance Linguistics and Education 343 Teachers' Course in Spanish.

MINOR ACADEMIC FIELD (for elementary school teachers). Students preparing to teach Spanish in the elementary schools should complete, under the supervision of a Department adviser, a program of study beyond Spanish 101-102, 103 First-Year Speaking Spanish, or beyond the second high school year, which would include at least the following courses:

COURSES	CREDITS
Spanish 201, 202, 203 Intermediate	9
Spanish 210, 211 Elementary Conversation	4
Spanish 409 Phonetics, Pronunciation, Intonation	3
Education 343 Teachers' Course in Spanish	2
Recommended electives	2

SPEECH EDUCATION

MAJOR ACADEMIC FIELD. The requirements are 50 credits, including the following:

COURSES	CREDITS
Speech 100 Basic Speech Improvement	5
Speech 140 Oral Interpretation	5
Speech 220 Introduction to Public Speaking	5
Speech 230 Essentials of Argument	5
Speech 235 Parliamentary Procedure	3
Speech 310 Voice Science	5
Speech 332 Principles of Group Discussion	5
Speech 335 Methods of Debate	3
Speech 470 Speech Correction	5
Education 342 Teachers' Course in Speech (3 credits count as Speech)	3
Drama 426 High School Play Direction	5
Speech electives	3

The student must pass proficiency tests in extempore speaking and oral reading, which should normally be completed during the junior year. In case of individual need additional specific courses may be required.

In the fifth year the student must elect an additional 15 credits in upper-division courses approved by the Department of Speech, including Speech 400 Backgrounds in Speech, if not already taken.

Teacher candidates with a major in Speech Education will normally be advised to elect English as their first minor. Other recommended minors include civics, drama, history, librarianship, or a modern foreign language. Such major-minor combinations are proposed on the basis of most probable teaching assignment combinations in the secondary schools of the state.

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are 40 credits, including the following:

COURSES	CREDITS
Speech 100 Basic Speech Improvement	5
Speech 140 Oral Interpretation	5
Speech 220 Introduction to Public Speaking	5
Speech 310 Voice Science	5
Speech 332 Principles of Group Discussion	5
Speech 359 Speech in the Classroom	3
Speech 470 Speech Correction	5
Approved Speech electives	7

FIRST MINOR ACADEMIC FIELD. The requirements are 30 credits, including the following:

COURSES	CREDITS
Speech 100 Basic Speech Improvement	5
Speech 140 Oral Interpretation	5
Speech 220 Introduction to Public Speaking	5
Speech 332 Principles of Group Discussion	5
Speech 359 Speech in the Classroom or	3
Education 342 Teachers' Course in Speech (3 credits count as Speech)	5
Speech 470 Speech Correction	5
Approved Speech electives	2

SECOND MINOR ACADEMIC FIELD. The requirements are 20 credits, including the following:

COURSES	CREDITS
Speech 100 Basic Speech Improvement	5
Speech 140 Oral Interpretation	5
Speech 332 Principles of Group Discussion	5
Speech 359 Speech in the Classroom or	3
Education 342 Teachers' Course in Speech (3 credits count as Speech)	5

SPEECH AND HEARING THERAPY

MAJOR ACADEMIC FIELD (for elementary education majors). The requirements are 45 credits, including the following:

COURSES	CREDITS
Speech 470 Speech Correction	5
Speech 471 Speech Correction	5
Speech 473 Diagnostic Methods in Speech Correction	5
Speech 475 Stuttering	2
Speech 478 Interview Techniques for Speech and Hearing Rehabilitation	3
Speech 480 Introduction to Hearing	5
Speech 481 Principles and Methods of Aural Rehabilitation	5
Speech 482 Principles and Methods of Aural Rehabilitation	5
Speech 487 Audiometry	3
Speech 474 Clinical Practice in Speech Correction and	Minimum of 3 credits in either
Speech 484 Clinical Practice in Aural Rehabilitation	
	7

Required related courses:

History 464 History of Washington and the Pacific Northwest	5
Psychology 100 General Psychology	5
Preventive Medicine 461 School and Community Health Programs	5
Speech 100 Basic Speech Improvement	5
Speech 220 Introduction to Public Speaking	5
Electives selected from (1) humanities (2) arts (3) social sciences (4) natural sciences and mathematics (minimum of 10 credits in each of the four areas)	43
Speech 310 Voice Science	5
Speech 359 Speech in the Classroom or	3
Speech 400 Backgrounds in Speech	3
Speech 411 Anatomy of the Vocal Organs and Ear	5
Speech 476 Language Development of the Child	3
Speech 485 Medical Background for Audiology	2
Psychology 101 Psychology of Adjustment	5

Electives selected from the following courses (9 credits):

Speech 140 Oral Interpretation	5
Drama 437 Creative Dramatics	3
Sociology 352 The Family	5
Library 451 Children's Books	3
Library 452 Storytelling	3
Psychiatry 267 Introduction to Mental Hygiene	2
Psychiatry 450 Principles of Personality Development	2
Psychiatry 451 Principles of Personality Development	2
Psychiatry 452 Clinical Psychiatry	2
Psychology 305 Abnormal Psychology	5
Psychology 320 Directed Observation of Early Childhood Development	3

Professional education courses:

Education 188 Principles of Education	3
Education 209 Educational Psychology	3
Education 370E Elementary School Methods	3
Education 371E Directed Teaching, Elementary	12
Education 374E Fundamentals of Reading Instruction: Elementary	3
Psychology 306 Developmental Psychology	5

Electives selected from the following courses (9 credits):

Education 376 Art in the Elementary School	5
Education 379 Arithmetic for Elementary Teachers	3
Education 377X-377Y Music for Elementary Teachers	6
Education 378C-378D Physical Education for the Elementary School	6
Education 404 Education of Exceptional Children	3
Education 408 Mental Hygiene for Teachers and Administrators	3
Education 425 Remedial Reading	3
Education 447 Principles of Guidance	3
Education 475S Improvement of Teaching: Elementary School Science	3

The student must pass proficiency tests in speaking and oral reading, which should normally be completed during the junior year. In case of individual need additional specific courses may be required.

During the fifth year students should elect a sufficient number of courses in Speech Therapy and Audiology to meet the academic requirements for Advanced Certification by the American Speech and Hearing Association.

SOCIOLOGY

MAJOR ACADEMIC FIELD. The requirements are 50 credits, including the following:

COURSES	CREDITS
Sociology 110 Survey of Sociology, <i>or</i>	5
Sociology 310 General Sociology	5
Sociology 223 Social Statistics	5
Sociology 230 Introduction to Human Ecology, <i>or</i>	5
Sociology 331 Population Problems, <i>or</i>	5
Sociology 430 Human Ecology	5
Sociology 240 Group Behavior	5
Sociology 450 Contemporary American Institutions, <i>or</i>	5
Sociology 352 The Family	5
Sociology electives chosen after consultation regarding the special field of interest.....	25

MINOR ACADEMIC FIELD. The requirements are 27 credits, including the following:

COURSES	CREDITS
Sociology 110 Survey of Sociology, <i>or</i>	5
Sociology 310 General Sociology	5
Sociology 352 The Family, <i>or</i>	5
Sociology 331 Population Problems, <i>or</i>	5
Sociology 430 Human Ecology	5
Sociology electives chosen after consultation regarding the special field of interest.....	17

CONVERSION TO STANDARD CERTIFICATE

The Standard Certificate has been issued since July, 1961, and is valid so long as the holder teaches and five years thereafter. Candidates converting from the Provisional to the Standard Certificate must plan their entire fifth year in advance under the supervision of advisers in the College of Education. Previous certificates and transcripts of all college work must be presented by the candidate when the conversion program is begun. The superintendent, principal, and/or supervisors in the school where the teacher is employed may have suggestions with reference to courses or areas in which additional work is needed. It is the responsibility of the teacher to have these suggestions available at the time of the interview with an adviser in the College of Education so that they may be considered in formulating the fifth-year program. It is possible that portions of the fifth year may apply toward an advanced degree. However, all work applied toward an advanced degree must have the approval of both the Graduate School and the major department.

The Standard Certificate, issued by the State Department of Public Instruction, may be earned through the University of Washington, regardless of where the previous certificates were earned.

I. Candidates for conversion from the Provisional Certificates to the Standard Certificate must meet the following requirements.

A. A total of 45 quarter credits above the requirements for a bachelor's degree is required for the Standard Certificate. These credits must meet the pattern for the fifth year as outlined and study shall be in both academic and professional fields.

- B. Fifty per cent of the 45 quarter credits in the fifth year must be upper-division and/or graduate courses (numbered 300 and above).
- C. A maximum of 12 quarter credits may be taken by correspondence and/or extension in the fifth year provided no transfer work from other institutions is included in the fifth-year pattern. Extension credits from teacher-training institutions which are not members of the National University Extension Association may be included in the attestation for the Standard Certificate, although these credits cannot be recorded on the individual's record at the University of Washington.
- D. A minimum of 22½ quarter credits approved by the attesting institution must be completed *in residence* at one institution. These credits may be in the thirteenth, fourteenth, or fifteenth quarters.
- E. A maximum of 30 quarter credits in excess of degree requirements may be taken *before* or *during* the first year of teaching.
- F. If the Provisional program has included 30 credits beyond the degree requirement, courses to apply toward the Standard Certificate *may not* be taken before the completion of one year of successful teaching experience. Two years of successful teaching experience are required before the issuance of the Standard Certificate.
- G. No less than 15 quarter credits must be taken after one year (180 days) of teaching experience. (At least 12 of these credits must be taken in residence.)
- H. A college-level course in Washington State History must be completed, unless already taken, in meeting the requirements for the Provisional Certificate. The student may take an examination approved by the State Department of Education, and must present a certificate of successful completion of the examination.
- I. A minimum grade-point average of 2.00 (C) must be maintained during the fifth year.
- J. A petition for the Standard Certificate should be filed in 221 Miller Hall when the conversion pattern is started.
- K. An outline of the detailed current requirements for renewal of the Provisional Certificate and conversion to the Standard Certificate should be obtained in 221 Miller Hall.

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.*

OUT-OF-STATE TRANSFERS AND EMERGENCY CERTIFICATES

Information about out-of-state transfers, emergency and 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

The revised requirements for administrators' credentials were adopted by the State Board of Education March 24, 1956, and became effective June 1, 1957.

All applications are to be made to the State Superintendent of Public Instruction, Olympia, Washington.

I. PROVISIONAL PRINCIPAL'S CREDENTIAL—Elementary, Secondary, and General.

- A. Applications for the Provisional Principal's Credential may be filed by graduate students after one year of successful teaching and prior to completion of requirements, preferably before the applicant has begun study for the credential. All applications are to be made to the State Superintendent of Public Instruction. The candidate may secure an application form for the Provisional Principal's Credential from the county superintendent, the State Department of Public Instruction, or the College of Education at the University of Washington. The completed application form, together with the \$1.00 registration fee, is to be forwarded to the county superintendent who, in turn, forwards it to the State Department of Public Instruction.
- B. Fifty-four quarter credits beyond the bachelor's degree in an approved institution are required as a minimum total. Twenty-four of the 54 credits must be in an approved program. The 24 credits should be earned in courses that will make a maximum contribution to the individual's responsibilities as a principal.
- C. Nine credits of the 54 quarter credits must have been earned *after* completion of the Standard Certificate. These 9 quarter credits shall be in courses in administration, curriculum, and supervision on the elementary and/or secondary level. These 9 credits must be earned in residence at the University of Washington.
- D. A total of 12 credits toward the 24 may be transferred from an approved institution. Not more than 6 of the 24 credits may be earned by extension and no credits earned in correspondence study may be applied. The combination of transfer and extension work may not exceed 12 credits.
- E. Laboratory experience shall be part of the program. In some cases this may be an internship and in others it may be in the nature of planned observations.
- F. Proof of three years of successful teaching experience on the appropriate level or levels is one of the requirements for a Provisional Principal's Credential. Two years of this experience must be as a full-time classroom teacher. Two of the three years of successful teaching experience must be in an organized elementary school for those seeking the provisional elementary principal's credential; and in an organized junior, senior, or four-year high school for applicants for the provisional secondary principal's credential. One year of the three years of successful teaching experience required for the provisional general principal's credential must be in an organized junior, senior, or four-year high school.
- G. The credential is dependent upon proof that the applicant possesses the qualities of leadership necessary for school administration and an evaluation of the applicant's success in positions already held.
- H. An official program plan must be arranged in consultation with the College of Education Advisory Office in 221 Miller Hall. The candidate will receive one copy of this approved program after it is evaluated officially by the College of Education committee on administrators' credentials. It is the responsibility of the candidate to notify the advisory office when he has completed the requirements.
- I. The provisional Principal's Credential is valid for not more than four years of administrative experience in elementary schools of six or more teachers or in accredited junior, senior, and four-year or six-year high schools.

II. STANDARD PRINCIPAL'S CREDENTIAL—Elementary, Secondary, and General.

- A. Applications for the Standard Principal's Credential may be filed during the applicant's second year of experience as a principal and prior to completion of requirements. Applications are to be made to the State Superintendent of Public Instruction. The candidate may obtain an application form for the Standard Principal's Credential from the county superintendent, the Superintendent of Public Instruction, or the College of Education at the University of Washington. The completed application form, together with the \$1.00 registration fee, is to be forwarded to the county superintendent who, in turn, sends it to the Superintendent of Public Instruction.
- B. After completion of the Provisional Principal's Credential, 12 credits in residence at the University of Washington must be earned for a Standard Principal's Credential. These credits shall be in approved courses in administration, supervision, and curriculum on the elementary and/or secondary level.
- C. A master's degree is required for the Standard Principal's Credential. This degree may be completed in the College of Education or in an academic department.
- D. Candidates for the Standard General Principal's Credential, with experience as principals at one level only, are required to have laboratory experience at the opposite level. These experiences are to be planned with the candidate, the teacher-education institution, and school administrators.
- E. Three years of successful teaching experience (two years of which must be as a full-time classroom teacher), and three years of experience as a principal on the appropriate level or levels are requirements for a Standard Principal's Credential.
- F. The credential is dependent upon proof that the applicant possesses the qualities of leadership necessary for school administration and an evaluation of the applicant's success in positions already held.
- G. An official program plan must be arranged in consultation with the College of Education Advisory Office in 221 Miller Hall. The candidate will receive one copy of this approved program after it is evaluated officially by the College of Education committee on administrators' credentials. It is the responsibility of the candidate to notify the Advisory Office when he has completed the requirements.
- H. The Standard Principal's Credential is valid as long as the holder's teaching certificate is valid.

III. PROVISIONAL SUPERINTENDENT'S CREDENTIAL

- A. Applications for the Provisional Superintendent's Credential may be filed after the applicant has completed preparation for a Standard Principal's Credential and prior to completion of requirements. Applications are to be made to the State Superintendent of Public Instruction. The applicant may obtain an application form for the Provisional Superintendent's Credential from the county superintendent, the State Superintendent of Public Instruction, or the College of Education at the University of Washington. The completed application form, together with the \$1.00 registration fee, is to be forwarded to the county superintendent who, in turn, sends it to the State Superintendent of Public Instruction.
- B. After completion of the Standard Principal's Credential, 12 credits in residence at the University of Washington must be earned for a Provisional Superintendent's Credential. These credits shall be in approved courses in administration, supervision, and curriculum on the elementary and/or secondary level.

- C. A master's or higher degree is required for the Provisional Superintendent's Credential. This degree may be completed in an academic department or in the College of Education.
- D. Candidates with experience as principals at one level only are to have laboratory experience at the opposite level. These experiences are to be planned with the candidate, the teacher-education institution, and school administrators.
- E. Three years of successful teaching experience (two years of which must be as a full-time classroom teacher), and four years of administrative experience on the appropriate level or levels are requirements for a Provisional Superintendent's Credential.
- F. The credential is dependent upon proof that the applicant possesses the qualities of leadership necessary for school administration and an evaluation of the applicant's success in positions already held.
- G. An official program plan must be arranged in consultation with the College of Education Advisory Office in 221 Miller Hall. The candidate will receive one copy of this approved program after it is evaluated officially by the College of Education committee on administrators' credentials. It is the responsibility of the candidate to notify the Advisory Office when he has completed the requirements.
- H. The Provisional Superintendent's Credential is valid for not more than three years of administrative experience.

IV. STANDARD SUPERINTENDENT'S CREDENTIAL

- A. Applications for the Standard Superintendent's Credential may be filed by the candidate after one year's service as a superintendent, and prior to completion of requirements. The candidate should apply to the Office of the State Superintendent of Public Instruction. He may obtain an application form for the Standard Superintendent's Credential from his county superintendent, the Superintendent of Public Instruction, or the College of Education at the University of Washington. He then forwards the completed application form with the \$1.00 registration fee to his county superintendent who, in turn, sends it to the Superintendent of Public Instruction.
- B. After completion of the Provisional Superintendent's Credential, 12 credits in residence at the University of Washington must be earned for a Standard Superintendent's Credential. These credits shall be in approved courses in administration, supervision, and curriculum.
- C. Three years of successful superintendent's experience are required for a Standard Superintendent's Credential.
- D. An official program must be completed by all candidates with an adviser in 221 Miller Hall. The candidates will receive one copy of this approved program after it is evaluated officially by the College of Education committee on administrator's credentials. It is the responsibility of the candidate to notify his adviser in 221 Miller Hall when he has completed the requirements.
- E. The Standard Superintendent's Credential is valid as long as the holder's teaching certificate is valid.

ANNOUNCEMENT OF COURSES

Courses numbered from 100 through 299 are lower-division courses, for freshmen and sophomores; those numbered from 300 through 499 are upper-division, for juniors and seniors. Courses open to graduate students only are numbered 500 and above, though courses numbered 400 may be applied to an advanced degree if they appear in the Graduate School Bulletin and are acceptable to the student's Supervisory Committee.

The number in parentheses following the course title indicates the amount of credit each course carries. In most lecture courses, a credit is given for each class hour a week during a quarter; laboratory courses generally carry less credit than the work time required. An asterisk in place of a credit number means that the amount of credit is variable. Hyphens between course numbers mean that credit is not granted until the series of courses is completed.

Not all these courses are offered every quarter. Final confirmation of courses to be offered, as well as a list of times and places of class meetings, is given in the *Yearly Time Schedule*.

For a listing of courses offered any given quarter, together with the time and place of meeting, consult the Yearly Time Schedule which is available for reference in the College of Education Advisory Office, 221 Miller Hall. Since the amount of credit for courses offered during Summer Quarter varies slightly in some cases from that given during the regular quarters, it is advisable to refer to the Summer Quarter Bulletin for the specific number of credits for a particular course.

COURSES FOR UNDERGRADUATES

- 126J, 127J French for the Elementary School (3,3)**
Training in basic French grammar, pronunciation, and intonation with practical techniques for using French in the elementary classroom; organization of study units, songs, dialogues and dramatizations. Open to those with little or no background in French. Offered jointly with the Department of Romance Languages and Literature.
- 128J, 129J Spanish for the Elementary School (3,3)** **Sousa**
Training in basic Spanish grammar, pronunciation, and intonation with practical techniques for using Spanish in the elementary classroom; organization of study units, songs, dialogues and dramatizations. Open to those who have little or no background in Spanish. Offered jointly with the Department of Romance Languages and Literature.
- 180, 181 Mechanical Drawing for Industrial Education Teachers (3,3)** **Baily**
Freehand sketching; orthographic projection; pictorial representation; dimensioning; lettering; developments; working drawing and blueprint reading. Prerequisite for 181, 180 or General Engineering 101, and 2.20 cumulative grade point.
- 182 General Shop for Industrial Education Teachers (5)** **Baily**
Introduction to industrial education; the common tools, materials, processes, and products of industry. Prerequisite, 2.20 cumulative grade point.
- 188 Principles of Education (3)** **Bolton, Boroughs, Foster, Jessup, Tostberg**
Contemporary education subjected to historical and philosophical analysis. Visitations arranged on the elementary, junior, and senior high schools levels. Prerequisite, 2.20 cumulative grade point.
- 209 Educational Psychology (3)** **Freehill, Salyer**
Psychological basis of education. Review of recent experimentation with applications. For students who wish to review educational psychology for advanced degree examinations as well as for beginners. Prerequisites, 188, Psychology 100, sophomore standing, and 2.20 cumulative grade point.
- 280 Fundamentals of Woodwork for Industrial Education Teachers (3)** **Baily**
Hand-tool processes; elementary machine operations; methods of assembling and fastening; simple wood finishing. Prerequisites, 180 and 181, or equivalent, and 2.20 cumulative grade point.
- 281 General Metalwork for Industrial Education Teachers (3)** **Baily**
Tools, materials, and processes used in sheet metal, forging, casting, bench metal, ornamental iron work, welding, machining, and finishing of metal. Prerequisites, 180 and 181, or equivalent, and 2.20 cumulative grade point.
- 318 Fundamentals of Kindergarten-Primary Teaching (3)** **MacDonald**
A basic course involving the methods, techniques, and materials used in teaching the young child. Prerequisites, 370E, 374E, and 2.20 cumulative grade point.
- 319 Supervision of Elementary Art Education (2)** **Johnson**
Prerequisites, 370E, senior standing, and 2.20 cumulative grade point.
- 320 Teachers' Course in Art (3)** **Johnson**
Prerequisites, 209, 370S, senior standing, and 2.20 cumulative grade point.
- 321 Teachers' Course in Biology (2)** **Blaser, Hatch**
Prerequisites, 209, 370S, 25 credits in biology, and 2.20 cumulative grade point.
- 322 Teachers' Course in Chemistry (3)** **Cady**
Prerequisites, 209, 370S, at least 20 credits in college chemistry, with a grade-point average of 3.00, and 2.20 cumulative grade point.
- 323 Teachers' Course in Civics (2)** **Hitchner**
Prerequisites, 209, 370S, and 2.20 cumulative grade point.
- 324 Teachers' Course in Business Education: Bookkeeping and General Business (2)** **Briggs**
Prerequisites, 209, 370S, 7 credits in accounting, and 2.20 cumulative grade point.

- 325 Teachers' Course in Business Education: Typewriting, Shorthand, Transcription, and Business Communications (2)** **Brown**
Prerequisites, 209, 370S, Secretarial Studies 111, 122, or permission, and 2.20 cumulative grade point.
- 326 Teachers' Course in English (5)** **Emery**
Two credits count as education and 3 as English. Prerequisites, 209, 370S, and 2.20 cumulative grade point.
- 327 Teachers' Course in Trade and Industrial Education (3)** **Baily**
Prerequisites, 209, 370S, and 2.20 cumulative grade point.
- 329 Teachers' Course in French (2)** **Simpson**
Prerequisites, 209, 370S, or permission of both the College of Education and the instructor, and 2.20 cumulative grade point.
- 330 Teachers' Course in German (2)** **Meyer**
Prerequisites, 209, 370S, German 303 or permission, and 2.20 cumulative grade point.
- 331 Teachers' Course in History (2)** **Johnson**
Prerequisites, 209, 370S, and 2.20 cumulative grade point.
- 332 Teachers' Course in Home Economics (5)** **McAdams**
Two credits count as education and 3 as home economics. Prerequisites, 209, 370S, 25 credits in home economics, and 2.20 cumulative grade point.
- 333 Methods of Teaching for Institution Administration Students (3)** **McAdams**
Prerequisites, junior standing and 25 credits in home economics, including Home Economics 307.
- 334 Teachers' Course in Geography (2)**
Prerequisites, 209, 370S, permission, and 2.20 cumulative grade point.
- 335 Teachers' Course in Latin (2)** **Grummel, Pascal**
Prerequisites, 209, 370S, 20 credits in upper-division Latin courses, or permission, and 2.20 cumulative grade point.
- 336 Teachers' Course in Secondary Mathematics (3)**
Emphasis is upon a critical understanding of subject matter; supplementary topics include teaching aids and classroom problems. Two credits count as education and 1 as mathematics. Prerequisites, 209, 370S, Mathematics 224 or equivalent, and 2.20 cumulative grade point.
- 337 Teachers' Course in Junior High School Mathematics (3)** **Dubisch**
Emphasis is upon a critical understanding of junior high subject matter; supplementary topics include teaching aids and classroom procedures. Not open to students having credit for Education 336. Prerequisites, 209, 370S, Math 101 or equivalent.
- 339 Teachers' Course in Physical Education for Men (2)** **Peek**
Prerequisites, 209, 370S, Physical Education 363, and 2.20 cumulative grade point.
- 340 Teachers' Course in Health and Physical Education for Women (2)** **Fox**
Prerequisites, 209, 370S, Physical Education 356, 362, 363, 364, Health Education 453, Education 371E, X, or S taken concurrently, and 2.20 cumulative grade point.
- 341 Teachers' Course in Russian (2)**
Prerequisites, 209, 370S, and 2.20 cumulative grade point.
- 342 Teachers' Course in Speech (5)** **Nelson**
Two credits count as education and 3 as speech. Prerequisites for majors in speech, 209, 370S, at least 20 credits in speech, including Speech 352, and 2.20 cumulative grade point; for nonmajors, permission.
- 343 Teachers' Course in Spanish (2)** **Simpson**
Prerequisites, 209, 370S, or permission of both the College of Education and of the instructor, and 2.20 cumulative grade point.
- 344 Teachers' Course in Scandinavian (2)** **Arestad**
Special methods in the teaching of Norwegian and Swedish to acquaint prospective teachers with materials, methods and problems. Prerequisite, permission.
- 346J Teachers' Course in Secondary School Music (3)**
Two credits count as education and 1 as music. Prerequisites, 209, 370S, Music 344 and 385, and 2.20 cumulative grade point.
- 360 Curriculum Development (3)** **Drapar**
A review of curriculum development in the United States and a comparison of recent trends in the United States with those in Europe and the Soviet Union. Each student will develop a resource unit. Techniques of fusion, correlation, and core curriculum will be emphasized. Prerequisites, permission and 2.20 cumulative grade point.
- 370E Elementary School Methods (3)** **Foster, Jarolimek**
Basic principles, techniques, and methods of teaching in the elementary school, from the kindergarten through the intermediate grades. Audio-visual laboratory experiences are provided. Prerequisites, 188, 209, and 2.20 cumulative grade point.
- 379S Secondary School Methods (3)** **Boroughs**
Fundamental techniques and methods of teaching applicable to junior and senior high school, with emphasis upon practical considerations. Audio-visual laboratory experiences are provided. Prerequisites, 188, 209, and 2.20 cumulative grade point.

- 371K Directed Teaching, Kindergarten (5-15)*** **Boroughs**
All directed teaching is done in the public schools, and all morning from 8:00 a.m. to 1:30 p.m. must be left free for an assignment. Assignments are made by the Director of Practice Teaching the first day of each quarter. Prerequisites, 188, 209, 370E, 374E, 376, 377X-377Y, 378C, 378D, 390, or approved equivalents, 2.20 cumulative grade point, and permission. Twelve quarter credits required for certification.
- 371E Directed Teaching Elementary (Grades One Through Six) (5-15)*** **Boroughs**
All directed teaching is done in the public schools, and all morning from 8:00 a.m. to 1:30 p.m. must be left free for an assignment. Assignments are made by the Director of Practice Teaching the first day of each quarter. Prerequisites, 188, 209, 370E, 374E, 376, 377X-377Y, 378C, 378D, 390, or approved equivalents, 2.20 cumulative grade point, and permission. Twelve quarter credits required for certification.
- 371X Directed Teaching, Junior High (5-15)*** **Boroughs**
All directed teaching is done in the public schools, and all morning from 8:00 a.m. to 1:30 p.m. must be left free for an assignment. Assignments are made by the Director of Practice Teaching the first day of each quarter. Prerequisites, 188, 209, 370S, secondary subject matter methods, or approved equivalents, 2.20 cumulative grade point, and permission. Twelve quarter credits required for certification.
- 371S Directed Teaching, Senior High (5-15)*** **Boroughs**
All directed teaching is done in the public schools, and all morning from 8:00 a.m. to 1:30 p.m. must be left free for an assignment. Vocational home economics practice teachers must take Home Economics 348 and 495 with 371S to make a total of 15 credits for the quarter. Assignments are made by the Director of Practice Teaching the first day of each quarter. Prerequisites, 188, 209, 370S, secondary subject matter methods, or approved equivalents; 3.30 cumulative grade point, and permission. Twelve quarter credits required for certification.
- 374E Fundamentals of Reading Instruction: Elementary (3)** ***Fea, Taylor**
A basic course in the methods, techniques, and materials used in the teaching of reading from the readiness period in the kindergarten-primary area through the study-techniques of the intermediate grades. Prerequisites, 370E (may be taken concurrently), and 2.20 cumulative grade point.
- 374S Fundamentals of Reading Instruction: Secondary (3)** ***Fea**
A basic course in the methods, techniques, and materials used in the teaching of reading from the intermediate grades through the study-techniques of high school. Prerequisites, 370S and 2.20 cumulative grade point.
- 375J Teachers' Course in Journalism (3)** **Brier**
Prerequisites, 209, 370S, Journalism 200 and 301, and 2.20 cumulative grade point.
- 375S Teachers' Course in Elementary School Science (3)** **Haugerud**
Study of the development of problem-solving skills and scientific attitudes in the elementary grades.
- 376 Art in the Elementary School (5)** **Johnson**
A course planned to prepare students for teaching art in the elementary classroom. Includes experiences in painting, design, murals, and various simple crafts, supplemented with lectures, discussions, and reading assignments. Prerequisites, 370E or permission, and 2.20 cumulative grade point.
- 377X-377Y Music for Elementary Teachers (3-3)**
377X: development of the music program in the public schools from kindergarten through grade three, with emphasis on rhythmic and melodic experience. Prerequisites, 370E, Music 110Y and 110Z, or equivalent as determined by examination, and 2.20 cumulative grade point. 377Y: development of the music program in the public schools from grade four through six, with emphasis on music reading, music background, listening, and harmonic and rhythmic experience. Prerequisites, 377X-, and 2.20 cumulative grade point.
- 378C Physical Education for the Elementary School (3)** **Horne, Peek**
Special methods and practice for the teaching of activities included in the physical education program in the elementary schools. Program planning and related problems. Analysis and practice of games, sports, story plays, mimetics, apparatus, stunts, tumbling, and special events. Prerequisite, 370E, and 2.20 cumulative grade point.
- 378D Physical Education for the Elementary School (3)** **Horne, Peek**
Special methods and practice for teaching the program relating to posture and body mechanics, activities for the handicapped child, fundamentals of rhythm, the place of singing games, dramatic and creative rhythms, simple and intermediate folk dances, and the program of special events relating to these phases of the curricular content. Prerequisites, 370E, 378C, and 2.20 cumulative grade point.
- 379 Arithmetic for Elementary Teachers (3)** **Vopni**
A re-examination of elementary arithmetic in the light of recent theoretical and pedagogical developments in mathematics, with emphasis upon a sound knowledge of arithmetic processes and the problems encountered in teaching these to elementary students. The subject matter includes that taught in grades one through eight. Prerequisite, 2.20 cumulative grade point.
- 380 Tools and Materials for Industrial Education Teachers (2)** **Baily**
Sources, specifications, and costs of shop materials and equipment. Care, repair, and sharpening of hand and machine tools. Prerequisite, 2.20 cumulative grade point.

* Twelve quarter credits required for certification.

- 383-384 Advanced Woodwork for Industrial Education Teachers (3-2)** **Baily**
Design, construction, and finishing of projects in wood, involving machine operations, air-brush finishing, and upholstering. Prerequisites, 280 for 383-, and 2.20 cumulative grade point.
- 386 Home Planning for Industrial Education Teachers (4)** **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. Prerequisites, 180, 181, or equivalent, and 2.20 cumulative grade point.
- 387 Special Problems in Industrial Education (1-5, maximum 5)** **Baily**
The student works on an individual basis, conferring with the staff as needs arise on one or more problems in industrial education of special interest to him. An outline and an organized plan of procedure are to be presented to the adviser. Prerequisites, permission and 2.20 cumulative grade point.
- 388 Selection and Organization of Industrial Education Subject Matter (3)** **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. Prerequisite, 2.20 cumulative grade point.
- 389 Industrial Education for Elementary Teachers (5)** **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. Prerequisite, 2.20 cumulative grade point.
- 390 Evaluation in Education (3)** **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. Prerequisites, permission, and 2.20 cumulative grade point.
- 391 Interpretation of Educational Data (2)** **Dvorak**
The interpretation of educational data usually encountered by classroom teachers, through measures of central tendency, variability and correlation, raw, derived, and standard scores, various norms, reliability and validity.

UPPER-DIVISION COURSES CARRYING GRADUATE CREDIT

- 401 Advanced Educational Psychology (3)** ***Fea**
Consideration of the major topics in the general field of educational psychology with emphasis upon the applied psychology of learning. Prerequisites, 209 or equivalent and permission.
- 401R The Psychology of Reading (3)** ***Fea**
Reading and perception, word recognition, concept development and meaning in reading; psychology of reading interests and skills. Prerequisite, permission.
- 402 Child Study and Development (3)** **MacDonald**
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 (3)** **Foster**
A study of important and recent research in the subjects of the elementary school curriculum and a consideration of its practical implications for teaching.
- 404 Education of Exceptional Children (3)** **Hayden**
Atypical children studied from the point of view of the classroom teacher. Prerequisite, permission.
- 405 Problems of Adolescence (3)** **Salyer**
A survey of the problems of adolescence, with analysis and discussion of their educational and social implications. Prerequisite, 209.
- 407 Teaching the Gifted Child (3)** **Freshill, Hayden**
The role of the teacher and the school in the identification and development of the special abilities and talents of gifted children. Prerequisite, teaching experience or permission.
- 407W Workshop in Teaching the Gifted Child (3)** **Hayden**
Explanation, demonstration and development of procedures and methods in working with gifted children. Prerequisite, teaching experience or permission.
- 408 Mental Hygiene for Teachers and Administrators (3)** **Salyer**
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.
- 409AJ Training of the Mentally Retarded (5)** **Hayden**
This course covers practical problems on the care and training of mentally retarded children including those with multiple handicaps, organization of classes for these children, regulations for state aid, and records needed will be studied. Offered jointly at Buckley, Washington, with the Department of Psychology. (Offered Summer Quarter only.) Prerequisite, permission.

- 409BJ Psychology of the Mentally Retarded (5)** **Hayden**
This course presents an opportunity to study the characteristics and development of mentally retarded children. Multiple disabilities will be observed and discussed. The course aims to develop an understanding of the place these children occupy in their homes, schools, and community, and the challenges they present in each sphere of living. Offered jointly at Buckley, Washington, with the Department of Psychology. (Offered Summer Quarter only.) Prerequisite, permission.
- 409CJ Educating the Emotionally Disturbed (5)** **Hayden**
Special problems encountered in teaching emotionally disturbed children; a study of organization of special classes for these children, regulations for state aid, and records needed; methods of working with individuals or groups, and an analysis of aids to learning; opportunities for observation, demonstrations, lecture sessions and individual study. Offered jointly with the Department of Psychology. (Offered Summer Quarter only.)
- 409DJ Psychology of the Emotionally Disturbed (5)** **Hayden**
Study of the characteristics and behavior of different types of emotionally disturbed children; development of understanding of these children and of the problems they present in their homes, schools, and communities; a study of outstanding psychological and educational experiments with emotionally disturbed children. Offered jointly with the Department of Psychology. (Offered Summer Quarter only.)
- 409FJ The Teaching of Speech to the Deaf (6)** **Hayden**
Study of the principles and techniques used in developing speech in the deaf. Offered jointly with the Department of Speech. (Offered Summer Quarter only.) Prerequisite, permission.
- 409GJ The Teaching of Language to the Deaf (6)** **Hayden**
Study of the principles and techniques of teaching language to the preschool and school-age deaf. Offered jointly with the Department of Speech. (Offered Summer Quarter only.) Prerequisite, permission.
- 409WJ Advanced Workshop in the Education of the Retarded (10)** **Hayden**
Advanced workshop on education of the retarded, with provision for supervised work with retarded children. Offered jointly with the Department of Psychology. Prerequisites, at least 10 hours in course work on the mentally retarded and permission.
- 410 Educational Sociology (3)** **Jessup**
An effort to examine certain aspects of contemporary American society in their relations to and impact upon the conduct of education. Selected educational problems of a socio-political nature will be considered. Prerequisite, permission.
- 412 Foundations of Freedom and Education (3)** **Morris**
Emphasis on the principles, processes, and content of constitutional law in an effort to provide new insights and new tools with which school administrators and teachers may examine questions involving political and civil rights in the United States, especially as these affect the conduct of education. Prerequisite, permission.
- 415 Principles of Safety Education (3)** **Corbally**
Designed primarily for teachers and administrators interested in developing a school safety program in elementary, junior, and senior high schools. Special emphasis is placed on the need for a safe school environment and the role of the teacher in promoting safety. Prerequisite, permission.
- 417 Adult Education (3)** **Jessup**
Introductory professional course in adult education; includes the survey, the analysis, the history, and the examination of the aims and objectives of American adult education; designed to increase the student's understanding and knowledge of the field by giving him a general overview of adult education today. Prerequisite, permission.
- 420 Theory and Technique of Kindergarten and Primary Teaching (3)** **MacDonald**
A course designed to give the experienced teacher of young children confidence in her endeavor to foster creativity through readiness, varied activities in the subject areas, media, and self-evaluation. Prerequisites, teaching experience and permission.
- 421 Remedial Education (3)** ***Fea, Taylor**
Experience in and study of analysis of difficulties in school subjects with special reference to language arts and mathematics. Experience in and study of appropriate remedial instruction. Analysis and instruction will be that which is both feasible and practical for the classroom teacher working with individuals or with a group. Prerequisite, permission.
- 425 Remedial Reading (3)** ***Fea, Taylor**
Experience in and study of analysis of difficulties in reading and application of appropriate remedial instruction, such analysis and instruction to be that which is both feasible and practical for the classroom teacher working with individuals or with a group. Prerequisites, 374E or S or equivalent, and permission.
- 430 Public School Administration (3)** **Bolton, 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)** **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)** **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)** **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, 6-4-4, 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.
- 435 Administration and Supervision of Junior High Schools (3)** **Strayer**
A general overview of the junior high school with examination of selected topics in such areas as special functions, curricula, and courses of study; co-curricular activities; pupil accounting, classification, and counseling; personnel selection, organization, and training; community resources and activities; evaluation of the program; business problems related to school plant, budget, and equipment. Prerequisite, permission.
- 437 School Supervision (3)** **Jessup**
Analysis of the problems and techniques of the improvement of schoolwork. Special emphasis is given to facilitating pupil growth, facilitating teacher growth, improving curriculum, and using teaching aids to greatest advantage. Prerequisite, permission.
- 439 Pupil Personnel and Progress Reporting (3)** **Vopni**
To aid teachers, counselors, and administrators in developing purposeful reports of student progress and in utilizing practical techniques of pupil personnel accounting for assistance in evaluation and interpretation of educational objectives and achievements in teacher-pupil-parent and school-community relationships.
- 445V Principles and Objectives of Vocational Education (3)** **Baily**
Aims and objectives of vocational education; materials of instruction; standards of work; judging measurement of work. Prerequisite, permission.
- 447 Principles of Guidance (3)** **Freehill, Salyer**
An introduction to guidance and normally the first course taken by those who plan to offer guidance as a field for an advanced degree. Special emphasis on types of programs in elementary and secondary schools, together with an introduction to tools, techniques, organization, and evaluation for teachers and administrators.
- 448E Guidance in the Elementary School (3)** **Salyer**
Techniques of individual appraisal; preparation and utilization of guidance records; orientation of pupils and parents; counseling processes; group procedures; case studies and utilization of consultant services. Prerequisite, 447.
- 448S Guidance in the Secondary School (3)** **Salyer**
For junior and senior high school teachers, counselors, and administrators; emphasis on techniques of individual appraisal, counseling and keeping records, and on group guidance procedures. Prerequisite, 447.
- 449 Workshop on Pupil Personnel Services (3)** **Vopni**
Designed for counselors, teachers, administrators, and others concerned with pupil personnel services in elementary and secondary schools. Special attention is given to testing programs, grade prediction, and other pupil inventory services; educational and occupational information services and career development; and counseling services, including teacher-parent conferences. Prerequisite, teaching experience or permission.
- 455 Auditory and Visual Aids in Teaching (3)** **Hayden**
A study of the utilization of audio-visual equipment and materials to improve instruction. Prerequisite, permission.
- 456 Auditory and Visual Aids in Teaching (3)** **Hayden**
Designed to assist teachers in the preparation and presentation of teaching materials appropriate to the different subject-matter areas and learning levels. Students provide their own materials for their projects. Prerequisite, 455 or equivalent.
- 457 Audio-visual Aids Management (3)** **Hayden**
- 459J Television in the Schools (3)** **Adams**
Television programs to supplement classroom work; suitable receiving equipment for schools; the development of the American system of broadcasting; the development and significance of educational television and the contribution schools can make to broadcasting. (Offered jointly with the School of Communications.)
- 460J Field Training in Health Education (5)** **Field**
Four and one-half weeks of full-time supervised work experience in the health education division of a local official health agency. Offered jointly with the Department of Preventive Medicine. (Offered Summer Quarter only.) Prerequisite, permission.

- 461 Elementary School Curriculum (3)** **Jarolimek, 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.
- 466 Workshop in Curriculum Improvement (1-15, maximum 15)** **Draper**
Individual or committee work on problems in the area of curriculum improvement in elementary and secondary schools. Special emphasis will be given to conservation education at all levels in the public schools, and to techniques of organizing the fused curriculum, correlated curricula, and core curriculum programs in the large block of time at the junior high school level. Prerequisite, 467 or permission.
- 467 Principles and Techniques of Curriculum Improvement (3)** **Draper**
Intensive study of the basic principles and techniques utilized in the development of curriculum materials at all levels in the public schools; action research studies in the development and evaluation of objectives, learning experiences, resource units, and learning units. Individual projects will be developed.
- 470 Historical Backgrounds of Educational Methods (3)** **Jessup**
This course is designed to acquaint students with the influence of various individuals upon the development of educational theory and practice. Selections will be made from such educational theorists as Plato, Aristotle, Quintilian, Plutarch, Comenius, Vives, Montaigne, Locke, Milton, Rousseau, Pestalozzi, Herbart, Froebel, and Spencer. Prerequisite, permission.
- 471D Observation and Student Teaching of Deaf Children (2-6, maximum 6)**
Observation of classroom procedures and student teaching at several grade levels under the direct supervision of properly qualified and certified teachers of the deaf. Prerequisite, 409G or 409F.
- 471E, 471X, 471S Advanced Directed Teaching (4-16 each)** **Boroughs**
Directed teaching in the public schools beyond certification requirements for those desiring more specialized training. Prerequisite, 371E, X, or S or permission.
- 471NJ Advanced Directed Teaching: School Nursing (4)** **Boroughs**
Directed school nursing practice in public schools, including health education and health services. (Offered jointly with the School of Nursing.)
- 474 Workshop in the Improvement of Teaching (5)**
A study through individual research projects of the adaptation of instruction to meet individual differences.
- 474GJ Seminar in Language Teaching (3)** **Rabura**
Designed to improve foreign language teaching through study of the latest teaching methods and materials and their use in the classroom and laboratory; observation and discussion of demonstration classes. Offered jointly with Germanic Languages and Literature. (Offered Summer Quarter only.) Prerequisite, restricted to NDEA Language Institute participants.
- 475 Improvement of Teaching (3)**
To help teachers (1) understand the physical, psychological, emotional, and social needs of children, (2) adapt instruction to the needs of the children, (3) select the approaches and instructional resources which will provide the soundest learning experiences, and (4) to help teachers and students in the appraisal of themselves and their work.
- 475A Improvement of Teaching: Secondary Mathematics (5)** **Allendoerfer**
An exploration of some modern mathematical concepts for the purpose of improving the teaching of secondary school mathematics.
- 475B Improvement of Teaching: Arithmetic (3)** **Vopni**
Designed for teachers of arithmetic, grades one through nine. Emphasis is placed on the contributions of research to the improvement of the teaching of arithmetic. Prerequisite, teaching experience or permission.
- 475DJ, 475EJ. The Teaching of Foreign Literature (3, 3)** **Keller**
The methodology of teaching a foreign literature with demonstration by instructor and practice by students; preparation of lectures; study of discussion techniques. Offered jointly with the Department of Romance Languages and Literature. Prerequisites, senior standing and permission.
- 475H Improvement of Teaching: Language Arts (3)** ***Fea, Taylor**
A study of important and recent research in elementary and high school language arts, and a consideration of its practical implications for teaching. Students will work intensively in one area of special interest.
- 475I Improvement of Teaching: Industrial Education (3)** **Baily**
An analysis of the types of teaching, instructional materials, and evaluation devices used in industrial education, with emphasis upon the improvement of existing methods and techniques.
- 475J Advanced Teachers' Course in Journalism (3)** **Benson**
Advanced course in teaching high school journalism. No credit if Education 375J has been taken. Prerequisite, permission.
- 475LJ Improvement of Teaching: Latin (5)** **Grummel**
New techniques and materials for classroom presentation of high school Latin: survey of Latin word formation and syntax in light of recent linguistic research, illustrated by excerpts from Latin literature; of practical value to modern language teachers and English teachers who have had some Latin. Offered jointly with the Department of Classics. (Offered Summer Quarter only.)

- 475M Improvement of Teaching: Social Studies (3)** **Boroughs**
Procedures in the social studies. Techniques; source materials; contribution of the various social sciences to the educational program. Prerequisite, permission.
- 475S Improvement of Teaching: Elementary School Science (3)** **Vopni**
Designed for the nonspecialized classroom teacher with reference to the teaching and learning of science from kindergarten through junior high school. Emphasis is placed on the aims, methods, materials, and concepts of science, as well as the use of the scientific method of solving problems. Prerequisite, teaching experience or permission.
- 475T Improvement of Teaching: Secondary School Science (3)** **Vopni**
Survey of the status and potential role of science in education, trends and their implications for the teaching of both biological and physical sciences in the junior and senior high schools, representative curriculum proposals and related teaching procedures, the psychology of concept formation and problem-solving, and guidance implications of the science program. Prerequisite, teaching experience or permission.
- 475XJ Caesar for High School Teachers (2½)** **Grummel**
Interpretation of Caesar's works in the light of their historical, political, literary, and geographical background, with special reference to the problems of high school teaching. Offered jointly with the Department of Classics. (Offered Summer Quarter only.) Prerequisite, teaching experience or permission.
- 476D Materials and Methods of Teaching Typewriting (2½)** **Briggs**
Psychological and physiological factors in the methodology of typewriting; objectives and evaluation; procedures for developing advanced and applied skills. (Offered Summer Quarter only.)
- 476E Materials and Methods of Teaching Office and Clerical Practice (2½)** **Briggs**
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. (Offered Summer Quarter only.)
- 476K Coordination of Distributive Education and Diversified Occupational Program (3)** **Briggs**
Stresses fundamentals, records and reports, the use of advisory committees, course titles, qualifications, coordinating activities, course content, and work training stations. Prerequisite, permission.
- 476L Materials and Methods of Teaching Gregg Shorthand and Transcription (2½)** **Briggs**
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. (Offered Summer Quarter only.)
- 476M Principles and Problems of Business Education (2½)** **Briggs**
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. (Offered Summer Quarter only.)
- 476N Materials and Methods of Teaching Bookkeeping and General Business Subjects (2½)** **Briggs**
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. (Offered Summer Quarter only.)
- 480 History of Education (5)** **Jessup, Tostberg**
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.
- 481 Workshop in Industrial Education (3-10, maximum 10)** **Baily**
Individual or committee work on problems in the field of instructional materials in industrial education. Application of new materials and techniques to existing materials. Prerequisite, permission.
- 482 Advanced Tools and Materials (3)** **Baily**
A study of the fundamental concepts and principles in planning industrial education areas to produce safe, efficient, and effective teaching-learning situations. An analysis of the problems encountered in the selecting, purchasing, locating, and installing of equipment, tools, materials, and services.
- 483 Organization and Administration of Industrial Education (3)** **Baily**
Types of programs of vocational-industrial education and industrial arts; organization and administration of these programs, the relationships between them, and their place in public school programs.
- 484 Comparative Education (5)** **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)** **Baily**
An advanced general shop course in industrial education involving a study of the common tools, materials, processes, and products of industry. Prerequisite, 182 or equivalent, or permission.

- 486 Trends in Industrial Education (3)** **Baily**
A study of the leaders, agencies, movements, experiments, and publications that have contributed to the development of industrial education, with special attention to the economic, social, and philosophical factors which have motivated and influenced this development in America.
- 487 Instructional Analysis for Industrial Education Teachers (3)** **Baily**
A study of the techniques and procedures used in analyzing instructional areas into their basic elements as has been developed by various leaders in industrial education. Arranging the elements into a teaching plan and sequence for industrial arts and vocational industrial education courses.
- 488 Philosophy of Education (3)** **Tostberg**
An examination of the theoretical approaches to education which are dominant in the United States today, together with some consideration of the most significant contemporary critical commentaries on American education. Prerequisite, permission.
- 489 Current Problems in Industrial Education (3)** **Baily**
A study of the current events, problems, and researches in industrial education and their application in the field.
- 490 Elementary Statistical Methods (5)** **Dvorak**
Brief review and addition to Education 391 essential to the introduction to electronic data processing equipment, probability, sampling and reliability measures of computed data, linear correlation, zero-order regression, and different methods of scaling. Prerequisite, Education 391 or permission.
- 491 Advanced Educational Measurements (3)** **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.
- 497J Special Topics in Mathematics for Teachers (2-5, maximum 15)** **Allendoerfer**
Algebra and geometry for junior high school teachers of mathematics. Offered jointly with the Department of Mathematics.
- 499 Undergraduate Research (2-5)**
Instructor and field must be designated in registration. (See 600 for list of fields.) Prerequisite, permission of instructor and director of graduate studies in education.
- 501 Seminar in Educational Psychology (3)** ***Fea, Freehill**
The psychology of children's thinking. Course will emphasize study of research results in concept development and critical thinking, with application to classroom learning situations. Prerequisite, 209 or the equivalent.
- 502 Seminar in Educational Psychology (3)** ***Fea**
The psychology of children's thinking. Each student will work intensively in one of the following: an area of cognition, a level of child development, a school subject. Prerequisite, 501 or equivalent.
- 506 Internship in Special Education (2-10, maximum 10)** **Hayden**
Supervised experiences in special education for advanced students. Prerequisite, permission.
- 510 Seminar in Educational Sociology (3)** **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.
- 522 Seminar in Diagnostic and Remedial Work in Education (3)** ***Fea**
Study of the recent research diagnosis of and remediation for learning difficulties in the academic school subjects.
- 525 Seminar in Elementary Education (3)** **Boroughs, Jarolimek**
An exploration into the philosophy, history, curriculum, and method of the elementary school, with emphasis upon individual research. Prerequisite, doctoral candidacy or special permission.
- 531 Seminar in Administration: Finance (5)** **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, 431, and doctoral candidacy or special permission.
- 533 Seminar in Administration: School Buildings (3)** **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. Prerequisites, 430 and doctoral candidacy, or special permission.
- 536 Internship in Educational Administration (1-10, maximum 10)** **Strayer**
Recommended for all doctoral candidates preparing for administrative positions except those having sufficient experience as administrators. Half-time work in a school district or districts in close proximity to the University of Washington for one, two, or three quarters, depending upon the student's previous experience. Supervision by staff members of the College of Education and the superintendent of schools or school principal in the selected school district. Prerequisites, 430 and doctoral candidacy, or special permission.

- 538 Public Relations for Public Schools (3)** **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. Prerequisites, 430 and doctoral candidacy, or special permission.
- 541 Student Appraisal (3)** **Vopni**
Emphasis on the utilization of objective measures for purposes of guidance. Prerequisite, 447 or permission.
- 542 Information Services (3)** **Vopni**
Emphasis on educational and vocational guidance. Prerequisite, 447 or permission.
- 543 Counseling (3)** **Vopni**
Emphasis on the theory and practice of pupil counseling. Prerequisite, 447 or permission.
- 544 Organization and Administration of Guidance Programs (3)** **Vopni**
Basic considerations in planning, organizing, and operating school guidance programs; analysis of issues and problems encountered in formulating policy and evaluating services. Prerequisite, 447 or permission.
- 546 Internship in Guidance (2-10, maximum 10)** **Vopni**
Supervised practice in guidance activities for advanced students. Prerequisite, 447 and permission.
- 547 Seminar in Guidance (3)** **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. (Offered Summer Quarter only.) Prerequisites, 447 or equivalent, and doctoral candidacy, or special permission.
- 550 Development and Organization of Higher Education (3)** **Giles, **MacLean, Madsen**
Higher education from the standpoint of the new instructor; history of administrative organization. Prerequisite, doctoral candidacy or special permission.
- 551 College Problems (3)** **Giles**
Current problems in the philosophy and organization of higher education, with special emphasis upon the curriculum and student personnel services. Prerequisite, doctoral candidacy or special permission.
- 552 Improvement of College Teaching (3)** **Hayden**
An analysis of the type 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. Prerequisite, doctoral candidacy or special permission.
- 553 Seminar in the Administration of Junior Colleges (3)** **Giles**
For students preparing for administrative positions in junior colleges. Principles and practices in organization and administration of junior colleges. Prerequisite, 555 or equivalent.
- 555 The Junior College (3)** **Giles**
A study of the history, development, role, objective and organization of the junior college and of problems and issues confronting the two-year college. Prerequisite, permission.
- 556 Internship in Higher Education (3-10)** **Giles**
Field study and experience in college teaching and administration, planned by the College of Education in cooperation with selected colleges. Prerequisite, doctoral candidacy and special permission.
- 560 Seminar in Curriculum: Cooperative Research in Curriculum (3)** **Draper**
Research studies in the field of curriculum development will be designed for experimentation in the public schools. An analytical study will be made of the place of action research in the curriculum field. Prerequisites, 467 and doctoral candidacy, or special permission.
- 561 Seminar in Curriculum: Studies in Fusion, Correlation, and Child-Centered Programs (3)** **Draper**
Research in fusion, correlation, and child-centered programs in the large block of time. Prerequisites, 467 and doctoral candidacy, or special permission.
- 568 Seminar in Secondary Education (3)** **Draper**
Research studies in the areas of extraclass activities, curriculum improvement, guidance and counseling, foreign education systems, and the professionalization of secondary school teachers. Prerequisite, 467 or special permission.
- 570 Seminar in the Study of Educational Methods (3)** **Foster**
The course is designed to develop an understanding of selected aspects of the history of educational methods. The course involves the exploration of various classical sources of educational theories which have provided the basis for development of educational method.
- 571 Seminar in the Study of Educational Methods (3)** **Foster**
The course provides for the study of contemporary educational methods. The theory and application of these methods are explored with regard to trends, research data, and problems of implementation.

572J-573J Romance Language Teachers Seminar (3,3)

Class activities will include use of the Language Laboratory, examination and evaluation of new methods, materials and textbooks, and acquaintance with recent professional literature. Questions presented by the registrants will be considered, and each member of the seminar will work on some project of his own choice. The class time scheduled permits observation in the Young People's Classes offered by the Division of Continuing Education for those preparing to teach French or Spanish in the elementary or secondary schools, and workshop activities for others. Residence in the appropriate Living-Language Group is recommended. Students with schedule conflicts should consult the instructor. Offered jointly with the Department of Romance Languages and Literature, Summer Quarter only. Prerequisite, graduate standing or permission.

574J The Application of Linguistics to the Teaching of Romance Languages (2) Saporta

Current methods and techniques of foreign language instruction, based on the findings of scientific linguistics. Prerequisite, permission.

575 Seminar in Language Arts (3) *Fea

Study of recent research in listening, oral language, reading and written language emphasizing psychological and interrelated aspects. Prerequisite, teaching experience or permission.

586 Seminar in Educational Classics (3) Lee

Analysis in depth and in the context of the relevant history of several major works in educational thought from Plato to Dewey. Registration open only to advanced doctoral candidates with several years teaching experience. Permission of instructor required.

587 Seminar in Philosophy of Education (3) Lee

Designed to provide a basic understanding of selected philosophic systems and their relationship to education. Prerequisite, permission.

588 Seminar in Philosophy of Education (3) Lee

A detailed examination of education goals undertaken through a study of axiology. Prerequisites, 587 and permission.

589 Seminar in Philosophy of Education (3) Lee

A philosophical analysis of the professional fields of education. Prerequisites, 588 and permission.

590 Advanced Statistical Methods (5) Dvorak

Those statistical methods essential to quantitative educational research leading to professional literacy at the doctoral level, such as various methods of zero-order correlation, analysis of variance, chi-square test, multiple correlation methods, multiple variable regression, review and analysis of comprehensive applications, and the practical applications of electronic computers.

591 Method of Educational Research (3) 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 (*)

Prerequisites, 591 and permission of instructor and director of graduate studies in education. Instructor and field must be designated in registration.

Audio-visual education	Elementary education
Comparative education	Guidance and counseling
Curriculum	Higher Education
Educational administration	History and philosophy of education
Educational methods	Industrial education
Educational psychology	Remedial and speech education
Educational sociology	Secondary education
Educational supervision	Tests and measurements

700 Thesis (*)

Advanced degree candidates in education must register for "thesis." When registration is for "thesis only," an incidental fee of \$56.50 is charged and the work may be done *in absentia* by special permission.

* On leave 1962-63.

** Autumn Quarter 1962 only.



FACULTY
OF THE
COLLEGE OF EDUCATION

FACULTY OF THE COLLEGE OF EDUCATION

(As of September 16, 1962)

A single date following the name indicates the beginning of service in the University. When two dates are given, the second, in parentheses, is the date of promotion to present academic rank.

Baily, Athol Romaine, 1949 (1955), *Professor of Industrial Education*

B.S., 1931, Kansas State Teachers College; M.A., 1936, Ed.D., 1949, Missouri

Batie, Harriett Virginia, 1941 (1954), *Assistant Professor Emeritus of Education*

B.S., 1935, Hastings College; M.A., 1945, Ph.D., 1953, Washington

Bolton, Dale Leroy, 1962, *Assistant Professor of Education*

B.S., 1950, Oklahoma State University; M.S., 1953, Oklahoma State University; Ph.D., 1958, University of Wisconsin

Bolton, Frederick Elmer, 1912 (1947), *Professor Emeritus of Education; Research Consultant; Dean Emeritus of the College of Education*

B.S., 1893, M.S., 1896, Wisconsin; Ph.D., 1898, Clark

Boroughs, Homer, Jr., 1948 (1956), *Associate Professor of Education; Director of Practice Teaching*

B.A., 1939, Western Washington College of Education; M.A., 1947, Ph.D., 1949, Washington

Cole, Thomas Raymond, 1930 (1951), *Professor Emeritus of Education; Consultant in School Service*

Ph.B., 1902, M.A., 1903, LL.D. (Hon.), 1931, Upper Iowa

Corbally, John Edward, 1927 (1942), *Professor of Secondary Education; Associate Dean, College of Education; Acting Director, Bureau of School Service and Research*

B.A., 1918, Whitworth College; M.A., 1925, Ph.D., 1929, Washington

Draper, Edgar Marian, 1925 (1936), *Professor of Curriculum; Director of In-Service Teacher Training*

B.A., 1916, M.A., 1925, Ph.D., 1926, Washington

Dvorak, August, 1923 (1937), *Professor of Education; Assistant Director of the Division of Counseling and Testing*

B.A., 1920, Ph.D., 1923, Minnesota

- Fea, Henry Robert, 1954 (1959), *Associate Professor of Education*
B.A., 1942, B.Ed., 1947, M.Ed., 1948, Saskatchewan; Ph.D., 1950, California
(On leave 1962-63)
- Foster, Clifford Donald, 1959 (1962), *Associate Professor of Education*
B.S., 1947, Northeast Missouri State Teachers College; M.A., 1952, Ph.D., 1957, Washington
- Freehill, Maurice Francis, 1962, *Professor of Education*
B.Ed., 1946, University of Alberta; M.A., 1947, Ed.D., 1948, Stanford
- Giles, Frederic T., 1961, *Coordinator of College Relations and Professor of Education*
B.Ed., 1939, Eastern Washington College of Education; M.A., 1946, State College of Washington; Ed.D., 1961, Washington State University
- Hayden, Alice Hazel, 1942 (1952), *Professor of Education*
Ph.C., 1928, B.S., M.S., 1929, Oregon State College; Ph.D., 1932, Purdue
- Hilby, Sylvester Lyman, 1961 (1962), *Office of School and College Placement, and Part-time Lecturer in Education*
B.A., 1929, Washington; M.A., 1930, Stanford
- Jarolimek, John, 1962, *Associate Professor of Education*
B.S., 1943, Wisconsin State College; M.A., 1949, University of Minnesota; Ph.D., 1955, University of Minnesota
- Jessup, John Hunnicutt, 1926 (1927), *Associate Professor of Educational Sociology*
A.B., 1920, Earlham College; M.A., 1924, Iowa
- Lee, Gordon Canfield, 1961, *Professor of Education and Dean of the College of Education*
A.B., 1937, California; M.A., 1938, Ph.D., 1948, Columbia
- MacDonald, Cecilia, 1949 (1957), *Associate Professor of Elementary Education*
B.A., 1946, Central Washington College of Education; M.Ed., 1952, Washington
- MacLean, Malcolm Shaw, 1962, *Consultant in Higher Education*
B.A., 1916, University of Michigan; Ph.D., 1929, University of Minnesota (Autumn Quarter 1962 only)
- Madsen, David Lawrence, 1962, *Assistant Professor of Education*
Ph.B., 1951, University of North Dakota; M.A., 1954, Ph.D., 1961, University of Chicago
- Marten, Elmer Francis, 1960, *Supervisor, Industrial Education Laboratory*
B.A., 1941, Washington
- Messerli, Jonathan Carl, 1962, *Assistant Professor of Education*
B.S., 1947, Concordia Teachers College; M.A., 1952, Washington University; Ph.D., 1962, Harvard University (On leave 1962-63)
- Powers, Francis Fountain, 1928 (1940), *Professor of Education; Director of Office of Educational Research*
B.A., 1923, Washington; M.A., 1927, Oregon; Ph.D., 1928, Washington
- Salzer, Rufus Coleman, Jr., 1953 (1962), *Associate Professor of Education*
B.A., 1930, Seattle Pacific; M.A., 1931, Ph.D., 1955, Washington
- Stevens, Edwin Bicknell, 1936 (1947), *Professor Emeritus of Education*
A.B., 1896, Tufts College; A.M., 1899, Harvard
- Strayer, George Drayton, Jr., 1949, *Professor of Educational Administration*
B.S., 1927, Princeton; M.A., 1928, Ph.D., 1934, Columbia
- Tostberg, Robert Eugene, 1962, *Assistant Professor of Education*
B.A., 1956, University of Oregon; M.A., 1958, University of Wisconsin; Ph.D., 1960, University of Wisconsin
- Vopni, Sylvia Freda, 1952 (1961), *Associate Professor of Education*
B.A., 1931, M.A., 1938, Ph.D., 1955, Washington
- Williams, Curtis Talmadge, 1920 (1957), *Professor Emeritus of Education*
A.B., 1913, Kansas State Normal School; A.M., 1914, Ph.D., 1917, Clark

COOPERATING FACULTY

Ames, William E., *Assistant Professor and Acting Director, Communications*

Blaser, H. Weston, *Associate Professor, Botany*

Bone, Hugh A., *Professor and Chairman, Political Science*

Brier, Howard M., *Associate Professor, Journalism*

Briggs, Robert, *Associate Professor, General Business*

Broer, Marion R., *Professor, Physical Education for Women*

Brown, Frances A., *Assistant Professor, General Business*

Cady, George H., *Professor and Chairman, Chemistry*

Carr, Kenneth M., *Assistant Professor, Drama*

Carrell, James A., *Professor, Speech*

Cole, William D., *Instructor, Music*

Coombs, Howard A., *Professor and Chairman, Geology*

Cutler, Russell K., *Professor and Chairman, Physical Education for Men*

Dubisch, Roy, *Professor, Mathematics*

Emery, Donald W., *Associate Professor, English*

Falls, Gregory A., *Professor and Chairman, Drama*

Faris, Robert E. Lee, *Professor and Chairman, Sociology*

Fox, Katharine, *Associate Professor, Physical Education for Women*

Frerichs, Alberta J., *Lecturer, General Business*

Fuller, Steven D., *Associate Professor, Art*

Galanter, Eugene H., *Professor and Chairman, Psychology*

Gates, Charles M., *Professor, History*

Geballe, Ronald, *Professor and Chairman, Physics*

Gillingham, J. Benton, *Assistant Professor and Chairman, Economics*

Gonzales, Boyer, *Professor and Director, Art*

Granberg, Grace G., *Instructor, Home Economics*

Grayston, J. Thomas, *Professor and Chairman, Public Health and Preventive Medicine*

Griffiths, Gordon, *Associate Professor and Acting Chairman, History*

Grummel, William C., *Associate Professor, Classics*

Haaga, Agnes M., *Associate Professor, Drama*

Harrington, Donal F., *Professor, Drama*

Hatch, Melville H., *Professor, Zoology*

Heilman, Robert B., *Professor and Chairman, English*

Hitchcock, C. Leo, *Professor and Chairman, Botany*

Hitchner, Dell G., *Associate Professor, Political Science*

Horne, Dorthalee, *Assistant Professor, Physical Education for Women*

Hudson, G. Donald, *Professor and Chairman, Geography*

Irvine, Demar, *Professor and Acting Director, Music*

Johnson, Mary Louise, *Professor and Director, Home Economics*

Johnson, Pauline, *Professor, Art*

Jones, Iris A., *Assistant Professor, Music*

Kingston, J. Maurice, *Associate Professor, Mathematics*

- Lieberman, Irving, *Professor and Director, Librarianship*
- Marcus, Sumner, *Professor and Chairman, General Business*
- Martin, Arthur W., *Professor, Physiology; Chairman, Zoology*
- McAdams, Laura E., *Associate Professor, Home Economics*
- McDiarmid, J. B., *Professor and Chairman, Classics*
- Meyer, Herman C., *Associate Professor, Germanic Languages and Literature*
- Mills, Caswell A., *Lecturer, Physical Education and Public Health and Preventive Medicine*
- Moseley, Spencer, *Associate Professor, Art*
- Murphey, Rhoads, *Associate Professor, Geography*
- Nelson, Oliver W., *Associate Professor, Speech*
- Normann, Theodore F., *Associate Professor, Music*
- Nostrand, Howard L., *Professor and Chairman, Romance Languages and Literature*
- Pascal, Paul, *Assistant Professor, Classics*
- Peek, Clifford, *Assistant Professor, Physical Education for Men*
- Pierce, Richard S., *Professor and Chairman, Mathematics*
- Rahskopf, Horace G., *Professor and Chairman, Speech*
- Read, Kenneth E., *Associate Professor and Chairman, Anthropology*
- Reeves, G. Spencer, *Associate Professor, Physical Education and Preventive Medicine*
- Rey, William H., *Professor and Chairman, Germanic Languages and Literature*
- Rulifson, Leone H., *Associate Professor, Physical Education for Women*
- Simpson, Lurline V., *Associate Professor, Romance Languages and Literature*
- Strother, Charles R., *Professor, Psychology and Psychiatry*
- Taylor, George E., *Professor, Far Eastern History and Politics; Chairman Far Eastern and Slavic Languages and Literature*
- Thompson, Laurence C., *Assistant Professor, Far Eastern and Slavic Languages and Literature*
- Turner, Mabel, *Assistant Professor, Librarianship*
- Wheeler, Sara Hutchings, *Assistant Professor, Librarianship*
- Wilsing, Weston C., *Associate Professor, General Business*
- Wilson, Ruth M., *Associate Professor and Chairman, Physical Education for Women*

APPENDIX

APPENDIX

UNDERGRADUATE ADMISSION, EXCEPTIONAL CASES

An applicant whose preparation and previous scholarship do not clearly qualify him for admission may submit additional evidence in support of his application. This may include scores on nationally recognized tests of scholastic aptitude or achievement; letters from school administrators, teachers, or counselors; and other information which may assist the Board of Admissions in evaluating his probability of success in the University.

Students admitted by special action of the Board of Admissions will be expected to achieve and maintain a satisfactory scholastic average in their University work and to fulfill any conditions specified by the Board at the time of their admission.

A student thus admitted on probation will be subject to scholarship rules given on page 24.

Furthermore, he or she may not (1) be pledged 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 regulations of the University Intercollegiate Athletics Committee.

ADVANCED STANDING AND TRANSFER OF CREDIT

1. The advanced standing for which an applicant's training appears to fit him is granted tentatively on admission. Definite advanced standing is not determined before the end of the student's first quarter in the University. The maximum that may be accepted from other colleges and universities is 135 quarter credits or senior standing. Transfer credit will not be allowed in the senior year.

2. Transfer credits will be accepted for upper-division credit *only* when earned at an accredited four-year degree-granting institution.

3. Transfer credits from institutions accredited for less than four years will not be accepted in excess of the accreditation of the school concerned.

4. Transfer of junior college credit shall apply on the 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 to completion of the first two years in the University. In no case shall the transfer of junior college credit to the University exceed 90 quarter credits exclusive of physical education activity credits.

5. The maximum number of credits obtainable by acceptance of Armed Forces training schools credits will be 30. All such credits will be counted as extension credits and will be included in the 90-credit maximum allowed toward the bachelor's degree, but none will apply toward the work of the senior year.

6. A maximum of 45 credits earned in extension and correspondence courses at other institutions may be transferred, but none of the credits can apply in the senior year. Extension and correspondence credits from schools that are not members of the National University Extension Association are accepted only after examination.

7. Credits earned in evening and extension classes or correspondence courses at this University are accepted after the student has satisfactorily completed 35 credits of work in residence (that is, registered in regular University classes). A maximum of 90 extension and/or correspondence credits is acceptable; the 90 credits may include the 45 extension and/or correspondence credits allowable from other institutions or may consist entirely of courses taken in this University's Division of Evening Classes or Division of Correspondence Study. All credits earned in advanced-credit examinations and all acceptable Armed Forces training schools credits must be counted in the 90 extension credit maximum. Up to 10 evening class or correspondence course credits from this University can apply toward the work of the senior year.

8. For work done in unaccredited institutions, extended secondary programs in institutions whose standing is unknown, and for work with private teachers, University credit is granted only after examination. Applications for advanced credit examinations must be filed during the first quarter in residence.

9. No credit will be granted 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. The prescribed written permission is effective only if obtained before registration. Nothing in this rule makes mandatory the granting of any credit by the University.

KOREAN VETERANS INFORMATION

Korean Certificate

Application for this certificate should be made at least four weeks prior to the beginning of University instruction. If the veteran is eligible, the Veterans Administration will issue him a Certificate for Education and Training which must be presented, along with his Program of Studies, to the Veterans Division, Safety Division Building, as soon as registration is completed. A Korean veteran should be prepared to meet all his own expenses as well as the cost of tuition, fees, and supplies for at least two months, because allowances are not made until after a full month's attendance has been established.

Quarter Credit Requirements (Public Law 550)

14 credits.....	Full subsistence
10 to 13 credits.....	Three-fourths subsistence
7 to 9 credits.....	One-half subsistence
6 credits or less	Established tuition and fees
or credits $\div 14 \times \$110.00$, whichever is the lesser.	

Graduate Credit Requirements (Public Law 550) 500-level Courses or Above

9 credits.....	Full subsistence
7 to 8 credits.....	Three-fourths subsistence
5 to 6 credits.....	One-half subsistence
4 credits or less.....	Established tuition and fees or credits $\div 14 \times \$110.00$, whichever is the lesser.

If a graduate is combining 400-level courses with 500-level courses, he should consult with the Veterans Division, Safety Division Building, to determine the scale of pay.

Termination of Training

A veteran *eligible* under Public Law 550 must complete his training by *eight years* after his release from active service, or by January 31, 1965, whichever is earlier.

WITHDRAWALS**WITHDRAWAL FROM A COURSE**

Official withdrawal from a course is made only under the following conditions: (1) during the first fifteen calendar days of a quarter, with the consent of the withdrawing student's adviser; (2) after the first fifteen calendar days of a quarter and before the end of the first six calendar weeks of a quarter, with the approval of the student's adviser, the instructor of the course from which withdrawal is sought, and of the dean of the college in which the withdrawing student is enrolled; and (3) after the first six calendar weeks of a quarter and before final examination week, only upon certification in writing to the Registrar by the dean of the college in which the withdrawing student is enrolled that, in the judgment of the dean, withdrawal is necessitated by the student's hardship. Withdrawals from courses accomplished by any other method are unofficial withdrawals which are entered on a student's record as EW, and are assigned the value of E in the computation of the student's grade-point average. No official withdrawal may be made during final examination week.

Official withdrawals are entered on a student's record as follows: (1) a withdrawal within the first fifteen calendar days of a quarter, as W; (2) a withdrawal after the first fifteen calendar days of a quarter and before final examination week, as PW, if the student's work has been satisfactory, and as E, if the student's work has been unsatisfactory. Grades of PW and W are assigned no value in the computation of grade-point averages.

WITHDRAWAL FROM THE UNIVERSITY

The student should obtain at the office of the Dean, 121 Miller Hall, the Request for Withdrawal from the University form.

MILITARY TRAINING

Military training at the University of Washington has now been placed on an elective basis. Students wishing to participate in military programs can find a complete list of courses offered by the Departments of Air Science, Military Science, and Naval Science in the *Yearly Time Schedule*. In addition to the basic programs, the Department of Air Science and the Department of Military Science each offers for selected students an advanced program which leads to commissioning in the Air Force or the Army. The four-year program of the Department of Naval Science, also for selected students, leads to commissioning in the Navy or Marine Corps.

Students enrolling in Naval ROTC, and those who take the advanced program of Air Force or Army ROTC must agree in writing to complete the course of

training and accept a commission in the service for which they are trained. *The honoring of this commitment is a condition of graduation from the University.*

The basic program of the Department of Air Science consists of three quarters of military classroom instruction on the Foundations of Air Power. These are offered in the Spring Quarter of the first year and the Autumn and Winter Quarters of the second year. During each of the other three quarters, the student must substitute an approved University course in lieu of Air Science. Leadership laboratory is required each of the six quarters of the basic program and is conducted one hour each week. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*.

The basic program (freshmen and sophomores) of the Department of Military Science requires drill one hour each week. Classroom military studies for freshmen are not required in the Autumn Quarter. One hour per week is required in the Winter Quarter, and two hours of classroom work are required in Spring Quarter. As a substitute for these classroom hours in Autumn Quarter of the freshman year, registration is required in a selected three-credit or five-credit course in another department. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*. Sophomores are required to attend two hours per week of classroom military studies throughout the academic year.

Information concerning the Naval Science ROTC program can be found on page 87.

PHYSICAL EDUCATION ACTIVITIES

Men students may use credits earned in freshman or varsity sports to satisfy the activity course requirement.

Women students, in fulfilling the three-quarter requirement, may take a maximum of two credits in any of the following: (1) swim area; (2) dance area; (3) tennis and badminton; (4) any other specific individual, dual, or team activity.

The following students are exempt from the requirement of activity courses:

1. Students who have attained the age of twenty-five. A student who attains the age of twenty-five during a quarter in which he is registered for a required physical education activity course shall be held for the completion of that course. This rule shall not be retroactive in its application to students who entered prior to Spring Quarter, 1951, and were exempted from required physical education courses under previous rules.

2. Students who enter as sophomores, juniors, or seniors.

3. Special students.

4. Students registered for 6 credits or less.

5. Students who, because of physical condition, are exempted by the Graduation Committee upon the recommendation of the Dean of the College. Such action will be taken only when the Dean has received a joint recommendation for exemption from the University Health Officer and the Executive Officer of the Department of Physical Education for Men or for Women, whichever is appropriate. All other students who are reported by the University Health Officer as physically unfit to join regular classes will be assigned by the Executive Officer of the Department of Physical Education for Men or for Women to special programs adapted to their needs.

6. Students who are veterans of military service. Complete exemption is granted for one year or more of active duty. This exemption does not grant credit. Veterans with less than one year of service receive no exemption.

7. Transfer students who present acceptable credit for physical education activity courses taken in other colleges. The amount of exemption depends on the number of quarters for which credit is transferred.

FEES, EXTRA SERVICE CHARGES, AND RENTALS

All fees, extra service charges, and rentals are payable in United States dollars at the time of registration, except that new students must submit a \$50.00 advance payment of fees at the time they are admitted to the University. This advance payment is applied against the total tuition and the fees collected from the student. The University reserves the right to change any of its fees and charges without notice.

The fee schedules for resident and nonresident students, following, apply to the academic year (Autumn, Winter, and Spring Quarters). Summer fees are listed in the *Summer Quarter Bulletin*.

EXEMPTIONS

Veterans of World Wars I or II

Exemption from tuition charges is granted resident students who either (1) served in the United States Armed Forces during World War I and received honorable discharges; or (2) served in the United States Armed Forces during World War II at any time after December 8, 1941, and before January 1, 1947, and received honorable discharges, but are no longer entitled to federal educational benefits; or (3) are United States citizens who served in the armed forces of governments associated with the United States during World Wars I or II and received honorable discharges. Nonresident students who meet one of these requirements pay one-half of the nonresident tuition. This exemption is not granted to Summer Quarter students.

Proof of eligibility should be met as follows:

- (1) World War I veterans should present copy of discharge papers to Comptroller's Office, 203 Administration Building.
- (2) World War II veterans with Korean service or who have suffered disability should present a letter from the Veterans Administration Regional Office to the Veterans Division, Safety Division Building, stating they are no longer eligible for any federal educational benefits. (Excepted are those veterans who have had both World War II benefits and Korean benefits and have expired those benefits at the University of Washington.)
- (3) World War II veterans who have not suffered any disability or served in the Korean Conflict should present an 8½-inch x 11-inch photostat of discharge papers to the Veterans Division, Safety Division Building.

Exemption must be cleared prior to student's appointment day for registration in order to prevent personal payment.

EXTRA SERVICE CHARGES

A registration service charge of \$15.00 is assessed those students: (1) eligible for Advance (mail) Registration who fail to participate; or (2) who, after the established application deadline, are granted Appointments or Permits to register by In-Person Registration by action of the Registration Appeal Board. A late registration charge of \$15.00 is assessed any student granted permission to register after the last registration day before the opening of Autumn, Winter, or Spring Quarters by action of the Registration Appeal Board. A charge of \$5.00 is made Autumn, Winter, and Spring Quarters 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.

<i>Special Examination</i>	\$1.00
<i>Removal of an Incomplete</i>	2.00
<i>Washington Pre-College Testing Program (Grade Prediction Test)</i>	5.00
<i>Athletic Admission Ticket (optional for ASUW members)</i>	3.50-6.50
Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.	
<i>Military Uniform Rental</i>	25.00

Paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.

Breakage Ticket	3.00
Required in some laboratory courses; ticket is returnable for full or partial refund.	
Locker Rental, per quarter	2.00
Required of men students taking physical education activities.	
Quarterly Grade Report	.50
One grade report is issued at the close of each quarter without charge; the charge, payable in advance, is made for each additional copy.	
Transcripts	1.00
One transcript is furnished without charge; the charge, payable in advance, is made for each additional copy.	
Graduation Exercises Diploma	10.00
Advanced Directed Practice Teaching Charge	6.00
per credit, Education 471E,S,X	

FEES FOR RESIDENT STUDENTS

A resident is one who has been domiciled in Washington for at least a year immediately prior to registration.

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

Type of Registration	Tuition Fee	Incidental Fee	ASUW Fee* Autumn, Winter, and Spring Quarters	Total Fees Autumn, Winter, and Spring Quarters
Full-time students** (undergraduate and graduate) except in Medical and Dental Schools	\$35.00	\$56.50	\$8.50	\$100.00
Auditors		39.00	†	39.00
Part-time (max. 6 credits exclusive of ROTC)§	35.00	39.00	†	74.00
Ex-service personnel of World Wars I and II† (Chapter 46, Laws of 1945)				
Full-time		56.50	8.50	65.00
Part-time (max. 6 credits)§		39.00	†	39.00
Students registered for thesis only (for credit or final)||		56.50	†	56.50
Students registered for degree final only (nonthesis)||		56.50	†	56.50

* Athletic admission ticket is optional for ASUW members. Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.

** A \$25.00 uniform rental is paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.

† 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 89) to determine eligibility.

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

|| Must be approved by the Graduate School.

Office of School and College Placement

Initial registration in senior year	5.00
Maintenance on active list each subsequent year	2.50

Teaching Certificate Charge

2.50

This does not include the legal registration fee of \$1.00, which is paid to the county school superintendent who first registers the certificate.

MUSIC PRACTICE ROOM, per quarter: piano practice, \$3.00, one hour a day; \$5.00, two hours a day; \$6.00, three hours a day. Organ practice, \$6.00, one hour a day; \$10.00, two hours a day; \$12.00, three hours a day. Practice rooms are available only to students taking music courses.

PHYSICAL EDUCATION ACTIVITIES, per quarter: bowling, \$5.00; canoeing, \$3.00; golf instruction, \$1.50.

REFUND OF FEES, CHARGES, AND RENTALS

All fees will be refunded in full if complete withdrawal is made during the first three calendar days of the quarter; one-half the amount will be refunded if with-

FEES FOR NONRESIDENT STUDENTS

Prospective students are classified as nonresidents when their credentials come from schools outside Washington. If they believe they are residents, they may petition the Residence Classification Office, 205A Administration Building, for a change of classification.

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

Type of Registration	Tuition Fee	Incidental Fee	ASUW Fee*	Total Fees
			Autumn, Winter, and Spring Quarters	Autumn, Winter, and Spring Quarters
Full-time students** (undergraduate and graduate) except in Medical and Dental Schools	\$105.00	\$86.50	\$8.50	\$200.00
Auditors		39.00	†	39.00
Part-time (max. 6 credits exclusive of ROTC)§	105.00	69.00	†	174.00
Ex-service, personnel of World Wars I and II† (Chapter 46, Laws of 1945)				
Full-time	52.50	86.50	8.50	147.50
Part-time (max. 6 credits)§	52.50	69.00	†	121.50
Students registered for thesis only (for credit or final)||		56.50	†	56.50
Students registered for degree final only (nonthesis)||		56.50	†	56.50

* Athletic admission ticket is optional for ASUW members. Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.

** A \$25.00 rental is paid by students in Army and Air Force ROTC, refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.

† 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 89) to determine eligibility.

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

|| Must be approved by the Graduate School.

drawal is made during the first thirty calendar days. Refunds are not made to students withdrawing under discipline.

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

At least two weeks must elapse between payment and refund, if payment was made by check.

AWARDS AND LOANS

The University offers a number of awards for outstanding academic achievement. Some are given by the University, and many others are available through the generosity of friends and alumni. A handbook listing the current awards may be obtained from the Office of the Dean of Students.

Scholarships and awards specifically for education students include three annual continuing scholarships of \$175 awarded by the Washington Congress of Parents and Teachers to freshmen with outstanding high school records in the state of Washington, an annual scholarship of Autumn Quarter tuition for a freshman woman awarded by Pi Lambda Theta, annual Boeing Scholarship awards to teacher-training students majoring in mathematics and science, and annual awards to entering freshmen by the Washington Education Association. Other awards are made from time to time, such as the Soroptmist Club grant of \$1,500 to an advanced-degree candidate in education.

An emergency loan fund available to all University students is administered by the Office of the Dean of Students.

BULLETIN • UNIVERSITY OF WASHINGTON



COLLEGE OF ENGINEERING

1961-1963

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes three general bulletins; bulletins of the colleges and schools; Summer Quarter Bulletin; the bulletin of the Center for Graduate Study at Hanford; and bulletins of the Division of Correspondence Study and the Division of Evening Classes.

INTRODUCTION TO THE UNIVERSITY, one of the general bulletins, is especially prepared for new and prospective students. It lists all the University curricula, with their admission requirements, and presents information on other phases of student life, including services for students, student activities, and expenses. UNIVERSITY RULES AND REGULATIONS, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as registered students. HANDBOOK OF SCHOLARSHIPS, the third general bulletin, lists the various scholarships available.

Curricula, courses, and scholarship requirements in each field of study are described in the college and school bulletins. Each of these bulletins also discusses services, organizations, and expenses as they relate to students in the particular college or school.

Requests for copies of any of the bulletins should be addressed to the Addressograph Service.

General Bulletins

HANDBOOK OF SCHOLARSHIPS (RESTRICTED DISTRIBUTION)

INTRODUCTION TO THE UNIVERSITY

UNIVERSITY RULES AND REGULATIONS (FOR REGISTERED STUDENTS ONLY)

Bulletins of the Colleges and Schools

COLLEGE OF ARCHITECTURE AND URBAN PLANNING

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF BUSINESS ADMINISTRATION

SCHOOL OF DENTISTRY

COLLEGE OF EDUCATION

COLLEGE OF ENGINEERING

COLLEGE OF FISHERIES

COLLEGE OF FORESTRY

GRADUATE SCHOOL

SCHOOL OF LAW

SCHOOL OF MEDICINE

SCHOOL OF NURSING

COLLEGE OF PHARMACY

SCHOOL OF SOCIAL WORK

Other Bulletins

SUMMER QUARTER

CENTER FOR GRADUATE STUDY AT HANFORD

CORRESPONDENCE STUDY

EVENING CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON

General Series No. 976

November, 1961

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CALENDAR

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

WINTER QUARTER, 1962

REGISTRATION PERIOD

OCT. 23-Nov. 17	Advance Registration only for students in residence Autumn Quarter, 1961. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
DEC. 26-28	In-Person Registration for students in residence Autumn Quarter, 1961, who did not complete Winter Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
DEC. 26-28	In-Person Registration for former students not in residence Autumn Quarter, 1961. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 8.</i>
DEC. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
DEC. 20	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
DEC. 26-28	In-Person Registration for ALL new students.
DEC. 28	Last day to register for Winter Quarter, 1962. Note application deadlines above.
JAN. 2-8	Change of registration by appointment only.

ACADEMIC PERIOD

JAN. 2—TUESDAY	Instruction begins
JAN. 8—MONDAY	Last day to add a course
FEB. 16—FRIDAY	Last day to submit applications for advanced credit examinations
FEB. 22—THURSDAY	Washington's Birthday and Founder's Day holiday
MAR. 3—SATURDAY	Advanced credit examinations
MAR. 8-15	Final examinations
MAR. 15—THURSDAY	Quarter ends

SPRING QUARTER, 1962**REGISTRATION PERIOD**

JAN. 22-FEB. 16	Advance Registration only for students in residence Winter Quarter, 1962. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
MAR. 20-22	In-Person Registration for students in residence Winter Quarter, 1962, who did not complete Spring Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
MAR. 20-22	In-Person Registration for former students not in residence Winter Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is March 9.</i>
MAR. 1	Deadline for ALL new students to submit Applications for admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
MAR. 15	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
MAR. 20-22	In-Person Registration for ALL new students.
MAR. 22	Last day to register for Spring Quarter, 1962. Note application deadlines above.
MAR. 26-30	Change of registration by appointment only.

ACADEMIC PERIOD

MAR. 26-MONDAY	Instruction begins
MAR. 30-FRIDAY	Last day to add a course
MAY 11-FRIDAY	Last day to submit applications for advanced credit examinations
MAY 26-SATURDAY	Advanced credit examinations
MAY 30-WEDNESDAY	Memorial Day holiday
MAY 31-JUNE 7	Final examinations
JUNE 3-SUNDAY	Baccalaureate Sunday
JUNE 7-THURSDAY	Quarter ends
JUNE 9-SATURDAY	Commencement

SUMMER QUARTER, 1962**REGISTRATION PERIOD**

General In-Person Registration for ALL students (*by appointment only*):

May 28-29, 31

June 7, 8; June 11-15

Admission to the University is a prerequisite for registration in Summer Quarter classes. Complete credentials must be filed with the Office of Admissions by May

15 to be considered for admission with regular standing. See the Summer Quarter Bulletin.

Students in the Schools of Law, Dentistry, Medicine, and the Hospital Division of the School of Nursing must file an Application for Registration Permit, although no appointment date is necessary.

Registration Appointments or Permits will be issued as follows:

Students in residence Spring Quarter, 1962:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates	Monday, April 16, 8 a.m. to 5 p.m.
Juniors	Tuesday, April 17, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 18, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 19, 8 a.m. to 5 p.m.

Former Students not in residence Spring Quarter, 1962, may obtain an Application for Appointment or Permit by writing to, or calling in person at, the Registrar's Office, Room 109, Administration Building, or telephoning LAkeview 4-6000, Extension 2551, beginning April 17 and preferably *no later than May 15*. Application for Appointment or Permit by writing to, or calling in person at, the Registrar's can be processed. *New (entering) Students* will be mailed Registration Appointments with their Official Notice of Admission.

Final application deadline is June 11, except for b term only registration.

ACADEMIC PERIOD

JUNE 18—MONDAY	Instruction begins
JUNE 19—TUESDAY	Last day to add a course for the first term
JUNE 22—FRIDAY	Last day to add a course for the full quarter
JUNE 29—FRIDAY	Last day to submit applications for advanced credit examinations for first term
JULY 4—WEDNESDAY	Independence Day holiday
JULY 14—SATURDAY	Advanced credit examinations
JULY 18—WEDNESDAY	Final examinations and first term end
JULY 19—THURSDAY	Second term begins
JULY 20—FRIDAY	Last day to add a course for the second term
JULY 27—FRIDAY	Last day to submit applications for advanced credit examinations for second term
AUG. 11—SATURDAY	Advanced credit examinations
AUG. 17—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1962

REGISTRATION PERIOD

APR. 30-MAY 25	Advance Registration only for students in residence Spring Quarter, 1962. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 10-27	In-Person Registration for students in residence Spring Quarter, 1962, who did not complete Autumn Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.

SEPT. 10-27	In-Person Registration for former students not in residence Spring Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is August 15.</i>
JULY 15	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointments will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 11-27	In-Person Registration for ALL new students.
SEPT. 27	Last day to register for Autumn Quarter, 1962. Note application deadlines.
OCT. 1-5	Change of registration by appointment only.

ACADEMIC PERIOD

OCT. 1—MONDAY	Instruction begins
OCT. 5—FRIDAY	Last day to add a course
NOV. 1—THURSDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1963, due at Registrar's Office
NOV. 12—MONDAY	State Admission Day holiday
NOV. 21—WEDNESDAY	Last day to submit applications for advanced credit examinations
NOV. 21-26	Thanksgiving recess (6:30 p.m. to 7:30 a.m.)
DEC. 8—SATURDAY	Advanced credit examinations
DEC. 12-18	Final examinations
DEC. 18—TUESDAY	Quarter ends

WINTER QUARTER, 1963

REGISTRATION PERIOD

OCT. 29-Nov. 27	Advance Registration only for students in residence Autumn Quarter, 1962. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
JAN. 2-4	In-Person Registration for students in residence Autumn Quarter, 1962, who did not complete Winter Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

- JAN. 2-4 In-Person Registration for former students not in residence Autumn Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Appointments or Permits is December 1.*
- DEC. 1 Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
- DEC. 20 Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
- JAN. 2-4 In-Person Registration for ALL new students.
- JAN. 4 Last day to register for Winter Quarter, 1963. Note application deadlines above.
- JAN. 7-11 Change of registration by appointment only.

ACADEMIC PERIOD

- JAN. 7—MONDAY Instruction begins
- JAN. 11—FRIDAY Last day to add a course
- FEB. 21—THURSDAY Last day to submit applications for advanced credit examinations
- FEB. 22—FRIDAY Washington's Birthday and Founder's Day holiday
- MAR. 9—SATURDAY Advanced credit examinations
- MAR. 15-21 Final examinations
- MAR. 21—THURSDAY Quarter ends

SPRING QUARTER, 1963

REGISTRATION PERIOD

- JAN. 28-FEB. 21 Advance Registration only for students in residence Winter Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
- MAR. 26-28 In-Person Registration for students in residence Winter Quarter, 1963, who did not complete Spring Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
- MAR. 26-28 In-Person Registration for former students not in residence Winter Quarter, 1963. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Appointments or Permits is March 1.*
- MAR. 1 Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.

MAR. 15	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
MAR. 26-28	In-Person Registration for ALL new students.
MAR. 28	Last day to register for Spring Quarter, 1963. Note application deadlines above.
APRIL 1-5	Change of registration by appointment only.

ACADEMIC PERIOD

APRIL 1—MONDAY	Instruction begins
APRIL 5—FRIDAY	Last day to add a course
MAY 10—FRIDAY	Last day to submit applications for advanced credit examinations
MAY 25—SATURDAY	Advanced credit examinations
MAY 30—THURSDAY	Memorial Day holiday
JUNE 7-13	Final examinations
JUNE 9—SUNDAY	Baccalaureate Sunday
JUNE 13—THURSDAY	Quarter ends
JUNE 15—SATURDAY	Commencement

SUMMER QUARTER, 1963**REGISTRATION PERIOD**

General In-Person Registration for ALL students (*by appointment only*):

June 6-10

June 17-21

Admission to the University is a prerequisite for registration in Summer Quarter classes. Complete credentials must be filed with the Office of Admissions by May 15 to be considered for admission with regular standing. See the Summer Quarter Bulletin.

Students in the Schools of Law, Dentistry, Medicine, and the Hospital Division of the School of Nursing must file an Application for Registration Permit, although no appointment date is necessary.

Registration Appointments or Permits will be issued as follows:

Students in residence Spring Quarter, 1963:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates	Monday, April 22, 8 a.m. to 5 p.m.
Juniors	Tuesday, April 23, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 24, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 25, 8 a.m. to 5 p.m.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

Former Students not in residence Spring Quarter, 1963, may obtain an Application for Appointment or Permit by writing to, or calling in person at, the Registrar's Office, Room 109, Administration Building, or telephoning LAkeview 4-6000, Extension 2551, beginning April 22 and preferably no later than May 15. Application for Registration Appointment must be received before registration materials can be processed. New (entering) Students will be mailed Registration Appointments with their Official Notice of Admission.

Final application deadline is June 17, except for b term only registration.

ACADEMIC PERIOD

JUNE 24—MONDAY	Instruction begins
JUNE 25—TUESDAY	Last day to add a course for the first term
JUNE 28—FRIDAY	Last day to add a course for the full quarter
JULY 3—WEDNESDAY	Last day to submit applications for advanced credit examinations for first term
JULY 4—THURSDAY	Independence Day holiday
JULY 20—SATURDAY	Advanced credit examinations
JULY 24—WEDNESDAY	Final examinations and first term end
JULY 25—THURSDAY	Second term begins
JULY 26—FRIDAY	Last day to add a course for the second term
AUG. 2—FRIDAY	Last day to submit applications for advanced credit examinations for second term
AUG. 17—SATURDAY	Advanced credit examinations
AUG. 23—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1963

REGISTRATION PERIOD

MAY 6-29	Advance Registration only for students in residence Spring Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 3-26	In-Person Registration for students in residence Spring Quarter, 1963, who did not complete Autumn Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
SEPT. 3-26	In-Person Registration for former students not in residence Spring Quarter, 1963. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is August 15.</i>
JULY 15	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.

SEPT. 4-26	In-Person Registration for ALL new students.
SEPT. 26	Last day to register for Autumn Quarter, 1963. Note application deadlines.
SEPT. 30-OCT. 4	Change of Registration by appointment only.

ACADEMIC PERIOD

SEPT. 30—MONDAY	Instruction begins
OCT. 4—FRIDAY	Last day to add a course
NOV. 1—FRIDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1964, due at Registrar's Office.
NOV. 11—MONDAY	State Admission Day holiday
NOV. 22—FRIDAY	Last day to submit applications for advanced credit examinations
NOV. 27-DEC. 2	Thanksgiving recess (6:30 p.m. to 7:30 a.m.)
DEC. 7—SATURDAY	Advanced credit examinations
DEC. 11-17	Final examinations
DEC. 17—TUESDAY	Quarter ends

For further information concerning subsequent quarters inquire at the Registrar's Office.

OBSERVANCE OF UNIVERSITY RULES AND REGULATIONS

It is the University's expectation that a student will follow University rules and regulations as they are stated in the Bulletins. In instances where no appeal procedure is spelled out and the student is persuaded that a special set of circumstances makes appeal reasonable, he may appeal the application of specific rules or regulations to the Office of the Dean of the School or College in which he is enrolled in the case of an academic matter, or to the Office of the Dean of Students in the case of a nonacademic matter. These offices will either render a decision on the appeal or refer the student to the proper office for a decision.

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

ADMINISTRATION

BOARD OF REGENTS

JOSEPH DRUMHELLER, <i>President</i>	Spokane
MRS. A. SCOTT BULLITT, <i>Vice-President</i>	Seattle
JOHN L. KING	Seattle
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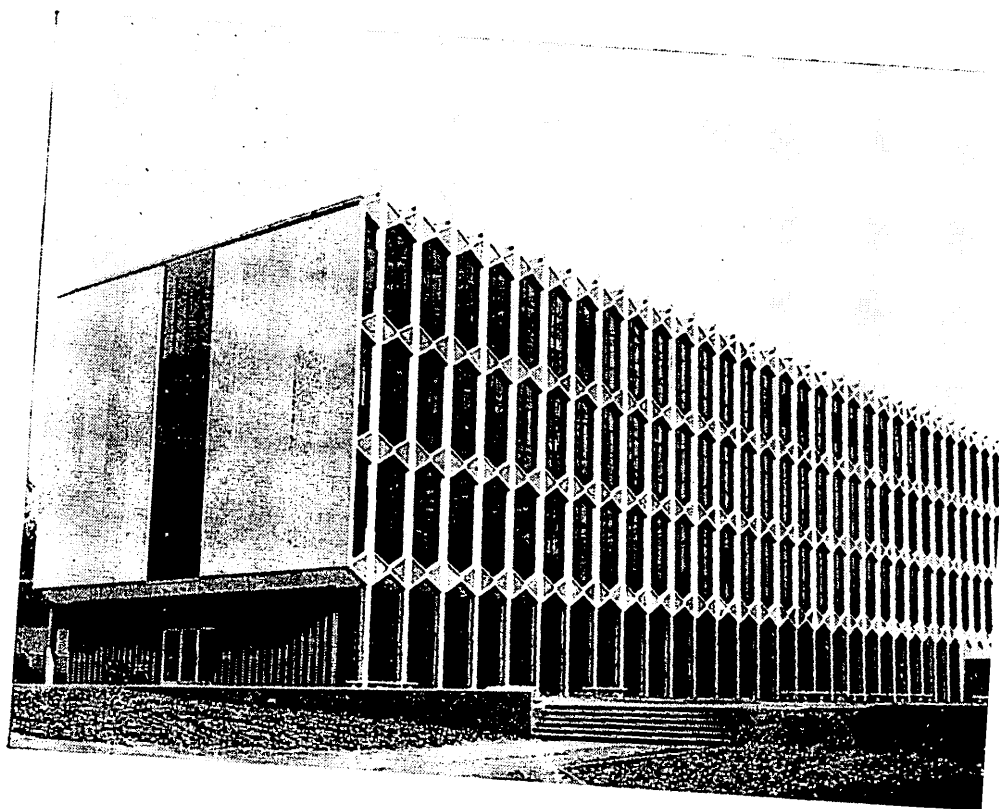
DON H. WAGEMAN, *Treasurer*

OFFICERS OF ADMINISTRATION

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FREDERICK P. THIEME, Ph.D.	<i>Provost of the University</i>
GLENN H. LEGGETT, Ph.D.	<i>Vice-Provost of the University</i>
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HAROLD A. ADAMS, M.S.	<i>Director of Admissions</i>
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HAROLD E. WESSMAN, Ph.D.	<i>Dean of the College of Engineering</i>
W. RYLAND HILL, M.S.	<i>Associate Dean of the College of Engineering</i>
JAMES W. SOUTHER, M.A.	<i>Assistant Dean of the College of Engineering</i>

COLLEGE OF ENGINEERING EXECUTIVE COMMITTEE

DEAN H. E. WESSMAN, <i>Chairman</i>
W. RYLAND HILL, <i>Associate Dean</i>
J. W. SOUTHER, <i>Secretary</i>
R. J. H. BOLLARD, <i>Aeronautical Engineering</i>
R. W. MOULTON, <i>Chemical Engineering</i>
C. H. NORRIS, <i>Civil Engineering</i>
A. V. EASTMAN, <i>Electrical Engineering</i>
V. B. HAMMER, <i>General Engineering</i>
S. W. CHAPMAN, <i>Humanistic-Social Studies</i>
B. T. MCMINN, <i>Mechanical Engineering</i>
D. A. PIFER, <i>Mineral Engineering</i>
F. B. FARQUHARSON, <i>Engineering Experiment Station</i>
E. C. ELLIOTT, E. E. DAY, J. I. MUELLER, <i>Faculty Representatives-at-Large</i>



GENERAL INFORMATION

GENERAL INFORMATION

IN THE SPRING of 1861 three forward-looking Seattle citizens, Arthur A. Denny, Judge Edward Lander, and Charles C. Terry, deeded ten acres of land for the establishment of a new university in what was then Washington Territory. Several months later, on November 4, 1861, the University of Washington opened the doors of a new frame building where the twenty-two-year-old "principal," Asa Shinn Mercer, began the instruction of thirty-one students, many of them young men recruited from nearby logging camps.

By 1889, when Washington was admitted to the Union, the University had achieved a consistent program and an enrollment of more than one hundred students. But it was clear that the original building would soon be inadequate and that the University would need more room for development. In 1891 the new University site, the present 600-acre campus between Lake Washington and Lake Union, was selected. The first of the new buildings, Denny Hall, was completed in 1894 and occupied for the first time in September, 1895, when the University's enrollment was 425 students. (The original campus is now the center of downtown Seattle. The Olympic Hotel stands on the ground occupied by the first University of Washington building.)

The plan to establish curricula in engineering was formulated at the time the University was preparing to move to its present campus. Instruction in mining engineering was authorized by the Regents in 1893 and the Catalogue of 1894-95, which listed courses in civil engineering, including surveying, descriptive geometry, hydraulics, irrigation, and strength of materials, also announced that instruction in electrical engineering was planned for 1895. It was not until 1898, however, that the Department of Civil Engineering and the School of Mining Engineering were established on a firm basis with qualified faculty members. In 1901 the sporadic courses in electrical engineering were brought into a definite curriculum.

The College of Engineering was recognized as a major unit of the University in 1899, when Professor Almon H. Fuller was appointed the first Dean of Engineering. The first engineering degree was awarded in 1900 in mining engineering. The first degree in civil engineering was awarded in 1901, the first degree in electrical engineering in 1902, the first degree in mechanical engineering in 1906, and the first degree in chemical engineering in 1907. The Department of Aero-

naval Engineering was established in 1929 and its first degrees awarded in 1930.

In 1911 the School of Mines became the College of Mines, and in that year the Northwest Mine Rescue Station of the United States Bureau of Mines was established at the University. Later, in 1916, the Training Station was joined by the Northwest Experiment Station, a coal and nonmetallic mining laboratory of the Bureau. The College of Mines remained a college until 1947, when it became the School of Mineral Engineering within the College of Engineering.

In 1955 there was established a graduate program in Nuclear Engineering leading to the degree of Master of Science in Engineering, and the first degree was awarded in 1958. An interdepartmental graduate program in Engineering Mechanics was initiated in 1961.

The College of Engineering, participating in the technological development of the Northwest, has shared the University's rapid growth. The College has a faculty of more than a hundred and fifty members. In 1960 some twenty-two hundred undergraduate and six hundred graduate students were enrolled in engineering curricula.

ENGINEERING AS A PROFESSION

The student interested in engineering and science should realize that many of the technical and scientific feats of today involve the joint efforts of teams of engineers, scientists, and engineering technicians. Each has his part to play.

Engineers use the principles of science and of engineering to create things that people need or want, such as highways, machine tools, airplanes, gasoline, television, or city planning. Scientists discover new principles; engineers make them useful. The scientist studies a carefully isolated aspect of reality and develops theories concerning its behavior. He is interested in knowledge for its own sake.

The engineer deals with reality in its many aspects. He must not only be competent to understand and use the methods of science, but he must be able to use his ingenuity to devise a product or process that will be useful and economical. Moreover, he must assume professional responsibility concerning the safety and wellbeing of people affected by his works.

Assisting the engineer and the scientist is the engineering technician. His work is more practical and applied and requires about two years of post high school training in a technical institute or junior college. He works closely with the engineer to test models, to assist in their development, and to put engineering designs into production.

The truly qualified scientist usually must have a college education extending past the four-year bachelor's degree to the Doctor of Philosophy degree. The engineer with the bachelor's degree, on the other hand, is more immediately useful to industry for many technical positions. However, many engineers now need graduate study leading to master's and doctor's degrees, particularly if they plan to engage in research, in college teaching, or in creative design on a high professional level. Students with academic aptitudes should seriously consider at least a fifth year of specialization.

EDUCATIONAL OBJECTIVES

The College of Engineering offers educational programs in the various fields of engineering with five main aims: (1) to provide a strong undergraduate engineering education leading to the bachelor's degree and enabling some students immediately to enter the engineering profession, (2) to provide a fundamental scientific and technical foundation for graduate studies, (3) to provide a stimulating program of graduate studies and research for students who have the potential to pursue such programs successfully, (4) to permit the outstanding student to realize his full capabilities and develop those qualities which eventually will

make him a leader in the profession, and (5) to inculcate in each student the desire to read, study, and progress professionally "on his own."

Although engineering education is aimed primarily at providing the scientific and technical foundation required for the profession, each curriculum includes courses in the humanities and social studies to broaden the student's knowledge, increase his sense of responsibility, and help him live more effectively as an individual engineer and citizen.

In recognition of the responsibility of the University for the development of knowledge and the training of research personnel, the College has active graduate programs beyond the Baccalaureate in all engineering departments. The College has also developed an expanded research program at every level in these departments. Not only does this research advance engineering knowledge, but it is an integral part of the educational experience needed to qualify men for research and development positions, or for careers in engineering teaching.

BUILDINGS AND FACILITIES

The departments of the College of Engineering occupy seven major campus buildings: More Hall (Civil), Hydraulics Laboratory (Civil), Electrical Engineering Building, Roberts Hall (School of Mineral Engineering), Guggenheim Hall (Aeronautical and Humanistic-Social Studies), General Engineering Building, and Mechanical Engineering Building. In addition to numerous smaller isolated laboratories, substantial portions of the following buildings are also used: Bagley Hall (Chemical Engineering), and Engineering Shops (Mechanical Engineering). Brief descriptions of the departmental facilities are given in the following paragraphs.

AERONAUTICAL ENGINEERING

Equipment is available, or is presently under construction, for laboratory instruction and experimental investigations in the fields of aerodynamics, gas dynamics, magneto-hydrodynamics, elastic and inelastic structures and materials, high temperature and vacuum effects on materials and structures, heat transfer and wave propagation in solids.

The largest facility is the self-contained F.K. Kirsten aeronautics laboratory housing an 8 by 12 foot 250 mile per hour wind tunnel specifically designed for advanced research projects and industrial testing. A hypersonic shock tunnel is located in a temporary self-contained facility.

All other laboratories are housed in Guggenheim Hall at this time with planned expansion into a new facility in the near future. These laboratories contain a fully equipped supersonic and subsonic testing facility with development underway of the gas dynamics and magneto-hydrodynamics facilities. Adjacent to these, and as part of the instructional laboratory complex, is the structures and materials laboratory equipped to investigate elastic and inelastic behavior of structures and materials with the capability of producing high vacuum environments.

These facilities are maintained and expanded by a well-equipped machine, electronics, and model shop which is available to all students and staff engaged in experimental research. An instrumentation laboratory devoted to the study of systems is under development. Adequate computer facilities are available on the campus.

CHEMICAL ENGINEERING

The Department of Chemical Engineering is in Bagley Hall, where, in addition to 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. Grinding and sieving equipment is

in a separate room. A unit processes 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 electro-chemistry. 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.

CIVIL ENGINEERING

More Hall, the civil engineering building, has modern structural, concrete, mineral aggregates, soil mechanics, bituminous, dynamics, 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, microscopic, and radiological analysis of water, sewage, and industrial waste 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 an outdoor laboratory for construction and study of models of river channels.

ELECTRICAL ENGINEERING

The Department of Electrical Engineering is housed in Electrical Engineering Hall, a three-story building of modern design completed in 1948. All laboratories and most of the research facilities are included in the approximately 80,000 square feet of this building. Some classroom and office space is also provided in Mechanical Engineering Hall across the street. Most classrooms are designed to accommodate a maximum of 24 students each.

Laboratories include two large undergraduate laboratories in which most of the sophomore and junior work is done. A number of smaller laboratories are also provided in such specialized areas as microwaves, controls, fields, solid-state electronics, computers, servo-systems, acoustics, measurements, and transients, most of which are used by both graduate and undergraduate students.

A 44-acre site in the south end of Seattle provides a field laboratory devoted to study of antennas, radio propagation, satellite reception, ionosphere measurements, etc.

Graduate students are usually assigned to one of the smaller laboratories or to a field site where they carry on research leading to a thesis, under the supervision of a graduate faculty adviser.

GENERAL ENGINEERING

The Department of General Engineering occupies a new, centrally located, modern, four-story building, especially designed for the use of the first-year engineering student. Besides adequate classrooms and offices, the building contains a student reading and study room, a blueprinting room with a high-speed printing and developing machine, a shop for model building, and a lecture and motion picture auditorium seating 160.

HUMANISTIC-SOCIAL STUDIES

The Department of Humanistic-Social Studies has its offices, classrooms, and library in Guggenheim Hall. Its library contains books in a wide variety of non-technical fields, located on open shelves where they are readily accessible to those who wish either to study or browse. In addition to the usual audio-visual equipment, the Department maintains a library of records which are loaned to students either to play at home or on the Department's own equipment.

MECHANICAL ENGINEERING

A new building, occupied in June, 1959, and containing 100,000 square feet, houses all of the activities of the department except those in manufacturing processes, which are located in an adjacent building. Approximately 15,000 square feet are devoted to laboratory instruction and research facilities for the study of engineering materials, experimental stress analysis, instrumentation, and vibration. All the usual physical testing equipment is available in these laboratories. The experimental stress analysis and non-destructive testing areas are especially well-equipped. The instrumentation laboratory contains facilities for the study of automatic control, including apparatus to demonstrate principles by electronic, pneumatic, and hydraulic analogs. A well-equipped instrument and experimental shop is an adjunct of these laboratories.

Instructional and research laboratories serving the thermodynamics, gas dynamics, and heat transfer areas, occupy about 18,000 square feet and are equipped to exemplify the modern trends in heat power laboratory instruction and also to lend themselves to research. Substantially all of the equipment is new. Molten-metal and water heat transfer loops are housed in special quarters and are instrumented to be used effectively in undergraduate and graduate instruction as well as for research in nuclear reactor applications. Facilities are provided for instruction and research in the use of radiation-tracer techniques in lubrication and wear studies. Solar heat collectors and associated equipment are mounted on the roof of the building. Through cooperation of the United States Navy, rocket dynamometer test stands of the department are quartered at the Sand Point Naval Air Station, two miles from the campus.

The manufacturing methods laboratories are arranged and outfitted to demonstrate the basic principles of forming and fabricating engineering materials, and also to provide for laboratory exercises and research work in methods analysis, quality control, plant layout, and economic studies of production.

MINERAL ENGINEERING

CERAMIC ENGINEERING. The laboratories of the Ceramic Engineering Division are made up of five groups, the first of which contains facilities for grinding and classifying raw materials, mixing and tempering them, and forming these materials into shapes. The second group, principally in the Hewitt Wilson Ceramic Laboratory, contains the various kilns necessary for firing and testing ceramic ware. Included in these are a small scale continuous electric-fired tunnel kiln and a small rotary kiln. A larger rotary kiln of sufficient size for pilot-plant experiments is also available outside this building. A physical testing laboratory makes up the third unit, also in the Hewitt Wilson Laboratory. The fourth group is the coatings laboratory in which glazes for ceramic ware and coatings for materials are prepared, applied, and fired. The research laboratory is the fifth of these groups and contains the equipment needed for specialized undergraduate and graduate research including a supercentrifuge for sub-sieve particle size determination, thermal expansion unit, differential thermal analysis equipment, and petrographic microscopes for mineral identification and analysis and electro-dialysis equipment. For X-ray diffraction, the laboratory is equipped with the latest Norelco diffraction and fluorescent analysis units by means of which either the direct reading techniques or camera technique can be employed.

METALLURGICAL ENGINEERING. The Division of Metallurgical Engineering maintains a laboratory with facilities for extractive process and physical metal-

lurgical investigations. The process laboratories are equipped for studies in sintering, roasting, smelting, 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, a metallographic laboratory with several dark rooms, and a heat treatment laboratory with furnaces ranging from salt-bath to controlled atmosphere and vacuum units. Other equipment is available for dilatometry, resistivity measurements, and special quenching techniques. The X-ray diffraction laboratory features spectroscopy, fluorescent units, and recording goniometric equipment together with the usual camera units. Alloys are prepared in a 17-Kva induction furnace. A separate laboratory is established for work in nuclear metallurgy. 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 machines of the latest design. Mining practices are studied with the aid of models, maps, and frequent field trips. An equipment catalog file enables the student to relate class problems to field practice. Case problems from actual mine operation are used for instruction, following the study of fundamental elements. The important coal fields of western Washington, the mining districts of the Cascade Mountains, and the large quarry industry of Puget Sound afford opportunity to observe 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 for research in all milling problems. A microscopy and fine-sizing laboratory is used in the basic approach to concentration and grinding problems. A 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. A crushing and screening laboratory and a sampling room complete the special facilities. A wide variety of ores are in storage and available for experimental testing. In cooperation with the school, the U.S. Bureau of Mines maintains the most extensive coal preparation laboratory in the West, and wide recognition is accorded the research performed in it. Graduate students work with the Bureau staff.

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 by summer field courses held in other localities. A feature of the senior year is field study, under supervision of faculty members, of the geology of a mine or a prospect.

NUCLEAR ENGINEERING

The nuclear engineering program is a cooperative effort of the Departments of Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, and Metallurgical Engineering. Each department offers laboratory facilities for training in one or more of the specialized fields of nuclear engineering. See page 79 for a detailed description of the nuclear engineering laboratories and facilities.

ENGINEERING EXPERIMENT STATION

In a typical year the total number of research projects active in the College of Engineering approximates seventy-five of which approximately 35 per cent are

sponsored by the Engineering Experiment Station. These E.E.S. projects are manned by half-time graduate research assistants who are subsidized by the Experiment Station which also provides a suitable subsidy for equipment and supplies. All investigations are carried on by research assistants under the supervision of the teaching faculty.

The Experiment Station publishes *The Trend in Engineering*, a quarterly journal of research, as well as occasional bulletins growing out of faculty research. *The Trend in Engineering* is sent to about 350 foreign institutions, generally on an exchange basis.

ADMISSION TO THE UNIVERSITY AND TO THE COLLEGE

PRELIMINARY STATEMENTS

The Board of Admissions, which is appointed by the President, is responsible for the interpretation and administration of the regulations governing admission to the University.

The University recognizes high school diplomas, college credits presented for advance standing, and college degrees earned in the following institutions: (1) high schools accredited by the Washington State Department of Public Instruction; (2) out-of-state high schools accredited by their state university and state department of public instruction, or by the regional accrediting association of the area; (3) colleges and universities accredited by their regional accrediting association.

Resident. Defined for purposes of admission and/or assessment of fees as an individual who has been domiciled in the state of Washington for one year immediately prior to his registration. The domicile of a minor is that of his parents or his legal guardian. The children of federal employees residing within the state of Washington and the children and spouses of staff members of the University are considered as residents for tuition purposes.

Nonresident. An applicant whose credentials are received from a school or college located outside the state of Washington. An applicant who believes himself eligible for resident status may apply for reclassification through the Office of Residence Classification which has final authority in determining such status.

Qualified Student. One whose scholastic standing and preparation meet the standards for admission to the University.

Regular Student. One who fulfills the following requirements: (1) has been granted unqualified admission to a college or school of the University; (2) whose current program of studies is satisfactory to the dean of his college or school; (3) has received medical clearance from the Student Health Service and has completed all of the required steps for registration, including the payment of tuition and fees, the filing of class cards, and the depositing of registration materials at Sections.

Grade-point averages. These are based on a four-point system in which A=4, B=3, C=2, D=1, E=0. An adjustment to this system is made as necessary in the computation of grade-point averages earned at other institutions.

ADMISSION OF WASHINGTON RESIDENTS

ELIGIBILITY FOR ADMISSION WITH FRESHMAN STANDING

Undergraduate programs, offered by the University lead to the baccalaureate degree; students, therefore, are admitted when, in the judgment of the University, they appear qualified to pursue a degree program with a reasonable probability of success. In making this judgment, the University's Board of Admissions considers the applicant's total record, including such factors as scholastic achievement in a college preparatory program, recommendations of the high school principal

or counselor, rank in class, and scores on any nationally administered tests associated with college entrance.

Scholastic achievement is measured largely in terms of the criteria listed below. All students entering the University are expected to meet these criteria. Non-residents and students who enter with advanced standing will find additional admission criteria in subsequent sections.

SCHOLASTIC CRITERIA

1. Graduation with diploma from an accredited high school.
2. Achievement of an over-all high school grade-point average of at least 2.50 in courses completed after September, 1960, and a grade-point average of at least 2.00 in courses completed prior to September, 1960.
3. Completion of a college preparatory program of at least 16 units to include the following:
 - a. English at least 3 units
 - b. One foreign language at least 2 units
(Effective Autumn, 1964)
 - c. College preparatory mathematics at least 2 units
 - d. One laboratory science at least 1 unit
 - e. Social science at least 2 units
 - f. Electives from the above subjects at least 2 units

Intermediate algebra, trigonometry, physics, and chemistry are prerequisites for the first-year courses in engineering. Students who fail to include these subjects in high school must study equivalent courses at the University in addition to the normal required program. This may extend the time needed to obtain a degree. The College also recommends that students elect a fourth year of mathematics and senior composition when possible.

Because an appropriate choice of high school electives serves to strengthen a student's preparation, the University will give this part of a student's record the same careful attention it gives to other aspects of his qualifications.

Junior High School Courses. The University recognizes college preparatory courses given in the junior high school and assigns them the same value as equivalent courses offered by the high school. Students who elect these subjects in the junior high school may subsequently achieve a superior degree of competence in related subject areas in high school.

Accelerated, Honors, and Advanced Placement Courses. The University encourages qualified students to extend themselves academically by taking advantage of advanced, accelerated, and honors courses offered by their schools. Successful participation in such challenging opportunities assures superior academic preparation and serves to identify those students more likely to profit from University-level honors courses.

The University of Washington grants placement and/or credit, at the discretion of the University department concerned, on the basis of scores earned in College Entrance Examination Board Advanced Placement Examinations, and on the basis of placement examinations administered to entering students (see "Required Tests and Examinations," page 26).

ELIGIBILITY FOR ADMISSION WITH ADVANCED STANDING

A qualified student in good standing at an accredited institution may apply for admission with advanced standing. Such an applicant is expected to have the same high school preparation as the student who enters as a freshman, and to have a college grade-point average which meets the standards herein specified.

With fewer than 45 acceptable credits, an applicant must present a grade-point average of 2.50 in high school work completed after September, 1960; a 2.00

grade-point average in such work completed prior to this date; and a 2.30 cumulative average in all college work.

With 45 or more acceptable credits an applicant is expected to present a cumulative and last-term grade-point average of at least 2.30.

The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted.

Regulations concerning the transfer of credit may be found on page 109.

ADMISSION OF SPECIAL STUDENTS AND AUDITORS

Non-high school students who are 21 or older and legal residents of Washington may apply to the Board of Admissions for admission with special standing. With their applications, they must submit all available records of secondary school and college study. Special students may register in and take for credit whatever courses the Dean of the College permits, but may not participate in student activities or receive degrees. By fulfilling conditions specified by the Board of Admissions, special students may change their status to that of regular students and may receive degrees.

Persons 21 or older may register as auditors in nonlaboratory courses or the lecture sessions of laboratory courses by obtaining the consent of the Dean of the College and the instructors of the courses. Auditors do not participate in class discussion or laboratory work. They may receive credit for audited courses only by enrolling in them as regular students in a subsequent quarter.

ADMISSION OF NONRESIDENTS

ADMISSION OF NONRESIDENTS TO UNDERGRADUATE STANDING

Applications from nonresidents will be considered, but first preference is given legal residents of the state of Washington, and sons and daughters of University of Washington alumni residing outside the state.

Nonresident applicants are selected on the basis of their preparation and scholastic standing. In general, a freshman applicant must be eligible to enter the university of his own state, and satisfy the foregoing scholastic criteria with a 3.00 (B) grade-point average or place in the upper 25 per cent of his graduating class.

An applicant for admission with advanced standing with fewer than 45 college credits must have a cumulative grade-point average of at least 3.00 in standard college courses as well as a high school grade-point average of at least 3.00 or have been in the upper fourth of his class. An applicant presenting more than 45 credits for advanced standing must present a 2.70 grade-point average in standard college courses. For regulations on transfer of credit, see page 109.

Sons and daughters of University of Washington alumni are admitted according to resident standards but are required to pay the regular nonresident tuition fees. Applicants for admission to curricula in which the University serves on a regional basis will be accorded special consideration by the Board of Admissions.

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Applicants for admission with graduate or advanced undergraduate standing are expected to meet the same general requirements as nonresidents of Washington educated in American schools. However, they must file their credentials before March 1 to be considered for admission Autumn Quarter, or six months before the opening of another quarter in which they may wish to enroll. In addition, they must demonstrate a satisfactory command of the English language and must have sufficient funds available in the United States to meet their expenses.

The official record of the Canadian student is the matriculation certificate or university admission certificate of his province. Canadian and foreign students who have been in university attendance must have official transcripts forwarded as required of all students. High school graduates and university transfer students must meet the scholarship requirements for nonresident students. See above.

UNDERGRADUATE ADMISSION, EXCEPTIONAL CASES

(See page 109.)

ADMISSION TO THE GRADUATE SCHOOL

Basic requirements for admission to the Graduate School are a bachelor's degree from an institution of recognized standing, a grade-point average of 3.00 in the junior and senior years of college work, approval of the Graduate School, and approval of the department in which the work is to be taken. For complete information, see the *Graduate School Bulletin*.

ADMISSIONS PROCEDURE

Requests for Application for Admission forms and correspondence regarding admission to any college or school of the University should be addressed to the University of Washington, Office of Admissions, Seattle 5, Washington. Graduates of high schools in the state of Washington may obtain this form from their principals.

Applications and required transcripts must be filed with the Office of Admissions prior to the following dates in order to be assured of consideration for admission to the quarter for which application is being made: July 15 for Autumn Quarter; December 1 for Winter Quarter; March 1 for Spring Quarter; May 15 for Summer Quarter.

All records become a part of the official file and can neither be returned nor duplicated for any purpose. Failure to submit complete credentials will be considered a serious breach of honor, and may result in permanent dismissal from the University.

A leaflet giving general information and instructions for registration is mailed with the Notice of Admission. In the event of a discrepancy, instructions in the leaflet supersede those found in earlier publications. *The University assumes no responsibility for applicants who come to the campus before they have been officially notified of their admission.*

The admissions credentials of applicants who do not register for the quarter to which they have been admitted are normally retained in the Office of Admissions for a period of one year from the date of application. At the end of this period, credentials on file are discarded unless the applicant has notified the Office of his continued interest in attending the University or of his enrollment in the Evening Classes program. Should a student wish to renew his application after the one-year lapse, he must submit new credentials in advance of the date given above for the quarter desired.

FOR FRESHMAN STANDING

An application form, obtained from the University's Office of Admissions or from a Washington high school, should be completed according to instructions appearing on the form and returned to the Office of Admissions.

Students may apply through their high schools on completion of the first semester of the senior year. Those who are qualified will be issued notices of early or conditional admission which become valid on graduation with a grade-point average of no less than 2.50 for the final semester. Others also will be notified of their admission status.

Scores on a nationally administered college aptitude test are not required. However, they may be helpful in evaluating a borderline student's probability of success.

FOR ADVANCED UNDERGRADUATE STANDING

An application form, obtained from the University's Office of Admissions or from a Washington junior college, should be completed according to instructions

appearing on the form and sent to the Office of Admissions. In addition, the applicant should request the principal of his high school and the registrar of each college he has attended to forward an official transcript of his record to the University's Office of Admissions. When these credentials have been evaluated, the applicant will be notified of his admission status.

FOR GRADUATE STANDING

An application form, obtained from the University's Office of Admissions, should be completed according to instructions appearing on the form and returned to the Office of Admissions. In addition an applicant should request the registrar of each college or university in which he has been enrolled as an undergraduate or graduate student to forward *two* official transcripts to the University's Office of Admissions. When these credentials have been evaluated, the applicant will be notified of his admission status. The student will find it convenient to have an additional copy of the record for reference.

VETERANS

ADMISSION OF VETERANS

Veterans and children of deceased veterans should meet the general admission criteria and follow the general procedures outlined for all applicants. Applications for and questions about government aid should be addressed to the Veterans Division Regional Office.

WORLD I OR II VETERANS

Under certain conditions a veteran of World War I or II who is not eligible for Veterans Administration benefits is fully or partly exempt from tuition charges. See page 113.

KOREAN VETERANS

A Korean veteran under Public Law 550 should obtain admittance to the University prior to making application for a Certificate for Education and Training, thus eliminating the chance of obtaining a certificate valid for an incorrect degree. If the veteran has any questions regarding application for a certificate, he should consult the Veterans Division, Safety Division Building. (Regulations concerning the Certificate are listed on page 110.) Educational allowance payments are made directly to the veteran by the Veterans Administration after the veteran and institution submit a monthly attendance certification.

DISABLED VETERANS

A veteran with a disability under Public Law 894 should contact a training officer in the nearest Veterans Administration Office approximately four weeks prior to registration.

CHILDREN OF DECEASED VETERANS

Public Law 634 grants federal benefits to children of deceased veterans of World War I, World War II, or the Korean Conflict who died as a result of injury or disease incurred or aggravated while in the service. Information regarding eligibility under this law should be requested from a Veterans Administration Regional Office.

The Certificate for Education and Training issued to those eligible persons by the Veterans Administration is to be presented, along with the Program of Studies, to the Veterans Division, Safety Division Building, as soon as registration is completed.

Credit requirements for monthly subsistence for Public Law 634 students are the same as those listed for Public Law 550 students. Public Law 634 students may not be authorized for less than half-time subsistence.

REQUIRED TESTS AND EXAMINATIONS**Washington Pre-College Testing Program**

This grade prediction test is required of all entering freshmen, including those transferring to the University with fewer than 45 credits. In order to identify transfer students needing remedial instruction in English, the test is also required of those who have not completed a course equivalent to English 101 (English composition). High school seniors are advised to arrange through their high schools to take this test in the spring when it is offered throughout the state of Washington. Nonresidents of Washington may take the test at the time of their registration according to instructions mailed with the notice of admission. Sample copies are not available. Special, foreign, blind students, and auditors are exempted.

The several parts of this test have been selected because of their proven value for the prediction of grades most likely to be earned by a student. The results of the test are used by departmental advisers as an aid in assigning students to appropriate sections in English composition and other subjects. Therefore, it is advisable that the student bring a copy of the results with him when he comes for his first conference with his counselor or adviser.

Mathematics Placement Tests

One section of the Pre-College Test evaluates a student's mastery of intermediate algebra and plane geometry, while an additional placement test evaluates his knowledge of trigonometry. Satisfactory scores on these tests qualify a student to enroll in Mathematics 105 (College Algebra), the normal beginning point of the Mathematics curriculum in Engineering.

Those who fail to qualify in both algebra and trigonometry may choose one of the following alternative plans:

1. Pass Mathematics 101 and then take 104, or 105, or both. No credit is given for Mathematics 101 to engineering students.
2. Pass Mathematics 103, in which the first four weeks are devoted to a review of intermediate algebra and the last six weeks to the study of plane trigonometry equivalent to Mathematics 104. The satisfactory completion of this course qualifies a student to enroll in Mathematics 105 (College Algebra).

Students who pass the algebra qualifying test but fail to qualify in trigonometry must take Mathematics 104 (Trigonometry) in addition to the regular engineering mathematics sequence.

Students who have studied fourth semester algebra, mathematical analysis, or similar subjects in high school, will be placed in the next appropriate course at the University according to their scores in additional placement tests given by the Department of Mathematics. It is advisable to review before taking these examinations.

Medical Examination

A student entering the University for the first time, or returning to the University after an absence of more than one calendar year, or who has previously attended Summer Quarter classes but is entering regular University classes for the first time, is required to submit to the Student Health Service (Hall Health Center) a form containing his health history and a report of a physical examination by a physician. The form will be sent to new students by the Office of Admissions, and to returning former students by the Registrar. This examination, which is required before a student may register, is taken at the student's expense. A chest X ray, also required of the above students, is given at the Student Health Service without charge.

With the exception of Canadian students, who will follow the above instructions, foreign students must take the required physical examination at the Student Health Service when they arrive on the campus.

REGISTRATION

PROCEDURE

ALL students, currently in school, who plan to register for a succeeding quarter (Summer Quarter excepted) must register by Advance Registration and pay fees by the stated deadline. Students are held responsible for knowing and observing registration procedures, dates, and deadlines which appear in the bulletins, in "Official Notices" in the *Daily*, and on campus bulletin boards.

New students are given appointments when they are notified of admission, and they receive complete directions for registering at the time of registration.

Students expecting to return to the University after an absence of a quarter or more (excluding Summer Quarter) must register by In-Person Registration. The required registration appointment may be obtained by writing to, calling at, or telephoning the Registrar's Office at the same time specified in the Calendar, but in no case later than the stated deadline. (See pages 4-11.)

ADVISING

After notification of admission and before registration, new freshman and transfer students may write to the Executive Office of the Department of General Engineering for help concerning any special problems which may arise in connection with their registration. Academic advising for all freshmen and for transfer students in their first quarter is done through the Department of General Engineering. Other students are advised by the executive officer and staff of their major department.

REGISTERED CREDITS ALLOWED EACH QUARTER

Except with the consent of his dean, no student may be registered for less than 12 credits (or the equivalent) or more than 16 credits (or the equivalent) or the number called for in the prescribed curricula, exclusive of physical education activity courses and lower-division military, naval, or air science courses. In no case may a student be registered for, or receive credit for more than 20 credits (or the equivalent) of work, exclusive of physical education activity courses and lower-division military, naval, or air science courses. Work taken in noncredit courses or concurrently in extension classes, by correspondence study, or in another collegiate institution, must be included in the computation of the total registered credits allowed.

CHANGES OF REGISTRATION

After students have registered, they cannot change their schedules except with permission of the Dean or Associate Dean of the College. No student is permitted to make a registration change that involves entering a new course after the first calendar week of the quarter. After that time no student may register without the consent of the Dean or Associate Dean and the instructor whose class the student wishes to enter.

WITHDRAWAL FROM COURSES OR FROM THE UNIVERSITY

See page 111.

SCHOLARSHIP

Grade points per credit are awarded on the following basis: a grade of A earns 4 points; B, 3 points; C, 2 points; D, 1 point. The grade of E or EW signifies failure and the grade point is 0. The quarterly and cumulative grade-point averages are computed by multiplying the grade point received in a course by the total number of credits the course carries, totaling these values, and dividing by the total number of credits the student attempted. Courses for which any of the following symbols are recorded are not considered in determining the grade-point average: I, N, S, W, PW, X. Grade-point averages are calculated on the basis of

all grades received in courses which carry academic credit, including courses repeated. Grades received in repeated courses do not cancel or replace any other grades. Only University of Washington residence credits will be used in these computations.

Any undergraduate student who has completed three or more quarters in the University and whose cumulative grade-point average is below 2.00 shall be placed on academic probation. Any undergraduate student who has completed not more than two quarters at the University shall be placed on probation when his cumulative grade-point average is below 1.80. The dean of the school or college in which the student is enrolled shall notify the student as soon as possible that he is on probation. Such action will be noted permanently on the student's official academic record.

Academic probation is essentially a warning to the student that he must show improvement if he is to remain in the University. University regulations regarding scholastic eligibility for participation in intercollegiate athletics and other student activities shall be recommended to the Senate by the Faculty Committee on Intercollegiate Athletics and the Faculty Committee on Student Welfare respectively.

An undergraduate student on academic probation will be removed from probation at the end of any quarter in which his cumulative grade-point average reaches 2.00 or better.

Any undergraduate student on academic probation will be dropped: (1) if he fails to attain at least a 2.00 for the following quarter's work; or (2) if he fails to attain a 2.00 cumulative average at the end of the two subsequent quarters. Any student dropped under this rule will be notified in writing of this action by the dean of the school or college in which he is enrolled.

Only under exceptional circumstances will a student dropped under low scholarship rules be readmitted to the University. Such a student will be readmitted only at the discretion of the dean of the school or college to which he seeks admission. A student readmitted after being dropped under these rules will enter on academic probation. Such a student will be dropped: (1) if he fails to attain a 2.00 for the following quarter's work; or (2) if he fails to attain a 2.00 cumulative average at the end of two quarters. He will be removed from probation at the end of the quarter in which his cumulative grade-point average reaches 2.00 or better.

A senior who has completed the required number of credits for graduation but whose work in what would normally be his final quarter places him on probation will not receive a degree until he has been removed from probation. A senior who has completed the required number of credits for graduation but whose work in his last quarter results in his being dropped for low scholarship shall not receive a degree until he has been readmitted and removed from probation.

Senior standing is attained when 135 credits, plus the required quarters of ROTC and physical education, has been earned. Of the work of the senior year (45 credits), at least 35 credits must be earned in three quarters of residence. The remaining 10 credits may be earned either in residence or in this University's evening classes or correspondence courses.

QUALIFICATIONS FOR GRADUATION

MINIMUM SUBJECT REQUIREMENTS

For graduation, the College of Engineering requires completion of one of the prescribed engineering curricula, including the required quarters of physical education activity and military training. This requirement supersedes the minimum credit requirement of the University (180 academic credits plus physical education activity and military training). No more than 9 quarter credits in advanced ROTC courses may be counted toward graduation. Grades earned at other institutions may not be used to raise the grade-point average at the University of Washington.

Military Training. The University requires male students who enter the University as freshmen or sophomores to complete six quarters of military training.

The Departments of Air Science, Military Science, and Naval Science conduct the ROTC programs under agreements between the University and the United States Air Force, Army, and Navy. At the University, these programs are coordinated by the Dean of the College of Engineering. Complete descriptions of the military training program may be found on page 111.

Physical Education Activity Courses. Students who enter the University as freshmen are required to complete one physical education activity course each quarter for the first three quarters of residence. In fulfilling the foregoing requirement, all students must pass a swimming test or satisfactorily complete one quarter of swimming. In fulfilling the three-quarter requirement, no activity course may be repeated for credit. Regulations concerning activity courses may be found on page 112.

Health Courses. All students who enter the University as freshmen are required to take Health Education 110 (women) or 175 (men) within the first three quarters of residence. The health education course requirement may be satisfied by passing a health-knowledge examination. Successfully passing this test exempts the student from the requirement but does not grant credit for Health Education 110 (women) or 175 (men). Veterans with one year or more of active service are exempt from this requirement.

ESTIMATE OF YEARLY EXPENSES

The figures given below are minimum estimates for an academic year, which includes Autumn, Winter, and Spring Quarters. Living costs and personal expenses vary widely with the needs of the individual student.

Tuition, Incidental, and ASUW Membership

Full-time resident student	\$300.00
Full-time nonresident student	600.00

<i>Athletic Admission Ticket</i> (optional)	6.50
---------------------------------------------	------

<i>Health and Accident Insurance</i> (optional)	16.50
-------------------------------------------------	-------

<i>Extra Service Charges and Rentals</i>	38.50
------------------------------------------	-------

Military uniform deposit, breakage ticket, and locker charges.

<i>Books and Supplies</i>	90.00
---------------------------	-------

Board and Room

Room and meals in Men's Residence Halls	675.00
-----------------------------------------	--------

Room and meals in Women's Residence Halls	615.00-720.00
-------------------------------------------	---------------

Room and meals in fraternity or sorority house (Including dues and social assessments.)	670.00-760.00
--------------------------------------------------------------------------------------------	---------------

Initial cost of joining is not included; this information may be obtained from the Interfraternity Council or Panhellenic Council.

<i>Personal Expenses</i>	300.00
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FEES, EXTRA SERVICE CHARGES, AND RENTALS

All fees, extra service charges, and rentals are payable in United States dollars at the time of registration. The University reserves the right to change any of its fees and charges without notice.

The fee schedules for resident and nonresident students, appearing on pages 114 and 115, apply to the academic year (Autumn, Winter, and Spring Quarters). Summer fees are listed in the *Summer Quarter Bulletin*.

STUDENT ACTIVITIES AND SERVICES

ASSOCIATED STUDENTS

Membership in the Associated Students of the University of Washington, the central organization which conducts all student activities, is required of all regularly enrolled students. Through the ASUW Board of Control and its various committees and boards, students assume major responsibility in the government of student life. The ASUM helps to finance the programs of athletics, debates, concerts, lectures, and many other activities and facilities, including the University of Washington *Daily* and the Student Union Building.

ENGINEERING STUDENT COUNCIL

The Engineering Student Council is made up of representatives elected from student organizations in the departments of the College. Tau Beta Pi, the honorary fraternity, and the *Washington Engineer* also have representatives on the Council, which supervises various student activities.

WASHINGTON ENGINEER

The *Washington Engineer*, which is written and managed entirely by engineering students, is published six times a year. It has achieved a national reputation as an outstanding engineering college magazine.

PROFESSIONAL AND HONOR SOCIETIES

All the great professional engineering societies, such as the American Society of Civil Engineers, the American Institute of Electrical Engineers, and the American Society of Mechanical Engineers, have student chapters on the campus, and every engineering student is encouraged to join the chapter that represents his field of interest.

Honor societies open to engineering students are Tau Beta Pi and Sigma Xi. Students who have maintained high scholarship and are of commendable character may be elected to membership in Tau Beta Pi in their junior or senior year. Election to Tau Beta Pi constitutes one of the highest honors an undergraduate engineering student can receive.

SCHOLARSHIPS AND LOANS

A considerable number of scholarships is awarded annually on a competitive basis. Applications are available through the Office of the Dean of Students during Winter Quarter, and awards are made late in the spring for the following academic year. Information concerning the list of current awards and loans may be obtained from the Office of the Dean of Students.

Short- and long-term loan funds, including the National Defense Student Loan fund, are administered by the Office of the Dean of Students. Full-time students who are making normal and satisfactory progress are eligible to apply.

The University of Washington awards 100 tuition scholarships each academic year to worthy students from other countries. There are no scholarships available for the Summer Quarter. These awards are made on the basis of the academic record of the student, recommendations from his professors, his need for such assistance, and the availability of such openings in his department at the University. These scholarships cover tuition only and are administered by the Foreign Exchange Scholarship Committee, Foreign Students Office, University of Washington, Seattle 5, Washington, U.S.A. Applications for these scholarships must be made by March 1 for the following year.

Fellowships, scholarships, and awards especially for engineering students are listed on page 116.

OFFICE OF THE DEAN OF STUDENTS

The Office of the Dean of Students is concerned with the general welfare of students and welcomes correspondence and conferences with both parents and

students. This Office works closely with the advisory system of the colleges and schools of the University; it directs students to faculty advisers, the Counseling Center, and other persons and agencies offering information and assistance with personal and social problems.

The Foreign Students Office operates through the Office of the Dean of Students. The Foreign Student Adviser and his staff offer guidance on all nonacademic problems to students from other countries. Questions about immigration regulations, housing, social relationships, personal problems, finances, minimum course requirements, and employment should be referred to this Adviser. Students who are interested in study abroad may obtain from him information about schools in other countries and about Fulbright and other scholarships.

COUNSELING CENTER

The Counseling Center in Lewis Hall Annex offers vocational and educational counseling to students who need help in their adjustments to college. The staff of the Center, including vocational counselors and psychologists, works closely with other student services and supplements the academic advisory program. The services of the Center are available to any registered student who desires vocational counseling and to students referred by academic advisers for individual interpretations of their college aptitude scores. Additional tests may be given to determine special interests and aptitudes when necessary.

HOUSING

Information and applications for residence in University-owned housing for single persons may be obtained by writing to the Manager, University of Washington Men's Residence Halls, 1201 Campus Parkway, Seattle 5, or to the Manager, University of Washington Women's Residence Halls, Seattle 5. Until August 1, preference in assignment to vacancies is given to students under 21 years of age, thereafter assignments are made in the order of application. Prospective students may apply for the residence halls prior to their acceptance by the University but not before April 15.

University regulations require that women students under twenty-one who do not live at home must live in approved group residences such as the Women's Residence Halls, sororities, and church-sponsored living groups. Other types of living arrangements must be reported to the Dean of Women and be approved by the student's parents or guardian.

Information about fraternities or sororities may be obtained by writing to the Interfraternity Council or the Panhellenic Council, Student Union Building, University of Washington, Seattle 5.

The Office of Student Residences maintains listings of off-campus rooms, rooms with board, housekeeping rooms, apartments, and houses which are available to University students. These listings must, however, be consulted in person.

Teaching and research assistants and other part-time subfaculty personnel are given first priority for assignment to University-owned housing facilities for married students. Second preference for assignment to Union Bay Village or Sand Point Homes is given to graduate, medical, dental, and law students who have children. Prospective students are eligible to apply when they have been accepted for admission. Write to the Office of Student Residences, 23 Administration Building, for further information and application forms.

A complete statement of University housing policy appears in the *Student Handbook of University Rules and Regulations* and the *Housing Bulletin*.

HEALTH SERVICES

The University maintains a health service and infirmary to help guard against infectious diseases and incipient ill health.

The infirmary receives bed patients at any hour and provides nursing care, medicines, and the attendance of a staff doctor up to one week each quarter free of charge. For a period longer than one week a charge of \$2.00 a day is made.

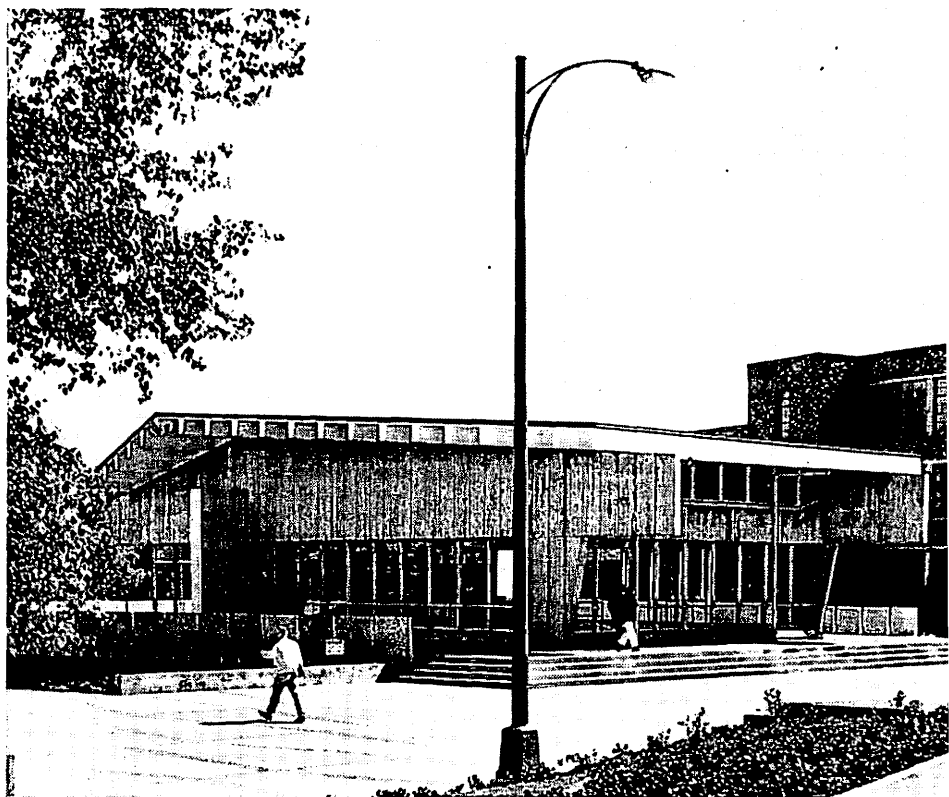
At their own expense, infirm patients may consult any licensed physician in good standing.

Health and accident insurance for students is available at the time of registration.

EMPLOYMENT

Part- and full-time work off campus may be obtained at the University Placement Office. Applications are accepted from students or graduates of the University and from the wives or husbands of University students. Application must be made in person after residence in Seattle has been established. Placement in jobs on the campus is handled by the Personnel Department and the ASUW Personnel Office.

Graduating seniors and recent graduates will be interested in the positions offered by major industrial organizations and government agencies. Many industry representatives visit the campus every year to select qualified seniors and graduate students. Arrangements for interviews with industrial representatives are made by the Office of the Dean of the College of Engineering and the various degree-granting departments. In addition, an engineering employment orientation program is provided each year and the Engineering Placement Office maintains an information file on over 300 companies.



THE DEPARTMENTAL PROGRAMS

THE DEPARTMENTAL PROGRAMS

CURRICULA in the College of Engineering 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 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.

UNDERGRADUATE PROGRAMS IN ENGINEERING

The engineering student enrolls for his first year in the Department of General Engineering, where he is assigned to a member of the faculty who counsels him on his educational objectives and his program of study. This first-year curriculum, administered for the other departments of the college by the Department of General Engineering, provides courses in basic engineering and science subjects as well as an orientation course designed to familiarize the student with university activities, the various fields of engineering, and the opportunities open to the engineering graduate. At the beginning of the sophomore year, regular students enter the curriculum of the department in which they have decided to major.

All undergraduate engineering students are required to take an integrated sequence of courses in the humanities and social sciences. These courses, offered by the Department of Humanistic-Social Studies, are designed to include a general, nontechnical education as an integral part of the engineer's professional training.

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 years 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.

Students working toward bachelor's degrees in engineering must meet certain general requirements of the University and the College as well as the particular course requirements of their major department. Course requirements for each

degree are described in the curricular announcements of the departments (see pages 38-82. General requirements for all degrees include military training, physical education, scholarship and minimum credits, and senior-year residence.

Students should apply for bachelor's degrees during the first quarter of the senior year. If not more than ten years have elapsed since the date of a student's entry into the school or college in which he is to graduate, he may choose to graduate under the requirements set out in either the bulletin published by the appropriate school or college most recently prior to the date of his entry, or that published most recently prior to his anticipated date of graduation; provided, that when, in the opinion of the faculty of the school or college or a departmental executive officer or a dean acting for such faculty, substantial changes have been made in the curriculum since the student's entry, the student's choice shall be subject to the approval of the appropriate faculty, executive officer or dean. Disapproval of the student's choice shall be faculty action and subject to the procedures of the Faculty Code. All responsibility for fulfilling graduation requirements shall rest with the student concerned. No student whose standing is in any way provisional can have an application for degree accepted.

HONORS PROGRAM

The honors program of the College of Engineering provides an opportunity for the gifted undergraduate engineering student to develop to his fullest extent. The objectives of the honors program are achieved through the provision of special honors sections in the engineering and supporting curricula, by permitting greater program flexibility to suit his special needs, by the development of ingenuity and a research attitude in special honors projects, and by participation in seminars and honors colloquia available on a campus-wide basis.

Although the designation of honors students is not made until the end of the freshman year, the program actually starts at college entrance. The taking of honors sections in mathematics and engineering graphics, plus entrance into the college mathematics sequence at a higher level than normal because of advanced high school preparation, will serve as the basis of the honors work to follow. However, the honors program should also attract those students who display outstanding scholarship during the freshman year even though their progress may not have been accelerated in high school or in college honors courses. Of importance in the selection of honors students at the end of the freshman year will be advanced standing in mathematics, inclusion of honors courses in graphics and mathematics, and outstanding academic performance.

A student may drop from the honors program into regular status at any time. Conversely, a student may enter the honors program later than normal if he can demonstrate the necessary ability and background.

An entering student interested in the honors program should consult with an adviser in the Department of General Engineering to plan a program that will best fit his abilities and high school preparation.

ENGINEERING PHYSICS

A four-year curriculum in engineering physics, leading to the degree of Bachelor of Science in Engineering Physics, is administered by the Department of Physics in the College of Arts and Sciences. The program combines preparation in basic engineering subjects with full training in physics, and it appeals particularly to students interested in advanced studies in physics, or in any of the new fields demanding training in both physics and technology. The curriculum is so organized that the student (a) may enter the College of Arts and Sciences as a freshman and choose certain engineering electives in the prescribed curriculum for the Bachelor of Science in Physics or (b) may transfer to the College of Arts and Sciences after two years in the College of Engineering. Details of the program, including the curriculum prescribed for engineering students who transfer to Arts and Sciences, will be found in the announcements of the Department of Physics in the *College of Arts and Sciences Bulletin*.

DEPARTMENTAL GRADUATE PROGRAMS

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 are working 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.

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 aeronautical, chemical, civil, electrical, and mechanical engineering, and in metallurgy.

Students who intend to work toward advanced degrees must fulfill the admission requirements of the Graduate School (as outlined in the *Graduate School Bulletin*) and of the department in which they expect to major. Graduate students must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded. No foreign language is required for any master's degree awarded by the College of Engineering.

INTERDEPARTMENTAL PROGRAMS

Interdepartmental programs have recently been initiated in Engineering Mechanics and Nuclear Engineering. Degrees of Master of Science in Engineering and Doctor of Philosophy are available for work in each of these fields.

ENGINEERING MECHANICS

An interdepartmental program in engineering mechanics is offered through the cooperation of the Departments of Aeronautical, Civil, Mechanical, and the Division of Metallurgical Engineering. Work in this field can lead to the Master of Science in Engineering and the Doctor of Philosophy degree. See page 77 for further details.

NUCLEAR ENGINEERING

A graduate program in Nuclear Engineering leads to the degree of Master of Science in Engineering, Major: Nuclear Engineering, and the Doctor of Philosophy degree. The program is a cooperative undertaking of the Departments of Chemical, Civil, Electrical, Mechanical, and the Division of Metallurgical Engineering. See page 78 for a detailed description of the program.

COURSE-NUMBERING SYSTEM

Courses numbered from 100 through 299 are lower-division courses, for freshmen and sophomores; those numbered from 300 through 499 are upper-division, for juniors and seniors.

Courses numbered 500 and above are intended for and restricted to graduate students. Some courses numbered in the 300's and 400's are open both to graduates and to upper-division undergraduates. Such courses, when acceptable to the major department and the Graduate School, may be part of the graduate program. The Graduate School accepts credit in approved 300-level courses for the minor or supporting fields only; approved 400-level courses are accepted as part of the major. For a listing of approved 300- and 400-numbered courses, consult the *Graduate School Bulletin*.

Undergraduate students of senior standing who wish to register for a 500-level course must obtain permission from both the instructor of the class and the Dean of the Graduate School.

The number in parentheses following the course title indicates the amount of

credit each course carries. In most lecture courses a credit is given for each class hour a week during a quarter; laboratory courses generally carry less credit than the work time required. An asterisk in place of a credit number means that the amount of credit is variable. Hyphens between course numbers mean that credit is *not* granted until the series of courses is completed.

Courses to which the letter J is appended are joint courses in two or more departments and as such grant credit in one of the departments.

Not all of these courses are offered every quarter. Final confirmation of courses to be offered, as well as a list of times and places of class meetings, is given in the *Yearly Time Schedule*.

GENERAL ENGINEERING

Chairman: VERNON B. HAMMER,

111 General Engineering Building

During the first year, the General Engineering Department offers several unique advantages for introduction and examination of engineering as a career.

In the first quarter, a course is offered in the analysis and solution of engineering problems, and further engineering experience is provided during this year in a series of integrated engineering graphics and mechanics courses. Classes in the engineering graphics and problems courses are on a "lecture-laboratory" basis, meeting for two hours, three times a week. This allows the instructor to introduce a subject, initiate a class discussion, then spend the remainder of the period working with the various members of the class as individual problems arise. These courses with the normal mathematics, chemistry, and communication subjects, give the student the opportunity to assess his interest and ability to pursue engineering.

Every freshman takes an orientation course learning about the various fields of engineering—the academic requirements as well as the present and future opportunities in the field. These presentations are from men actively engaged in the various fields and consist of talks, films, question sessions, and open-house tours.

The student is assigned an adviser who is informed of his previous academic background. Consultation with him on matters of program planning is required and his counsel in other academic and some personal matters is available. In addition, other members of the staff representing all fields of engineering are available for consultation. A staff of professional counselors is also available at the University Counseling Center.

At the beginning of the sophomore year, regular students enter the curriculum of the department in which they have decided to major. The College of Engineering sets no required minimum number of credits per quarter. Students may, therefore, extend the course of study over a period longer than four years and may adjust to part-time work, remedial courses, or a broader program to include courses such as languages, accounting, music, etc., from any department of the University.

First Year					
FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
GE 100 Orientation	1	GE 102 or 105		GE 103 Applied	
GE 101 or 104 Graphics	3	Graphics	2 or 3	Descriptive Geom. or	
GE 111 Problems	3	GE 112 Statics	3	Honors Elective*	3
Chem. 140 General	3	Chem. 150 General	3	Chem. 160 General	3
Math. 105 College		Chem. 151 Gen.		H. Ed 175 Personal	
Algebra	5	Chem. Lab.	2	Hlth.	2
	15	Math. 124 Calc. with		Math. 125 Calc. with	
PE Activity	†	Analytic Geometry	5	Analytic Geometry	5
ROTC	†		15-16	Phys. 217 Engr. Physics	4
		PE Activity	†		17
		ROTC	†	PE Activity	†
				ROTC	†

* List an elective or a sophomore subject.

** See page 29 for Physical Education Activity requirement.

† See page 29 for ROTC requirement.

Exceptions are as follows:

Students without high school chemistry will take Chemistry 100, Chemical Science, followed by Chemistry 140, 150, 151, 160. Students in Chemical and Ceramic Engineering will substitute Chemistry 170 for Physics 217.

Mining Engineering students will substitute General Engineering 121 for Physics 217 the third quarter. Civil Engineering students will substitute General Engineering 121 for General Engineering 103 the third quarter.

Students are required to demonstrate proficiency in mathematics by passing qualifying tests. Those who are unable to pass tests in algebra and trigonometry will adjust their program of studies to allow for refresher courses.

COURSES FOR UNDERGRADUATES

- 100 Engineering Orientation (1)** **Macartney**
Lectures, discussion, and reading assignments on the functions of engineering, the various fields of the profession, and on the College of Engineering.
- 101 Engineering Graphics (3)** **Boehmer**
Use of instruments, scales; techniques of lettering and line work. Fundamentals of orthographic projection, including sections. Simple isometric drawings. Orthographic and isometric sketches. Introduction to dimensioning of shop drawings. Simple rectilinear graphs.
- 102 Engineering Graphics (2)** **Messer**
Continuation of orthographic projection, reading and interpretation of engineering drawings, diagrams, notes, and other forms of graphical representation. The making of freehand sketches and drawings. Study of shop and engineering practices; and their applications to dimensions and notes used in engineering drawings. Prerequisite, 101.
- 103 Applied Descriptive Geometry (3)** **Douglass**
Application of fundamental principles to the solution of problems in the different fields of engineering by graphics. Includes point, line, and plane problems, intersections and developments, and vectors in three dimensions. Prerequisites, 101 and 102.
- 104 Engineering Graphics (3)** **Hoag**
Fundamentals of orthographic projection, including sections and auxiliary views, isometric and oblique drawings. Technical sketching. Making, dimensioning, and interpretation of engineering drawings. Prerequisites, aptitude test and permission.
- 105 Engineering Graphics (3)** **Hoag**
Continuation of making, dimensioning, and interpretation of engineering drawings. Limit dimensions. Charts and graphs, application of principles of descriptive geometry in various fields of engineering. Includes point, line, and plane problems, intersections and developments, and vectors in three dimensions. Prerequisite, 104.
- 111 Engineering Problems (3)** **Brown**
An introduction to some fundamental principles, including dimensional analysis, statics, rectilinear motion with uniform and non-uniform acceleration, work, energy, power, efficiency, and Newton's Laws. Designed to develop the ability to analyze and solve engineering problems. Instruction in the use of the slide rule, in effective methods of work and study, and in systematic arrangement and clear workmanship. Prerequisites, high school physics, qualifying test in algebra and in trigonometry, and Mathematics 105, which may be taken concurrently.
- 112 Statics (3)** **Alexander**
A fundamental and rigorous course in engineering statics using the vector notation treatment. Prerequisites, 101, 111, and Mathematics 124, which may be taken concurrently.
- 121 Plane Surveying and Measurements (3)** **McNeese**
Plane surveying methods; use of the engineer's level, transit, and tape; computations of bearings, plane coordinate systems, areas, stadia surveying; public land system. The theory of measurements and errors, and the applications of probability to engineering measurements. Prerequisites, 102 and trigonometry.
- 351 Inventions and Patents (1)** **Seed**
Law and procedures for patenting inventions, employer-employee relationship, and trademarks. Primarily for engineering students. Prerequisite, junior standing.

AERONAUTICAL ENGINEERING

Chairman: R. JOHN H. BOLLARD

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 Advanced Degrees, page 37, Master of Aeronautical Engineering, and Doctor of Philosophy.

BACHELOR OF SCIENCE IN AERONAUTICAL ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 38).

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
HSS 265 Tech. of Commun.	3	CE 291 Dynamics	3	AE 200 Introduction	2
Mtl. E 250 Mt'l's. Science	4	CE 292 Mech. of Mt'l's.	3	CE 293 Mech. of Mt'l's.	3
Math. 126 Calc. with Analytic Geometry	5	HSS 270 Report Writing	2	ME 320 Thermodynamics	5
Phys. 218 Engr. Physics	4	Math. 224 Interm. Anal.	3	ME 340 Engr. Mt'l's.	3
		Phys. 219 Engr. Physics	4	Math. 221 Diff. Equat. or Math. 225 Interm. Anal.	3
	16		15		16
ROTC	†	ROTC	†	ROTC	†

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
AE 300 Aerodynamics	3	AE 301 Aerodynamics	3	AE 302 Aerodynamics	3
AE 360 Aircraft Engines	3	AE 330 Aircraft Struct. Anal.	3	AE 320 Aerodyn. Lab.	3
HSS 331 Orig. West. Cult. Inst.	3	HSS 332 Dev. West. Cult. Inst.	3	AE 331 Aircraft Struct. Anal.	3
HSS 491 Lit. Heritage West. World I	3	Math. 324 Adv. Calc. I or ME 361 Mach. Design	3	HSS 333 Contemp. Pol. and Soc. Problems	3
Math. 322 Diff. Equat. or ME 260 Mechanisms	3	Phys. 320 Modern Physics	3	Math. 325 Adv. Calc. II or ME 362 Mach. Design	3
	15		15		15

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
AE 332 Aircraft Struct. Anal.	3	AE -N392- Seminar	-0-	AE -392 Seminar	-1
AE 350 Aircraft Struct. Lab.	2	AE 411 Aircraft Design	3	AE 412 Aircraft Design	3
AE N390- Seminar	-0-	EE 400 Vacuum Tubes and Electron.	5	AE 461 Jet Propulsion	3
AE 410 Aircraft Design	3	HSS 492 Lit. Heritage West. World II	3	HSS 493 Lit. Heritage West. World III	3
EE 303 Elements of EE	4	Econ. 211 General	3	H. Rel. 365 Hum. Behav. in Organizations	3
EE 304 EE Lab.	1	Technical Electives	3	Technical Electives	3-6
Technical Electives	3		17		16-19

† See page 29 for ROTC requirement.

Note: The student will either conclude the mathematics sequence at the end of the second year with Mathematics 221 and proceed with the Mechanical Engineering sequence or will follow the Mathematics sequence beginning with Mathematics 225 if graduate study is an objective.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate School Bulletin*.

MASTER OF SCIENCE IN AERONAUTICAL ENGINEERING. Candidates for this degree must have the degree of Bachelor of Science in Aeronautical Engineering or its equivalent. A total of 30 credits of course work and a thesis, equivalent to 9 credits of course work, are required. Courses 505, 506, -522, 530, 553, 567, 568, and 569J are usually a part of the program. No foreign language is required. The thesis for the Master of Science in Aeronautical Engineering degree may be waived in certain cases. Such a waiver requires staff approval and 9 additional credits of course work.

MASTER OF AERONAUTICAL ENGINEERING. This is a more advanced degree than that of Master of Science in Aeronautical Engineering. A total of 60 credits of course work and a more extensive thesis, equivalent to 18 credits of course work, are required. Other requirements are similar to those for the Master of Science in Aeronautical Engineering degree.

DOCTOR OF PHILOSOPHY. Candidates for this degree must complete an approved program of studies and a research program which makes a definite contribution to knowledge.

- 200 Introduction to Aeronautics** **Bollard**
Introduction to the field of aeronautical engineering; discussion of basic concepts and typical problems.
- 300 Aerodynamics (3)** **Ganzer, Street**
Properties of the atmosphere; continuity, momentum, and energy equations for compressible flow; dimensional analysis; stream function and circulation theory; aerodynamic characteristics of airfoils in perfect and real fluids at subsonic and supersonic speeds. Prerequisites, Civil Engineering 291, Mechanical Engineering 320, Physics 217, 218, 219, and Mathematics 221 or accompanied by 322.
- 301 Aerodynamics (3)** **Ganzer, Rae**
Induced effects; spanwise lift distribution; power drag characteristics of wings and complete airplanes; propeller characteristics. Prerequisite, 300.
- 302 Aerodynamics (3)** **Ganzer, Joppa**
Performance of propeller and jet-driven aircraft; static stability and control. Prerequisite 301.
- 320 Aerodynamics Laboratory (3)** **Joppa, Rae**
Investigation of operating characteristics of subsonic, supersonic, and hypersonic wind tunnels. Two- and three-dimensional tests of various aerodynamic configurations. Prerequisite, 302, which may be taken concurrently.
- 330 Aircraft Structural Analysis (3)** **Dill, O'Brien**
Elasticity and plasticity; virtual work and Castigliano's theorem; stress and deflection of trusses; torsion of rods and box beams.
- 331 Aircraft Structural Analysis (3)** **Dill, O'Brien**
Bending of unsymmetrical and tapered beams; shear stresses in thin skin structures; buckling of rods; analysis of statically indeterminate structures. Prerequisite, 330.
- 332 Aircraft Structural Analysis (3)** **Dill, O'Brien**
Plane stress; bending and buckling of plates; stresses in shells. Prerequisite, 331.
- 350 Aircraft Structural Laboratory (2)** **O'Brien**
Methods and techniques of aircraft structural testing; laboratory tests of structural components typical of an airplane. Prerequisite, 332, which may be taken concurrently.
- 360 Aircraft Engines (3)** **Eastman**
Performance and operating characteristics of reciprocating and jet engines for aircraft. Prerequisite, Mechanical Engineering 320.
- N390-N391-392 Seminar (0-0-1)**
Preparation and presentation of at least one topic by the student. Prerequisite, senior standing.
- 404 Introduction to Theoretical Aerodynamics (3)** **Ganzer, Street**
Euler's equations of motion; potential and stream functions; sources, sinks, and vortex flow; two and three dimensional flow; airfoil theory. Prerequisite, Mathematics 221 or permission.
- 405 Elements of Gas Dynamics (3)** **Street**
Thermodynamics of perfect gases; one-dimensional gas dynamics; flow in ducts and channels; waves in supersonic flow; general equations of motion; small perturbation theory; similarity rules. Prerequisite, senior standing.
- 410 Aircraft Design (3)** **Ganzer**
Preliminary design of a modern airplane to satisfy a given set of requirements; estimation of size, selection of configuration, weight and balance, and performance. Prerequisite, 302.
- 411 Aircraft Design (3)** **Ganzer**
Stability and control; elementary dynamics of the rigid airplane; flight and handling loads; CAA load requirements. Prerequisite, 410.
- 412 Aircraft Design (3)** **O'Brien**
Loads analysis for the entire airplane; selection and disposition of structural materials for airplane components; influence of fabrication techniques on structural design; coordination of structural design with aerodynamic and other design requirements; basic principles of optimum design. Prerequisites, 411 and 332.
- 422 Aerodynamics Laboratory (3)** **Joppa, Rae**
Supersonic wind tunnel tests of simple models; comparison of experimental and theoretical results. Prerequisite, 301, 320.
- 425 Flight Test Laboratory (3)** **Joppa**
Theory of flight test; calibration of flight instruments, performance and stability measurements in flight; reduction of flight test data. Prerequisite, 302.
- 430 Aerodynamic Performance, Stability, and Control (3)** **Ganzer, Joppa**
Non-dimensional coefficients; aerodynamic characteristics of subsonic and supersonic configurations; static stability; control. For non-aeronautical engineering majors. No credit if 302 has been taken. Prerequisite, senior standing in engineering, mathematics, or physics.
- 441 Advanced Structural Design (3)** **Dill, O'Brien**
Design of missile, aircraft, and space structures. Prerequisite, 332.
- 450 Astronautics (3)** **Bollard**
Celestial mechanics; calculation of terrestrial and interplanetary trajectories and orbits; fundamental rocket principles; dynamics of rocket flight; introduction to aerodynamic, thermal, and other problems associated with hypersonic flight. Prerequisite, senior standing.

- 461 Jet Propulsion (3)** **Ganzer**
Study of jet and rocket engines with regard to flow through inlets, compressors, burners, turbines, and nozzles. Prerequisite, 302.
- 462 Propellers and Moving Wing Systems (3)** **Eastman**
Aerodynamic characteristics common to all moving wings; analysis of the screw propeller, the helicopter, and other possible types of moving wing systems. Prerequisite, 302.
- 470 Analytical Problems in Aeronautics (3)**
Application of mathematical methods to problems in aerodynamics, structures, and dynamics. Prerequisite, Mathematics 221 or permission.
- 480 Elementary Dynamics (3)** **Fyfe**
Equations of motion and solutions for selected problems; natural frequencies and mode shapes; response of simple systems to applied loads. Prerequisite, senior standing.
- 481 Elementary Aero-elasticity (3)** **Fyfe, O'Brien**
Discussion of aero-elastic problems in aircraft design; elementary development of static and dynamic aero-elastic problems. Prerequisite, 480.
- 499 Special Projects (2-5, maximum 10)**
An investigation on a special project by the student under the supervision of a staff member. Prerequisite, senior standing.

COURSES FOR GRADUATES ONLY

- 505 Aerodynamics of Incompressible Fluids (3)** **Fyfe, 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. Prerequisite 404 or permission.
- 506 Aerodynamics of Incompressible Fluids (3)** **Street**
Theory of viscous incompressible fluids; the Navier-Stokes equations, dimensional analysis, and exact solutions; Prandtl's boundary layer theory, Karman's integral theorem, and laminar and turbulent boundary layer over airfoils and bodies of revolution.
- 508 Aerodynamics of Compressible Fluids (3)** **Fyfe, Street**
Equations of motion in general vector form; exact solutions for shock waves, expansion waves and flow past cones; small perturbation theory applied to bodies of revolution and wings in subsonic and supersonic flow. Prerequisite, 405 or permission.
- 509 Hypersonic Aerodynamics (3)** **Fyfe, Street**
Fundamental concepts of hypersonic flow; Newtonian flow theory, small disturbance theory and other known methods of solution of inviscid flow problems; the hypersonic laminar boundary layer; flow over flat plate; the blunt body problem; high temperature effects. Prerequisite, 405 or permission.
- 510 Non-Stationary Gas Dynamics (3)** **Fyfe, O'Brien**
Time dependent fluid flow problems; wave and shock propagation in gases and solids; the interaction of different wave forms and boundaries. Prerequisite, 569J or permission.
- 511 Unsteady Aerodynamics (3)** **Fyfe, O'Brien**
Oscillating airfoils at subsonic and supersonic speeds; consideration of wings and bodies in unsteady flow. Prerequisite, 404, 405 or permission.
- 513 Heat Transfer in Aeronautics (3)** **Street**
Laws of heat transfer; forced convection in laminar and turbulent boundary layers with heat transfer; methods of alleviation and applications in high speed aerodynamic heating. Prerequisite, 506 or permission.
- 514 Rarefied Gas Dynamics (3)** **Street**
Kinetic theory of gases; Boltzmann equation and the Maxwell transport equation; equations of continuum and slip flow, free-molecule and near free molecule flows; applications to ultra-high altitude flight. Prerequisites, 405 or equivalent, and permission.
- 516 Stability and Control I (3)** **Ganzer, Joppa**
Aerodynamics of control; the general problem of dynamic stability; the influence of aerodynamic parameters on flying characteristics. Prerequisite, 302 or 430, or equivalent.
- 517 Stability and Control II (3)** **Ganzer, Joppa**
Equations of motion with control terms; response of airplane to actuation of controls; automatic stability and control. Prerequisite, 516.
- N520-N521-522 Seminar (0-0-1)**
- 523 Seminar in Aerodynamics (1-2, maximum 12)** **Fyfe, Street**
Study of recent advances in aerodynamics with students and staff reporting on recent publications. Topics vary from year to year. Open only to students having the M.S. degree or its equivalent.
- 530 Theory of Elastic Structures (3)** **Dill, Martin**
Stresses, strains, displacements; Hooke's law; basic equations of elasticity; virtual work and energy theorems; application of theory to selected problems; approximate methods.
- 531 Analysis of Shells (3)** **Dill, O'Brien**
Kinematical, equilibrium and material-behavior relationships for arbitrary thin shells; considerations of orthotropy, finite deflections, inertia loads and nonuniform temperature distributions; applications to advanced aero-space structures. Prerequisites, 332 and 567, or permission.

- 533 Theory of Plasticity (3)** **Dill, Martin**
Physical behavior of elastic-plastic and plastic structures; development of stress-strain relations and conditions for yielding; discussion of extremum principles; application of theory to representative problems. Prerequisite, 530 or Civil Engineering 572 or Mechanical Engineering 551.
- 540 Structural Problems (3)** **Dill, Martin**
Theory for analysis of complex structures; displacement and force methods; use of high speed calculating equipment; heated structures; nonlinear problems. Prerequisite, 530 or Civil Engineering 572, or Mechanical Engineering 551.
- 550 Dynamics of Aircraft Structures (3)** **Bollard, O'Brien**
Equations of motion of restrained and unrestrained elastic structures; response of elastic systems to time dependent forces and to forces arising from motion of the system; calculation of dynamic overstresses in complex structures. Prerequisites, 553 or Civil Engineering 574 or Mechanical Engineering 567.
- 553 Aircraft Vibrations (3)** **Bollard, Fyfe**
Natural frequencies and modes of vibrations of linear systems; forced vibrations and motion dependent forces; Lagrange's equations and Hamilton's principle; matrix methods for discrete and continuous systems typical of aircraft structures. Prerequisite, 480 or permission.
- 556 Aeroelasticity (3)** **Martin, O'Brien**
Concept of functional diagrams and aeroelastic operators; quasi-static lifting-surface deformations and stability; control surface effectiveness; non-stationary lifting-surface deformations and stability; general dynamics of aerodynamic, structural, and control system interactions. Prerequisite, 481, 553, or permission.
- 557 Nonlinear Problems in Airplane Dynamics (3)** **Fyfe, Street**
The application to aeronautics of nonlinear ordinary differential equations 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. Prerequisites, Mathematics 538 or permission.
- 567, 568 Analysis in Engineering (3,3)**
Mathematical methods for solving problems arising in engineering. 567: vector analysis, matrices, tensors, complex variables; 568: calculus of variations, Sturm-Liouville problems, series solutions and special functions for ordinary differential equations, orthogonal functions. Prerequisite, Mathematics 221.
- 569J Partial Differential Equations (3)** **Fyfe, Street**
Classification of second order partial differential equations; solution by separation of variables and reduction to a boundary value problem; theory of characteristics and solutions by means of Green's functions. Examples from classical mechanics of continua. Offered jointly with the Department of Mathematics. Prerequisite, 568 or Mathematics 428.
- 571 Flight Mechanics I (3)** **Miele**
Equations of motion for rocket vehicles and for vehicles powered by air-breathing propulsion systems. Scalar equations for flight over a Flat Earth and a Spherical Earth. Quasi-steady flight of subsonic and supersonic aircraft. Nonsteady flight of supersonic aircraft, hypervelocity gliders, skip vehicles, and ballistic missiles. Optimization theory: Lagrange multipliers and Green's theorem. Prerequisites, 404, 567 or permission.
- 572 Flight Mechanics II (3)** **Miele**
Equations of motion for unpowered and powered flight. The two-body problem. Ballistic transfer and low-thrust transfer. Relativistic effects. Optimization theory: Lagrange multipliers and variational approach. Prerequisite, 571 or permission.
- 580 General Theory of Continuous Media I (3)** **Dill, Street**
General formulation of the classical field theories; fundamental concepts of motion, stress, energy, entropy, and electromagnetism for a continuum; conservation of mass; balance of momentum; balance of energy, including thermodynamics of irreversible deformations; balance of electromagnetism. General nature of constitutive equations for a continuum. Examples of kinematic, energetic, mechanical, thermomechanical, electromagnetic, and electromechanical constitutive equations. Prerequisite, 567 or permission.
- 581 General Theory of Continuous Media II (3)** **Dill, Street**
Prerequisite, 580.
- 582 General Theory of Continuous Media III (3)** **Dill, Street**
Prerequisite, 581 or permission.
- 583 Plastic Flow and Fracture of Solids (3)** **Dill**
A study of the growth and decay of discontinuities in otherwise elastic-plastic continuous media. Application to the fracture of solids. Prerequisite, 582 or permission.
- 599 Special Projects (2-5, maximum 15)**
An investigation on a special project by the student under the supervision of a staff member.
- 600 Research (*)**
Prerequisite, permission of Department Chairman.
- 700 Thesis (*)**
- 702 Degree Final (0)**
Limited to students completing a nonthesis degree program.

CHEMICAL ENGINEERING

Chairman: RALPH W. MOULTON, 37 BAGLEY HALL

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 37), 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 38).

Second Year			
FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS
Ch.E 271 Introduction ..	1	Ch.E 272 Introduction ..	1
HSS 265 Tech. of Commun.	3	Chem. 336 Organic ..	3
Chem. 335 Organic ..	3	Chem. 346 Org. Chem. Lab.	1
Chem. 345 Org. Chem. Lab.	1	Econ. 211 General ..	3
Math. 126 Calc. with Analytic Geometry ..	5	Math. 221 Diff. Equat. ..	3
Phys. 217 Engr. Physics ..	4	Phys. 218 Engr. Physics ..	4
	17		15
ROTC	†	ROTC	†

Third Year			
FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS
Ch.E 384 Indust. Stoich ..	4	Ch.E 385 Thermodynamics ..	4
EE 303 Elements of EE ..	4	HSS 332 Dev. West. ..	3
EE 304 EE Lab.	1	Cult. Inst.	3
HSS 331 Orig. West. Cult. Inst.	3	Chem. 357 Physical ..	3
Chem. 356 Physical ..	3	Phys. 320 Modern Physics ..	3
	15	Electives	3
			16

Fourth Year			
FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS
Ch. E 471 Unit Oper.	3	Ch. E. 472 Unit Oper.	3
Ch. E 474 Unit Oper. Lab.	2	Ch. E 475 Unit Oper. Lab.	2
Ch.E 481 Process Design Prin. I ..	3	Ch.E 482 Process Design Prin. II ..	3
Ch.E 499 Special Projects ..	2	Ch.E 499 Special Projects ..	2
HSS 491 Lit. Heritage West. World I ..	3	HSS 492 Lit. Heritage West. World II ..	3
H. Rel. 365 Hum. Behav. in Organizations ..	3	Electives	3
	16		16

† See page 29 for ROTC requirement.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate School Bulletin*. Entrance, or qualifying, examinations are required of prospective candidates for the degrees of Master of Science in Chemical Engineering and Doctor of Philosophy. 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 Tuesday and Wednesday 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 39 credits of which 30 credits are in formal course work and 9 in thesis. The course work is usually divided in the ratio of about two to one between the major

department and other departments. It is recommended that candidates for this degree include Chemical Engineering 570, 571, 574, and 575 among their courses. 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 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 (1,1,1)

Calculation techniques; material balances, heat balances; plant visits. Prerequisite, sophomore standing or permission.

N381 Field Trip (0)

A two- to four-day field trip during the Spring Quarter in which various chemical industries in the Pacific Northwest are visited. Prerequisite, junior standing or permission.

N382 Field Trip (0)

A two- to four-day field trip during Spring Quarter in which various chemical industries in the Pacific Northwest are visited. Prerequisite, senior standing or permission.

384 Industrial Stoichiometry (4)

Introduction to first law of thermodynamics. Heat balances; thermophysics and thermochemistry. Prerequisite, 273 or permission. **Johanson**

385 Chemical Engineering Thermodynamics (4)

Thermodynamic definitions and laws. P-V-T and thermal relations; calculation of the functions. Heat and work of state change. Compressor and expander engines and power cycles. Phase equilibria and chemical equilibria in multicomponent systems. Prerequisites, 384 or permission and Chemistry 356.

470 Transport Process Principles (4)

Rates of heat, mass, and momentum transfer are discussed with particular emphasis on fluid flow. Molecular and turbulent mechanisms are considered. The analogies among the transport processes are pointed out. Prerequisite, 385. **Babb**

471 Unit Operations (3)

Applications of transport principles are made to such unit operations as fluid flow, filtration, fluidized beds, heat transfer, and evaporation. Prerequisite, 470. **Heideger**

472 Unit Operations (3)

A continuation of 471. Humidification, distillation, absorption, and liquid extraction are studied from the standpoint of equilibria, operating lines, rates, and sizes of equipment required. Prerequisite, 471. **Heideger**

473 Unit Operations (3)

A continuation of 472. Drying and absorption operations are studied. Chemical reaction kinetics and transport principles are applied to reactor design. Prerequisite, 472. **Johanson**

474 Unit Operations Laboratory (2)

The laboratory experiments cover primarily the subject matter of 470. Prerequisite, 470.

475 Unit Operations Laboratory (2)

The laboratory experiments cover the subject matter of 471, together with evaporation and instrumentation. Prerequisite, 471.

476 Unit Operations Laboratory (2)

The laboratory experiments cover primarily the subject matter of 472 and 473. Prerequisite, 472.

481 Process Design Principles I (3)

Homogeneous reaction kinetics, instrumentation and process control. Prerequisite, 470 or permission. **David**

482 Process Design Principles II (3)

Introduction to chemical engineering design, engineering economics pertinent to chemical engineering design and operations, market survey and plant site location, initial stages in the design of a specific process. Prerequisites, 471 and 472 concurrently. **David**

483 Chemical Engineering Process Design (4)

Comprehensive design of a specific process, including economic feasibility studies, utilization of market survey and plant location studies, process equipment design and optimization, and over-all plant integration and layout. Prerequisites, 472 and 482.

- 485 Industrial Electrochemistry (3)** **Moulton**
Theoretical and applied electrochemistry; units and laws; overvoltage and polarization; analysis; oxidation and reduction; deposition; refining; metallurgy; electrothermics. (Offered when demand is sufficient.) Prerequisite, Chemistry 356 or permission.
- 499 Special Projects (1-6, maximum 6)**
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 Graduate Seminar (1-5)**
- 570 Introduction to Transport Phenomena (3)** **Sleicher**
Derivation and analysis of differential equations for transport of heat, mass, and momentum in a flowing fluid; introduction to kinetic theory of gases and theories of the liquid state and their application to the estimation of transport coefficients. Prerequisites, 385, Mathematics through 221 or 224.
- 571 Heat Transfer (3)** **David**
Steady and unsteady state conduction with emphasis on numerical methods. Radiation; design theory background and application to furnace design; convection; introductory concepts; methods for predicting coefficients; recent developments in theory; heat-exchanger design. Prerequisites, 570 and 575, or permission.
- 572 Mass Transfer (3)** **Heideger**
Diffusion theory; multicomponent systems; transfer of material between phases; differential mass transfer operations; stage contact separations; efficiency; applications to design of equipment. Prerequisites, 570 and 575, or permission.
- 573 Absorption and Extraction (3)**
Diffusion theory; transfer of material between phases; design of absorption equipment; multicomponent systems; performance of absorption equipment; simultaneous absorption and chemical reaction; solvent extraction. Prerequisites, 570 and 575, or permission.
- 574 Fluid Mechanics (3)** **Sleicher**
An introduction to methods of analysis in fluid mechanics; laminar flow of viscous fluids, inviscid theory, introduction to hydrodynamic stability and turbulence, boundary layer theory. Prerequisite, 570.
- 575 Advanced Chemical Engineering Thermodynamics (3)** **McCarthy**
Principle of thermodynamics. Applications to unit operations and to prediction of phase equilibria and chemical equilibria. Prerequisite, 375.
- 581 Kinetics and Catalysis (3)** **Johanson**
Homogeneous and heterogeneous systems, with emphasis on chemical engineering principles applied to industrial reactor design. Prerequisites, 571 and 575, or permission.
- 582 Advanced Topics in Mass Transfer (3)** **Heideger**
Discussions and readings of topics of current interest in the field of mass transfer. Subject matter changes from year to year. Prerequisite, 572 or permission.
- 583 Advanced Topics in Chemical Engineering (1-3)**
Discussions and readings of topics of current interest in the field of chemical engineering. Subject matter changes from year to year. Prerequisite, satisfactory completion of one year of graduate study in chemical engineering or permission.
- 584 Advanced Topics in Chemical Engineering Science (1-3)**
Discussions and readings of topics of current interest in the field of chemical engineering science. Subject matter changes from year to year. Prerequisite, satisfactory completion of one year of graduate study in chemical engineering or permission.
- 585 Topics in Chemical Engineering Plant Design (1-3)**
Discussions and readings of topics of current interest in the field of chemical engineering plant design. Subject matter changes from year to year. Prerequisite, satisfactory completion of one year of graduate study in chemical engineering or permission.
- 586 Chemistry of High Polymers (3, maximum 6)**
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. (Offered alternate years; offered 1962-63.) Prerequisites, Chemistry 232 and 356.
- 587 Cellulose and Lignin (3)**
Chemistry and technology of cellulose, lignin, and related substances. Origin and status in plant tissue, isolation procedures, physical characteristics, and chemical reactions. Chemical processing in pulp, paper, rayon, and plastic industries. (Offered alternate years; offered 1962-63.) Prerequisites, Chemistry 232 and 356, or permission.
- 588J Nuclear Chemical Separations Processes (3)** **Babb**
Applications of chemical engineering principles to processing of nuclear reactor materials and irradiated fuels. Fuel cycles; properties of irradiated fuel; theory of molecular separations processes; analysis of steady state and transient characteristics of chemical processing operations. Offered jointly with Nuclear Engineering. Prerequisites, 570, 572, Nuclear Engineering 484, or permission.
- 596 Topics in Chemical Engineering Research (3, maximum 18)**
Discussions and readings of topics of current interest in the field of chemical engineering research. Subject matter changes from year to year. Prerequisite, satisfactory completion of one year of graduate study in chemical engineering or permission of Department Chairman.

600 Research (*)

Prerequisite, permission of Department Chairman.

700 Thesis (*)**CIVIL ENGINEERING****Chairman: CHARLES HEAD NORRIS, 201 More Hall**

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 37), Master of Science in Civil Engineering, and Doctor of Philosophy.

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 38).

The fourth-year program calls for four 3-credit civil engineering elective courses. Electives in the field of hydraulics are courses 441, 442, 445, 447, 448; in engineering mechanics, 494; in materials, courses 467, 468; in structures, courses 481, 482, 485; in sanitary, courses 452, 453, 456, 457; in transportation, courses 315, 403, 422, 423, 424, 426, 428, 429, 430. Students planning to take a degree in industrial engineering should elect Accounting 210 (Fundamentals of Accounting).

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
CE 210 Route Design	5	CE 291 Dynamics	3	CE 214 Control Surveys . . .	3
GE 103 Applied Descriptive Geometry	3	Econ. 211 General	3	CE 292 Mech. of Mt'ls. I. . .	3
Math. 126 Calc. with Analytic Geometry	5	HSS 265 Tech. of Commun.	3	HSS 270 Report Writing . . .	2
Phys. 218 Engr. Physics . . .	4	Phys. 219 Engr. Physics . . .	4	Mtl. E. 250 Mt'ls. Sci.	4
		Math. 221 Diff. Equat. . . .	3	Math. 224 Intern. Anal. . . .	3
	17		16		15
ROTC	†	ROTC	†	ROTC	†

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
CE 293 Mech. of Mt'ls. II . . .	3	CE 345 Fluid Mechanics II . .	3	CE 321 Roads	3
CE 342 Fluid Mechanics I . . .	4	CE 363 Mt'ls. of Constr. . . .	3	CE 346 Hydr. Engr.	3
EE 303 Elements of EE	4	CE 370 Struct. Theory I . . .	3	CE 350 Sanitary	3
EE 304 EE Lab	1	HSS 332 Dev. West. Cult. Inst.	3	CE 371 Struct. Theory II . .	3
HSS 331 Orig. West. Cult. Inst.	3	Geol. 310 For Engineers . . .	5	HSS 333 Contemp. Pol. and Soc. Problems	3
	15		17		15

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
CE 470 Struct. Theory III . . .	4	CE 454 Sewerage	3	CE Tech. Elective	3
CE 466 Soil Mechanics	3	CE 480 Struct. Design	5	CE Tech. Elective	3
CE Tech. Elective	3	CE Tech. Elective or Phys. 320 Modern	3	HSS 493 Lit. Heritage West. World III	3
CE 362 Mt'ls. of Constr. . . .	3	HSS 492 Lit. Heritage West. World II	3	ME 320 Thermodynamics I .	5
HSS 491 Lit. Heritage West. World I	3	B. Law 307 Business Law . .	3	H. Rel. 365 Hum. Behav. in Organizations	3
	16		17		17

† See page 29 for ROTC requirement.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate School Bulletin*.

MASTER OF SCIENCE IN CIVIL ENGINEERING. Graduate work leading to this degree is offered in the fields of hydraulic engineering, sanitary engineering, soil mechanics, engineering mechanics, structural engineering, and transportation (highway) engineering. The requirements are: a minimum of 39 credits, of which 30 credits must be in formal course work and 9 in thesis. No foreign language is required.

DOCTOR OF PHILOSOPHY. Candidates for this degree must complete an approved program of studies and a research program which makes a definite contribution to knowledge. This research program may be in one of the following areas: hydraulics and fluid mechanics, sanitary engineering, soil mechanics, engineering mechanics, structural engineering, or transportation engineering.

COURSES FOR UNDERGRADUATES

- 210 Route Design (5)** **Chittenden, Colcord**
Reconnaissance, preliminary and location surveys of transportation routes. Alignment problems; circular, parabolic and spiral curves. Earthwork computation; mass diagram in economic route design. Application of electronic computers. Prerequisites, General Engineering 121 and Mathematics 125.
- 214 Control Surveys (3)** **Chittenden, Colcord**
Design of engineering surveys and analysis of errors. State plane coordinates, calibration and adjustment of instruments, triangulation and traverse, leveling and engineering astronomy. Modern optical and electronics instruments and computers. Prerequisite, 210 or permission.
- 291 Dynamics (3)** **Campbell, Hartz**
Vectors; equations of motion; translation and rotation of rigid bodies; kinetics, energy, work, power, momentum and impulse, and impact. Prerequisites, General Engineering 112, Mathematics 126 or equivalent, and Physics 217.
- 292 Mechanics of Materials I (3)** **Campbell, Hartz**
Basic theory, analysis and design of machine and structural members. Deformation, normal and shearing stresses in tension members, beams and columns. Torsional stresses and deformations. Prerequisites, Mathematics 126 or equivalent, and Physics 217.
- 293 Mechanics of Materials II (3)** **Campbell**
Review problems on material of 292, with emphasis on engineering applications. Combined stresses, introduction to structural continuity, eccentric loadings, resilience, dynamic loadings. Prerequisites, 292, and Mathematics 221 or 224 or equivalent.
- 321 Roads and Pavements (3)** **Ekse, Meese, Sawhill**
The historical development and modern practice in the construction of highway subgrades, base courses, surface treatments, and pavements. Engineering properties and identification characteristics of road building materials. Four hours of lecture and two hours of soils and asphalt laboratory per week. Prerequisite, junior standing.
- 342 Fluid Mechanics I (4)** **Neco**
Elementary mechanics of incompressible fluids. Hydrostatics. Continuity, energy, and momentum equations. Resistance phenomena for laminar and turbulent flows. Dynamic similitude. Introduction to potential flow. Prerequisites, 291, Mathematics 221 or 224 or 253.
- 345 Fluid Mechanics II (3)** **Richey**
Analysis of fluid flows of particular interest in civil engineering. Hydraulic models, conduit resistance, pipe systems, open channel flow, hydraulic machinery. Prerequisite, 342.
- 346 Hydraulic Engineering (3)** **Richey**
Application of fluid mechanics principles to problems in hydraulic engineering drawn from the areas of surface and ground-water hydrology, dams, economic studies, and others. Prerequisite, 345.
- 350 Introduction to Sanitary Engineering (3)** **Bogan, Carlson, Sylvester**
Basic concepts of water supply, sewerage, refuse disposal, and stream pollution; chemical, bacteriological, and physical analysis of water and sewage. Prerequisite, Chemistry 160 or equivalent.
- 362 Materials of Construction (3)** **Clanton, Mittet**
Portland cement concrete. Laboratory determination of physical properties of plain, reinforced, and prestressed elements. Basic reinforced concrete theory. Prerequisite, 293 or concurrently.
- 363 Materials of Construction (3)** **W. M. Miller, Paris, Vasarhelyi**
Mechanical properties of structural metals and woods, effects of static and dynamic loads on structural components, testing, inspection, and selection of materials. Prerequisite, 293.
- 370 Structural Theory I (3)** **Hartz, Miller, Rhodes**
Stresses and deflections of wood and steel trusses. Trussed bents and portals. Space frames. Moving loads and influence lines. Williot-Mohr and strain-energy methods. Prerequisite, 293.
- 371 Structural Theory II (3)** **Hartz, Miller, Mittet**
Theory of continuous beams and rigid frames. Nonuniform members. Moment distribution and matrix methods. Elastic line and influence principles and procedures. Prerequisite, 370.
- 403 Principles of Urban Planning (3)** **Horwood**
Introduction to the urban planning process. Characteristics and determinants of urban land utilization. Elements of physical land planning and the comprehensive plan. Prerequisite, senior or graduate standing.

- 415 Photogrammetry (3)** **Chittenden, Colcord**
Geometrical characteristics of photographs and photogrammetric equipment, flight planning and control considerations for photogrammetric mapping, stereoscopy, parallax measurement and computations, mosaicing, tilt determination, consideration of accuracies and error sources. Prerequisite, 214 or permission.
- 422 Railway Engineering (3)** **Ekse**
Locomotive performance and train resistances; permanent way; economics of railway location; sidings and terminals. Prerequisite, 210.
- 423 River and Harbor Engineering (3)** **Ekse, Maese**
Breakwaters, shore protection, channel protection and regulation; theory of waves. Prerequisites, 210 and 342.
- 424 Highway Pavement Design (3)** **Ekse**
Evaluation of subgrade soils for pavement design; laboratory testing and field control. Design of bituminous mixtures; theories of flexible and rigid pavement design; selection of adequate surfacing; culvert design. Prerequisite, 321.
- 426 Airfield Design (3)** **Ekse**
Airport planning; layout of runways, taxiways, and building area; subgrade soil evaluation; flexible and rigid pavement requirements; surface and sub-surface drainage systems; lighting and marking layouts. Three periods of combined discussion and project work. Prerequisite, 321.
- 428 Highway Policy and Economics (3)** **Hennes, Horwood**
The economic determinants of highway improvement. Highway systems interrelations, development, and finance. Prerequisite, senior or graduate standing in engineering or permission.
- 429 Traffic Engineering—Operations (3)** **Horwood, Sawhill**
Traffic engineering functions and administration. Vehicle and driver characteristics. Traffic surveys. Design and warrants for control devices. Laws and ordinances. Prerequisites, senior standing in engineering, major in urban planning, or permission.
- 430 Traffic Engineering—Design (3)** **Sawhill**
Geometric design of major streets and highways, intersections at grade, interchanges, and parking facilities. Prerequisite, senior standing in engineering, major in urban planning, or permission.
- 441 Intermediate Fluid Mechanics (3)** **Chenoweth, Richey**
Dimensional analysis, similitude, hydraulic models. Introductory study of boundary layer theory and potential flow. Prerequisite, 342.
- 442 Introduction to Hydrodynamics (3)** **Necs, Richey**
Fundamentals of the flow of an ideal fluid. Complex variables and conformal mapping. Application to flow past immersed bodies and fixed boundaries. Prerequisites, 441, Mathematics 221, or permission.
- 445 Hydraulic Machinery (3)** **Moritz**
Application of hydraulic principles to the design and function of hydraulic machinery, with emphasis on turbine design and pump analysis. Topics include: head, speed, power, type, shape, losses; details of runner, shaft, guides, bearing casing governor, auxiliaries, etc., pumps and other hydraulic devices. Prerequisite, 342.
- 447 Applied Hydrology (3)** **Campbell, Richey**
Theory and application of hydrology, with emphasis on water-power development. Precipitation, runoff, maximum and minimum flows, flood routing. Economics of storage and transportation of water. Types of hydroelectric installation; multiple use projects. Prerequisite, 343 or 346.
- 448 Reclamation (3)** **Campbell**
The transportation of water by gravity flow. Analysis and design of canals, flumes, transitions, energy dissipators, and similar structures. Special problems in irrigation engineering. Prerequisite, 343 or 346.
- 450 Advanced Sanitary Engineering Laboratory (5)** **Bogan**
Analytical procedures and control methods involved in the analysis and treatment of water, sewage, and industrial wastes; their application and limitations. Prerequisites, 350 and senior or graduate standing.
- 452 Water Supply (3)** **Bogan, Carlson, Sylvester**
Water sources, consumption, fire protection, financing, cost comparisons, intakes and supply conduits, pipe line materials and appurtenances, distribution system design and analysis, storage on the distribution system, and ground water and wells. Prerequisites, 343 or 346 and 350.
- 453 Water Treatment (3)** **Bogan, Carlson, Sylvester**
Water sources and their quality, interpretation of water analyses, theory of a water filtration plant design, water softening, corrosion control and miscellaneous water treatment methods. Prerequisites, 343 or 345 and 350.
- 454 Sewerage (3)** **Bogan, Carlson, Sylvester**
Population estimates, quality and quantity of sewage. Hydraulics of sewers. Storm water runoff. Design of storm and sanitary sewers and their appurtenances. Sewage pumping problems. Prerequisites, 343 or 346 and 350.
- 456 Sewage Treatment (3)** **Bogan, Carlson, Sylvester**
Theory and fundamental principles of the major unit operations and processes employed in sewage treatment together with their applications and design. Prerequisite, 454 (450 recommended).

- 457 Environmental Engineering Problems (3)** **Bogan, Sylvester**
Air pollution, its significance, study and control. Industrial wastes, their characteristics, origin and methods of control. Refuse characteristics, collection, and disposal. Prerequisite, 454 (450 recommended), and senior or graduate standing.
- 466 Soil Mechanics (3)** **Hennes, Meese**
Mechanical properties of soils. Theoretical mechanics and engineering practice in the evaluation of lateral earth pressures, bearing capacity, and settlement of foundations. Underground exploration and sampling techniques. Prerequisite, 321 or permission.
- 467 Earthwork Engineering (3)** **Hennes, Meese**
Further development of the principles of soil mechanics, with emphasis on problems involving plastic equilibrium and seepage forces. The stability of earth cuts and embankment. Seepage under and through dams. Flow net construction for the solution of groundwater problems. Underdrainage; quicksand; filter design. Soil compaction, in practice and in laboratory, for earth-fill construction. Design and analysis of an earth dam. Prerequisite, 466.
- 468 Engineering Properties of Soils (3)** **Hennes, Meese**
Theoretical study of those soil properties which are of concern to the civil engineer. Training in soil laboratory techniques. Soil sampling and testing, including consolidation, direct shear, unconfined and triaxial compression, compaction, permeability, capillarity, Atterberg limits, and mechanical analysis. Prerequisite, 466.
- 470 Structural Theory III (4)** **Rhodes, Sergev, Vasarhelyi**
Strength and deflection of beams, columns, and combined stress members of metal and of wood. Supports, attachments, and connections. Prerequisites, 363, 371.
- 480 Structural Design (5)** **Clanton, Miller, Sergev**
Structural design of buildings of wood, steel and reinforced concrete. Prerequisites, 362 and 470.
- 481 Bridge Design (3)** **Clanton, Rhodes**
The design of highway bridges. Characteristics of various types. Corequisite, 480.
- 482 Advanced Reinforced and Prestressed Concrete (3)** **Clanton, Mittel**
Materials and procedures of prestressed concrete construction. Design for flexure, shear, bond, composite sections, continuous spans, and columns. Special problems in reinforced concrete. Prerequisite, 480 or graduate standing.
- 485 Applied Structural Analysis (3)** **Miller**
Theory of statically indeterminate structural assemblies including rigid frames and continuous trusses. Redundant members. Members of non-uniform sections. Introduction to arches and curved members. Moment-area, moment-distribution, and strain-energy methods. Prerequisite, 371.
- 494 Introduction to the Mechanics of Continuous Media (3)** **Hartz**
A rigorous development of the basic equations of motion of elastic solids and Newtonian fluids through the use of vectors and cartesian tensors, mechanical behavior of materials, problems in linear elasticity and fluid statics and dynamics. Prerequisites, 291, 292, 342, or Aeronautical Engineering 300, Mathematics 221, or permission.
- 499 Special Projects (2-5, maximum in one field 15)**
Students should register for H (hydraulic), M (materials), P (planning), S (structural), W (sanitary), or T (transportation). Prerequisite, permission of Department Chairman.

COURSES FOR GRADUATES ONLY

- 509 Engineering Relations (2)**
Methods of setting up engineering problems and investigations; written and oral presentation of professional ideas and analysis, both professional and economic, in the student's major field. Prerequisites, graduate standing and permission of Department Chairman.
- 520 Seminar (1, maximum 6)**
Formal presentation for discussion and criticism of all research of the graduate year, one credit, required of all candidates for a master's degree during their final quarter in residence. Prerequisite, permission of Graduate Adviser or Major Professor.
- 521 Seminar in Urban Transportation Planning (2)** **Horwood, Sawhill**
Prerequisite, graduate standing in Civil Engineering or Urban Planning, or permission.
- 523 Port Development (4)** **Ekse, Hennes**
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. Prerequisites, 342 and senior or graduate standing; not open to students with credit in 423.
- 524 Modern Pavement Theory (4)** **Ekse**
Elastic slab theory as applied to rigid pavements, considering such factors as subgrade reaction, stress repetition, temperature, and warping stresses; theories of plastic equilibrium as applied to base courses and flexible mats. Other elements of highway design. Two lectures, one laboratory period, and one conference. Prerequisite, graduate standing; not open to students with credit in 424.
- 530 Advanced Traffic Engineering—Freeways (4)** **Sawhill**
Factors and elements in the geometric design and location of arterials, freeways, interchange connections, and parking facilities. Special studies and reports. Prerequisite, permission; not open to students with credit in 430.

- 542 Hydrodynamics I (4)** **Neco, Richey**
Fundamentals of fluid potential motion. Two- and three-dimensional flow examples, including free surface flows. Complex variables, conformal mapping, other solution techniques. Prerequisite, 441 or permission; not open to students with credit in 442.
- 543 Hydrodynamics II (3)** **Neco, Richey**
Circulation and lift. Vortex motion. Introduction to viscous flows: the Navier-Stokes equations, and some exact solutions. Instability of laminar flow. Introduction to turbulent flow. Prerequisite, 542.
- 544 Wave Dynamics (3)** **Richey**
Application of wave theory to the interaction of water waves and objects, emphasizing forces on marine structures. Prerequisites, 542, Oceanography 411, or permission.
- 547 Advanced Hydrology (4)** **Campbell, Richey**
Theory and application of hydrology, with emphasis on water power development. Precipitation, runoff, maximum and minimum flows, flood routing. Economics of storage and transportation of water. Types of hydroelectric installations; multiple use projects. Special problems in hydrology and hydraulic power. Prerequisite, 343 or 346 or permission; not open to students with credit in 447.
- 549 Experimental Hydrodynamics (3)** **Neco**
Experimental studies of steady and unsteady flow phenomena. Model tests as used in hydraulic design. Instrumentation and experimental techniques. Prerequisites, 441 or permission.
- 553 Advanced Water Treatment Design (4)** **Bogan, Carlson, Sylvester**
Functions and performance of unit operations employed in water treatment. Methods of design and process applications involving sedimentation, chemical coagulation, filtration, demineralization, and the removal of radioisotopes. Functional design of a complete water treatment plant by the student to meet specific requirements. Prerequisites, 450, 452 or permission; not open to students with credit in 453.
- 556 Advanced Sewage Treatment Design (4)** **Bogan, Carlson, Sylvester**
Application and design of unit operations and processes employed in sewage treatment, including mechanical and gravitational separations, aerobic and anaerobic biochemical transformations, aeration and ORP control. Functional design of a complete sewage treatment plant. Prerequisites, 454, 450 or permission; not open to students with credit in 456.
- 557 Industrial Waste Treatment (4)** **Bogan, Sylvester**
Origin and properties of waste gases, aerosols, and liquids from industries, including chemical, petroleum, pulp and paper, food processing, metallurgical, pharmaceutical, and nuclear energy. Laboratory analysis and treatment of wastes. Prerequisites, 452, 454, 450 or permission; not open to students with credit in 457.
- 567 Advanced Soil Mechanics and Foundations (4)** **Hennes, Meese**
Design of earth dams and analysis of slope stability. Dam foundations. Stress distribution in a semi-infinite elastic solid, and its application to foundation analysis. Hydraulics of groundwater flow, including piping, uplift, and quicksand phenomena. Flow net construction. Moisture-density control in earth embankment. Weekly seminar on current publications in the field of soil mechanics with special emphasis on landslides, seepage, and earth fill. Prerequisites, 466 and graduate standing; not open to students with credit in 467.
- 569 Applied Soil Mechanics (3)** **Hennes, Meese**
Soil mechanics in engineering practice; the application of theory to the analysis of footings, piling, retaining walls, tunnels, and other substructures. Prerequisites, 466 and graduate standing.
- 570 Strain Measurements (3)** **Hartz, Vasarhelyi**
Experimental determination of strain under static and dynamic loads; mechanical, optical and electrical strain gages; transducers for displacement, velocity and acceleration; photoelasticity, strain rosette, brittle coating and other methods; problems of instrumentation, and analysis of data. Prerequisite, graduate standing in engineering.
- 571 Advanced Strength of Materials (3)** **Hartz, Sergev**
Stresses and deflection of curved bars, beams on elastic foundation, beams with axial forces, shear center, stresses and deflection of thin plates; stresses in thick cylinders; stresses in pressure vessels. Particular emphasis is on the technique of breaking down the problems to fundamentals and solving the resultant mathematical equations. Prerequisite, Mathematics 221.
- 572 Theory of Elasticity (3)** **Sergev**
A more rigorous approach to stress and strain problems, including differential equations of equilibrium, compatibility, conditions, stress function; stresses in and deflection of beams, stresses in semi-infinite plates, disks, curved bars, and stress concentration. Introduction to torsion of prismatic bars and energy methods. The subject matter deals primarily with two-dimensional problems. Prerequisite, 571 or permission.
- 573 Elastic Stability (3)** **Sergev**
The study of buckling phenomena in columns, beams, plates, and tubes, with practical application. Prerequisite, 571 or permission.
- 574 Dynamics of Structures (3)** **Hartz**
Stresses and deflections in structures due to dynamic loads. Methods for the analysis of lumped and distributed mass systems. Response of structures to earthquake, moving, and blast loads. Prerequisite, 585 or permission.
- 575 Advanced Theory of Elasticity II (3)** **Hartz**
Topics in three-dimensional theory of elasticity, general curvilinear coordinates, tensors, time dependent problems in elasticity and elastic wave propagation. Prerequisites, 579, Aeronautical Engineering 580, or permission.

- 576 Theory of Plates and Shells (3)** **Sergeov**
Stresses and deflections of flat plates and shells. Effect of transverse loads on circular and rectangular plates. General theory of thin shells. Prerequisite, 573, or permission, graduate standing in engineering.
- 577 Energy Methods in Structural Mechanics (3)** **Hartz**
Basic energy and minimal principles of mechanics; calculus of variations and variational methods; applications to structures, elasticity, plates and shells, stability and vibrations. Prerequisites, 571, 585 or permission.
- 578 Advanced Analytical Mechanics (3)** **Paris**
Generalized coordinates and LaGrange's equations; fundamental theorems and applications; Hamilton's principle; canonical equations; transformation theory; integrals of dynamical equations. Prerequisite, Mathematics 221 or permission.
- 579 Advanced Theory of Elasticity I (3)** **Hartz**
General formulation of the equations of two- and three-dimensional linear theory of elasticity using vectors and tensors; general methods of solution including stress and strain functions and complex variables; nonlinear elasticity. Prerequisite, 572 or Mechanical Engineering 551, or Aeronautical Engineering 530, or permission.
- 581 Advanced Structures (3)** **A. L. Miller**
Multi-story, multi-bay rigid frames including wind and earthquake loads. Theory of flexure of members of nonuniform section. Nonrectangular rigid frames. Moment-area and moment-distribution methods. Prerequisite, graduate standing in Civil Engineering.
- 582 Advanced Structures (3)** **A. L. Miller**
Truss deflection and secondary stresses. Trussed arches. Multi-span trusses. Redundant members. Mueller-Breslau, Maxwell-Mohr, and strain-energy methods. Prerequisite, graduate standing in Civil Engineering.
- 583 Advanced Structures (3)** **A. L. Miller**
Ideal, two-hinged and hingeless elastic arches. Influence lines for statically indeterminate structures. Castigliano's Theorem and strain-energy methods applied to curved members of nonuniform section. Prerequisite, graduate standing in Civil Engineering.
- 584 Plastic Design of Structures (3)** **Vasarhelyi**
Plastic (inelastic) behavior of structural materials. Applications to the design of structural members and systems. Principles of upper and lower bound. Limitations and economy of the procedure. Prerequisite, 581.
- 585 Numerical and Model Methods of Structural Analysis (3)** **Hartz, Vasarhelyi**
Review of basic structural theory. Introduction to matrix, numerical, and approximate methods. Dimensional analysis and model similitude. Structural model analysis. Analogs and analog computers. Prerequisite, graduate standing in Civil Engineering.
- 586 Structural Materials and Design (3)** **Vasarhelyi**
A critical review and discussion of the mechanical properties of structural steel, structural aluminum alloy, and reinforced concrete which affect structural design. Fatigue and impact in metal structures. Failure of structures and structural members. Prerequisite, graduate standing in Civil Engineering.
- 587 Design of Welded Structures (3)** **Vasarhelyi**
A broad review of the factors such as the function of the structure, the mechanical properties of the base metal and welds, structural details, and type of loading which must be considered in the design of a welded structure. Prerequisite, 586.
- 590 Structures Under Wind (3)** **Farquharson**
Fundamental principles governing the static or dynamic response of suspended structures, transmission lines, tall stacks and other flexible structures subject to deflection, overturning or oscillation as a result of wind action. Prerequisite, graduate standing in engineering.
- 595 Advanced Professional Design and/or Analysis (2-5, maximum in one field 15)**
Special studies under the direction of staff members. Students should register for H (hydraulic), M (materials), P (planning), S (structural), W (sanitary), or T (transportation.) Prerequisite, permission of Department Chairman.
- 600 Research (*)**
Special investigations by graduate students under the direction of staff members. Prerequisite, written permission of Department Chairman.
- 700 Thesis (*)**
Prerequisite, permission of Major Professor.

ELECTRICAL ENGINEERING

Chairman: AUSTIN V. EASTMAN, 202 Electrical Engineering

The Department of Electrical Engineering offers courses leading to the degrees of Bachelor of Science in Electrical Engineering, Master of Science in Electrical Engineering, Master of Science in Engineering (see page 37), Master of Electrical Engineering, and Doctor of Philosophy.

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 38).

High scholarship students who plan to study for an advanced degree may, with the advice of a faculty counselor and approval of the executive officer, make a limited number of substitutions for normally required courses in the junior and senior years.

Students planning to take a degree in industrial engineering should elect Accounting 210 (Fundamentals of Accounting).

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
EE 231 Circuits I	5	EE 233 Circuits II	5	EE 235 Circuits III	5
HSS 265 Tech. of Commun.	3	EE 234 Elec. Meas. Lab. I	2	EE 236 Elec. Meas. Lab. II	1
Math. 126 Calc. with Analytic Geometry	5	HSS 270 Report Writing	2	CE 291 Dynamics	3
Phys. 218 Engr. Physics	4	*Math. 221 Diff. Equat.	3	Econ. 211 General	3
	17	Phys. 219 Engr. Physics	4	*Math. 224 Interm. Anal.	3
ROTC	†	ROTC	†	ROTC	†

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
*EE 243 DC Machinery	4	EE 331 Fields and Mt'ls.	4	EE 333 Electronics I	4
EE 311 Transients	4	EE 332 Fields and Mt'ls. Lab.	1	EE 334 Electronics Lab.	1
EE 312 Transients Lab.	1	*EE 340 AC Machinery	4	HSS 333 Contemp. Pol. and Soc. Problems	3
CE 292 Mech. of Mt'ls.	3	*EE 341 AC Machinery Lab.	2	Mtl. E 250 Mt'ls. Science	4
HSS 331 Orig. West. Cult. Inst.	3	HSS 332 Dev. West. Cult. Inst.	3	Phys. 320 Modern Physics	3
	15	B. Law 307 Business Law	3		15
			17		

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
EE 335 Electronics II	4	EE 411 Energy Transmission	4	HSS 493 Lit. Heritage West. World III	3
EE 336 Electronics Lab.	1	EE 412 Energy Trans. Lab.	1	ME 426 Thermodynamics	4
CE 342 Fluid Mechanics	4	HSS 492 Lit. Heritage West. World II	3	**Electives	9
IISS 491 Lit. Heritage West. World I	3	ME 325 Thermodynamics	4		16
ME 368 Kinematics	3	H. Rel. 365 Hum. Behav. in Organizations	3		
	15		15		

* Students planning to do graduate work are urged to (1) replace Mathematics 221, 224 with Mathematics 224, 225, 222; (2) replace Electrical Engineering 243, 340, 341 with Electrical Engineering 251, 351; (3) include, as electives, Electrical Engineering 441 and one or more of the following: Electrical Engineering 469, 479, 485.

** At least 3 credits of electives shall be in Electrical Engineering courses.

† See page 29 for ROTC requirements.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate School Bulletin*. No foreign language is required for the master's degrees, but mathematics through at least one quarter of differential equations is a prerequisite to all graduate work.

Students who received their undergraduate training at other institutions are expected to have substantially the same training as that given to students at this University. In case of deficiencies, students may be required to take certain undergraduate courses in addition to the normal graduate program.

MASTER OF SCIENCE IN ELECTRICAL ENGINEERING. A total of 45 credits of which 36 are in course work and a suitable thesis for 9 credits 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. The courses must include 510 and N520-N521-522. Other electrical engineering courses must be chosen from those numbered 500 or above, with the following exception: On the approval of the candidate's supervisory committee, not more than two of the following senior elective courses, 441, 469, 479, 485, may be applied to this degree. University of Washington graduates are expected to include 441 and one of the others in their undergraduate programs.

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 in Electrical Engineering degree. Certain physics courses may be used in partial satisfaction of the major requirements.

DOCTOR OF PHILOSOPHY. This is primarily a research degree. It is not conferred as a result of course work, no matter how faithfully nor how long it is pursued. The granting of the degree in this department is based essentially on general proficiency and distinctive attainments in electrical engineering, particularly on the demonstrated ability to pursue independent research. Evidence of research investigation is the production of a doctoral thesis which makes a definite contribution to knowledge and is presented with a satisfactory degree of literary skill. In addition to the general requirements of the Graduate School (see the *Graduate School Bulletin*) this department selects prospective candidates for the doctor's degree from outstanding students at the master's level by means of a series of written examinations given each year in the Winter Quarter.

COURSES FOR UNDERGRADUATES

231 Electric Circuits I (5)

Basic concepts of electric circuits, including the concepts of inductance and capacitance. Includes study and application of Ohm's law and Kirchhoff's laws, Thevenin's theorem, Norton's theorem, superposition theorem, nodal and mesh methods, and sufficient study of electric and magnetic fields to gain the necessary concepts of inductance and capacitance. Applications to d-c sources only. Prerequisite, General Engineering 111; corequisites, Mathematics 125 and Physics 218.

233 Electric Circuits II (5)

Applications of the principles covered in 231 to circuits containing a-c sources. Elementary concepts of electric and magnetic fields; ferromagnetism. To be taken concurrently with 234. Prerequisite, 231; corequisite, Mathematics 125.

234 Electrical Measurements Laboratory I (2)

One lecture per week and one four-hour laboratory on alternate weeks covering fundamental electrical measurements. To be taken concurrently with 233. Prerequisite, 231.

235 Electric Circuits III (5)

Continuation of 233 covering polyphase circuits, nonsinusoidal wave forms and Fourier series, resonance and S-plane analysis, and four-terminal networks. To be taken concurrently with 236. Prerequisite, 233.

236 Electrical Measurements Laboratory II (1)

A four-hour laboratory on alternate weeks covering alternating-current measurements. To be taken concurrently with 235.

243 Direct-Current Machinery (4)

Theory of operation of direct-current generators and motors. Voltage characteristics of d-c generators, speed and torque characteristics of d-c motors, and their fields of application. Special d-c machines; rotating amplifiers; the Amplidyne, Rototrol, Regulex and their application in the control of voltage, speed, torque, and in automation of industry. Includes one four-hour laboratory on alternate weeks. Prerequisites, 233 and 234.

251 Energy Conversion Systems I (4)

Basic principles of stationary magnetic systems; equivalent circuits, transformers and saturable reactors, nonlinear core materials. Elements of electromechanical systems from the energy point of view. Includes one four-hour laboratory on alternate weeks. May be substituted for 243. Corequisites, 235 and Civil Engineering 291.

Carswell, Guilford

303 Elements of Electrical Engineering (4)

Short course in the analysis of direct- and alternating-current circuits with an introduction to electronics. For nonelectrical engineering majors. To be taken concurrently with 304. Prerequisites, Physics 218, Mathematics 221, and General Engineering 111.

304 Electrical Engineering Laboratory (1)

A four-hour laboratory on alternate weeks, to be taken concurrently with 303.

305 Electrical Machinery (5)

Condensed course in the theory, circuits, and performance of direct- and alternating-current electrical machinery. Includes one three-hour laboratory per week. Prerequisite, 303.

311 Electric Transients (4)

Principles of dynamic analysis applied to linear and nonlinear systems. Study of voltage, current, force, motion, and energy relationships in linear electrical and mechanical systems using both classical and transformation methods for solving linear differential equations, including those having time-variable coefficients. Analytical, numerical, graphical, and piece-wise linear techniques for solving nonlinear differential equations, with applications to nonlinear inductive and capacitive circuits. To be taken concurrently with 312. Prerequisites, 235 and Mathematics 221 or 322

312 Electric Transients Laboratory (1)

A four-hour laboratory on alternate weeks. To be taken concurrently with 311.

331 Fields and Materials (4)

Formulation of Maxwell's equations and their application to problems in electrical engineering. Study of the interaction of physical materials and electromagnetic fields. To be taken concurrently with 332. Prerequisites, 235 and Mathematics 221 or 322.

332 Fields and Materials Laboratory (1)

A four-hour laboratory on alternate weeks. To be taken concurrently with 331.

333 Basic Electronics I (4)

Characteristics of electron tubes and semiconductor devices; equivalent circuits; vacuum tube and transistor amplifier fundamentals. To be taken concurrently with 334. Prerequisite, 235.

334 Electronics Laboratory (1)

A four-hour laboratory on alternate weeks. To be taken concurrently with 333.

335 Basic Electronics II (4)

Continuation of 333, including fundamentals of rectifiers and power supplies; band-pass amplifiers; tuned power amplifiers; oscillators, modulators and demodulators. To be taken concurrently with 336. Prerequisite, 333.

336 Electronics Laboratory (1)

A four-hour laboratory on alternate weeks. To be taken concurrently with 335.

340 Alternating-Current Machinery (4)

Theory of the transformer; single-phase and polyphase transformation; effect of circuit connections on harmonics, transformer rating, etc.; theory of synchronous machines; armature reaction in the synchronous machine; voltage regulation in the alternator. Applications of the synchronous motor. Theory of the induction motor; speed and torque characteristics. Speed control of the induction motor. To be taken concurrently with 341. Prerequisite, 243.

341 Alternating-Current Machinery Laboratory (2)

One four-hour laboratory per week covering experimental work with alternating-current machinery. To be taken concurrently with 340.

351 Energy Conversion Systems II (4)

Carswell, Guilford

Elements of induction, synchronous, and commutator machines; basic principles, advantages and limitations, equations of motion. Applications of electromagnetic field theory to rotating machines. Includes one four-hour laboratory per week. May be substituted for 340, 341. Prerequisite, 251; corequisite 311.

400 Vacuum Tubes and Electronics (5)

Principles of operation and application of electronic tubes, transistors, and circuits in the fields of instrumentation control and communication. Includes one four-hour laboratory on alternate weeks. Prerequisite, 303.

411 Energy Transmission (4)

Application of Maxwell's equations to topics in electromagnetic energy transmission. Plane and spherical wave propagation. Guided waves with particular emphasis on transmission lines and wave guides. To be taken concurrently with 412. Prerequisites, 311, 331.

412 Energy Transmission Laboratory (1)

A four-hour laboratory on alternate weeks. To be taken concurrently with 411.

433 Transistor Circuit Engineering (3)

Cochran, Hanson

Basic concepts of semi-conductor devices including construction, principles of operation, application as amplifiers, oscillators, and switching or control elements. Includes one two-hour laboratory per week. Prerequisite, 335.

441 Linear System Analysis (3)

Frequency and time domain properties of signals. Fourier methods used for determining the response of linear systems. Transform methods and operational properties. Comparison of Fourier and Laplace transform methods. Prerequisite, 311.

450 Advanced Alternating Currents (6)

Hoard

Advanced study of the synchronous machine. Electro-dynamic performance of the synchronous machine under steady state and transient conditions. Torque angle and torque equation. The machine as a torsional pendulum. Single-phase induction motors. Double revolving field theory and cross-field theory. Motor performance. Conversion of a-c to d-c. Advantages and limitations of the various methods. Introduction to transmission lines. Review of symmetrical components with application to shortcircuit calculations on some simplified networks. Includes one four-hour laboratory per week. Prerequisite, 340.

- 451 Dynamics of Electromechanical Systems (3)** **Guilford**
Energy principles and applications to electromechanical systems; circuit theory methods; matrix transformations of voltage and force equations; elementary applications of field theory to analysis of electromechanical systems. Prerequisite, 351 or permission.
- 453 Electric Power Systems (3)** **Robbins**
Theory and analysis of the complete electrical power system including generation, transmission, control, relaying, and distribution. Analytical study of the integrated electrical power network, under steady state and transient conditions involving symmetrical components, system analyzers and data computers. Nuclear power generation, control, protection, safety, and integration into the network. Includes one three-hour laboratory per week. Laboratory includes several field trips to typical power installations including a nuclear reactor power plant. Prerequisite, 340.
- 457 Industrial Control (4)** **Hoard**
Introduction to the theory of control; types of control; control system components. Study of relays, the Amplidyne, the Rototrol, and Regulex, magnetic and other control amplifiers and their application to typical control circuits. Includes one four-hour laboratory on alternate weeks. Prerequisites, 333, 340.
- 469 Advanced Field Theory (4)** **Ishimaru**
Applications of Maxwell's Equations to wave propagation, skin effect, circuit impedance elements, and other time-varying electrical phenomena; wave guides and resonators; electro-magnetic radiation and ultra-high frequency techniques. Includes one three-hour laboratory. Prerequisites, 331 and 411.
- 471 Amplifier Theory (5)**
Theory of analysis and synthesis of small-signal, low-pass, and band-pass amplifiers; analysis of transient response, feedback, and the effects of noise. Includes one four-hour laboratory on alternate weeks. Prerequisites, 311 and 335.
- 473 Pulse Circuits (5)** **Cochran**
Wave shaping circuits including clipping circuits, square-wave generators, differentiator and integrator circuits, d-c restoration, and clampers. Free-running and driven trigger circuits. Ringing circuits. Applications to high-frequency circuits including television and radar. Includes one four-hour laboratory on alternate weeks. Prerequisite, 335.
- 475 Digital Circuits (4)** **Cochran**
Digital circuits, transmission gates, voltage comparators, time modulation and measurement, pulse and digital systems. Includes one four-hour laboratory on alternate weeks. Prerequisite, 473.
- 477 Principles of Computer Application (4)** **Johnson**
Digital and analog computer application fundamentals. Specific preparation and programming of simple problems for various computers. Number systems and Boolean Algebra relative to computer application. General types of computer storage, control, and circuitry in reference to application. Prerequisite, senior standing or permission.
- 479 Fundamentals of Automatic Control (4)** **Clark, Nokes**
Linear servomechanism theory and design principles. Dynamic analysis of linear systems through use of pole-zero plots. Stability and performance analysis of feedback systems by the root-locus technique, and by the real frequency response method. Nyquist stability criteria, Bode diagrams, and Nichols charts. Introduction to advanced topics on automatic control theory. Includes one three-hour problem period per week. Prerequisite, 311.
- 481 Fundamentals of Microwaves (4)** **Carswell, Harrison**
Microwave circuit elements, waveguides and resonators; microwave measurement techniques; high frequency triodes, klystrons and other transit-time devices; beam type and solid-state amplifiers. Includes one three-hour laboratory per week. Prerequisites, 331, 335, 411.
- 482 Antennas and Propagation (3)** **Swarm**
Theory of radiation; radiation patterns and impedance characteristics of antennas and arrays; theory of tropospheric and ionospheric propagation. Prerequisite, 331.
- 483 Introductory Communication Theory (3)** **Swarm**
Frequency analysis modulation; mathematical concepts of Fourier Integral and probability theory; correlation techniques; elementary study of noise and communication theory. Prerequisite, 335.
- 485 Introduction to Solid State Electronics (4)** **Bjorkstam, Watt**
Elementary quantum theory and atomic spectra; elements of classical and quantum statistics; introduction to the free electron theory of metals; elementary concepts of band theory, the behavior of holes, electrons and imperfections in semiconductors; theory of p-n junction and metal-semiconductor junction devices; introduction to dielectric and magnetic properties of materials. Prerequisites, 331, Physics 320.
- 493 Guidance and Control (4)** **Clark**
Analysis and design problems in altitude control and flight-path guidance of fluid-borne vehicles. Principles of inertial instruments and navigation systems. Solution of special control problems by use of the analog computer. Prerequisite, 479.
- 494 Principles of Radar (3)** **Reynolds**
An introduction to the basic principles and detection of radar signals. Examples of the application of these principles in various radar systems. Prerequisite, 482.
- 499 Special Projects (2-5, maximum 10)** **Staff**
Assigned construction or design projects carried out under the supervision of the instructor. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 505 Analysis of Random Processes (3)** **Lytle**
Probability theory; discrete and continuous random variables; stochastic processes. Spectral analysis of random signals and noise. Introduction to Markov processes. Prerequisite, 441 or permission.
- 510 Introductory Network Theory (5)** **Hsu, Lewis, Lytle**
Mathematical concepts applicable to network theory, including mesh and nodal formulations in matrix form. Linear transformations and relation of quadratic forms to energy functions. Elements of complex variable including conformal transformations and complex potential applied to fields and networks. Complex contour integration and evaluation of residues; application to Laplace transforms and determination of transient response. Prerequisite, 441.
- 511, 512 Network Synthesis (3,3)** **Lewis, Lytle, Hsu**
Network representations in the complex frequency domain, realizability criteria, synthesis of driving point and transfer impedance and coupling networks for prescribed transfer characteristics, canonical forms and network equivalents, frequency and time domain aspects of approximating response functions. Prerequisites, 510 for 511; 511 for 512.
- 514 Power System Analysis (5)** **Bergseth**
Methods of analysis of power systems, with emphasis on the interrelations between generation, transmission, and distribution; symmetrical components; evaluation of system parameters and sequence networks; fault studies; transient and steady-state behavior of systems; elements of system protection. Prerequisite, 340 or 351.
- 515 Measurements and Circuit Components (2)** **Cochran**
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, 411.
- N520-N521-522 Seminar (0-0-2)** **Hanson, Lewis**
Required for all graduate students.
- 531 Solid State Electronics I (4)** **Bjorkstam, Watt**
Matrix formulation of quantum theory, perturbation theory; lattice vibrations; introduction to the band theory of solids; some properties of normal and superconducting metals; dielectric and magnetic properties of materials including some discussion of ferroelectricity and ferromagnetism; luminescence; fundamentals of magnetic resonance. Includes one two-hour laboratory per week. Prerequisite, 485 or permission.
- 532 Solid State Electronics II (4)** **Bjorkstam, Hanson**
Solid state electronic devices including ferrites, parametric amplifiers, masers, semiconductor and superconductor devices. Includes one two-hour laboratory per week. Prerequisite, 531.
- 551 Power System Protection (3)** **Bergseth**
Protection of power systems and equipment against both overvoltages and overcurrents; includes power circuit breakers, fuses, relays, lightning arrestors, expulsion tubes, and the influence of neutral grounding methods on overvoltages. Offered alternate years; offered 1962-63. Prerequisite, 514 or permission.
- 562 Physical Electronics (3)** **Shimada**
Basic analysis of vacuum tubes and gas discharges. Thermionic emission, work function, Schottky effect. Field emission and devices using field emission and cold emission. Space-charge-limited current flow. Application of conformal mapping in electrostatic field in tubes. Noise. Kinetic theory of gases; creation of charged particles. Modes of gas discharges; various regions in gas discharges. Microwave properties of plasma. Ion sheath; probe technique. Discussions on plasma energy convectors. Prerequisite, 441.
- 563 Electrical Noise I (3)** **Shimada**
The noise theory and its application to electron devices. Fourier analysis of stationary random process; correlation; noise power spectrum. Statistics; distribution functions; Gaussian distribution. Characterization of noisiness; noise ratio, noise figure, noise measure, noise temperature. Noise measurements; noise in quadratic detector. Prerequisite, 505 or permission.
- 564 Electrical Noise II (3)** **Shimada**
Noise in vacuum tubes, semiconductors; noise suppression, excess noise. Noise in transistors, mixers, detectors, parametric amplifiers, electron beam devices, masers and other low noise devices. Prerequisite, 563.
- 566 Microwave Measurements (2)** **Harrison**
Measurements of wave length, admittance, power, dielectric constant, and losses in the microwave frequency region utilizing wave guide techniques. Problems in impedance matching and impedance transformation based on laboratory work. Includes one three-hour laboratory per week. Prerequisites, 335 and 411.
- 567 Microwave Vacuum Tubes (4)** **Harrison**
Theory of microwave vacuum tubes, including triodes, klystrons, traveling wave tubes, and magnetrons, and their modulation characteristics. Oscillator theory is considered in detail, with klystron oscillators used to illustrate general principles. Prerequisite, 566 or permission.
- 568 Microwave Electronics (3)** **Golde**
A selection of topics applicable to the study of microwave tubes. Formation and focusing of electron beams. Application of various theories to the interaction of electron beams with electromagnetic fields. Prerequisite, 469.

- 570 Antenna Theory (3)** **Reynolds, Swarm**
Theory of radiation; impedance characteristics and radiation patterns of thin linear antenna elements; properties and synthesis of antenna arrays. Prerequisite, 469.
- 572 Microwave Network Theory (4)** **Ishimaru**
Theory of uniform waveguides, application of general network theory to waveguides and cavities; matrix representation; equivalent circuit for waveguide discontinuities. Quasi-static solution, and variational principles. Radial and spherical waveguides; slow-wave structures; anisotropic media. Prerequisites, 411, 441, and 469.
- 574 Microwave Antennas (4)** **Carswell**
Fundamental principles underlying the design of microwave antennas. Slot antenna on cylinder. Green's function and eigenfunctions. Watson transform. Theory of slot on waveguides. Physical optics, variational expression for radar cross section. Prerequisite, 572; corequisite Mathematics 429 or permission.
- 575 Microwave Propagation (4)** **Ishimaru**
Microwave propagation through anisotropic media. Slow waves and leaky waves. Surface waves. Mode theory and dipole over earth. Rayleigh and Kirchhoff approximation. Wiener-Hopf techniques. Prerequisite, 574 or permission.
- 576 Communication Theory I (3)** **Lytle**
Mathematical theory of communication. Information theory for discrete and continuous systems. Channel capacity and coding. Prerequisite, 505 or permission.
- 577 Communication Theory II (3)** **Lytle**
Communication in the presence of noise. Analysis of systems with random inputs. Optimum linear systems, statistical detection of signals, decision theory. Statistical analysis of nonlinear system. Prerequisite, 576 or permission.
- 578 Radio Propagation I (3)** **Swarm**
Theory of electromagnetic propagation over a finite conductive earth and in a horizontally stratified media; theory of scattering with applications to the troposphere. Prerequisite, 469.
- 579 Radio Propagation II (3)** **Swarm**
Theory of electromagnetic propagation in ionized medium with application to the ionosphere. Theory of ionospheric scattering, meteor reflection, and auroral propagation. Prerequisite, 469.
- 580 Electroacoustics (4)** **Rogers**
Vibration of strings, bars, and membranes; acoustical wave equation and solutions; electric, acoustic, and mechanical analogies; acoustical networks and measurements; architectural acoustics; properties of hearing; loudspeakers, microphones, and sound reproduction. Includes one four-hour laboratory on alternate weeks. (Offered alternate years; offered 1962-63.) Prerequisite, 411.
- 581 Control System Measurements (2)** **Noges**
Theory and practice in measurement of control system parameters. Determination of transfer functions for various system components by transient and frequency response measurements. Prediction of feedback system performance, from experimentally derived data, with experimental verification. Use of the analog computer in simulation. Includes one three-hour laboratory per week. Prerequisite, 479.
- 582 Analytical Design of Linear Control Systems (4)** **Clark, Noges**
Synthesis of linear automatic control systems to satisfy analytical performance criteria. Performance measures for control systems and minimization techniques. Elements of probability theory and statistical analysis of random, continuously-varying time functions. Minimization of mean square error in the presence of noise. The adaptive control system problem. Prerequisites, 479, 505, and 583 recommended.
- 583 Nonlinear Control Systems (3)** **Clark, Noges**
Dynamic analysis of nonlinear control systems. Graphical and numerical methods for solution of nonlinear differential equations. Limit cycles and other phenomena peculiar to nonlinear systems. Use of phase-space, describing function, and simulation techniques in the analysis of nonlinear servomechanisms. Prerequisite, 479.
- 584 Sampled-Data Control Systems I (4)** **Hsu**
Sampling process and data reconstruction; Z-transform analysis of linear sampled-data systems; modified Z-transform analysis behavior of systems between sampling instants; multirate sampled-data systems; sampled-data systems with finite sampling duration; general design principles of sample-data systems. Prerequisites, 441, 479, and Mathematics 427.
- 585 Sampled-Data Control System II (4)** **Hsu**
Digital compensation of control systems; sampled-data control systems with random input; nonlinear sampled-data control systems; other current topics on sampled-data control systems. Prerequisite, 584.
- 586 Electrical Computing Methods (4)** **Johnson**
Study of field models, analog and digital computers, and various special-purpose computers for solving electrical problems. Includes one three-hour laboratory per week. Prerequisite, graduate standing.
- 587 Applications of Digital Computers to Engineering Problems (4)** **Johnson**
Evaluation and application of numerical methods in solution of typical engineering problems by means of digital computers. Choice of method, problem organization, error, convergence, limitations and considerations for specific computers. Curve fitting and random selection. Prerequisites, 505, 586.

- 588 Logical Design of Digital Computers I (3)** **Johnson**
Circuit components and binary numbers, Boolean algebra and the simplification of Boolean functions. Memory element input and application equations. Digital computer memories, computer arithmetic units, control units. Computer design organization. Prerequisite, graduate standing.
- 589 Logical Design of Digital Computers II (3)** **Johnson**
Analysis and synthesis of digital systems from logical models, sequential and time independent logic, Boolean matrix analysis, "nand" and "nor" logic. Evaluation of various analysis and synthesis methods in application to logical problems. Prerequisite, 588.
- 599 Selected Topics in Electrical Engineering (*)**
Prerequisite, permission of Department Chairman.
- 600 Research (*)**
Prerequisite, permission of Department Chairman.
- 700 Thesis (*)**
Prerequisite, permission of Department Chairman.

HUMANISTIC-SOCIAL STUDIES FOR ENGINEERS

Chairman: STUART W. CHAPMAN, 316 Guggenheim Hall

The Department of Humanistic-Social Studies offers courses designed to give engineering students a general, nontechnical education as an integral part of their professional training. All of these courses, except 302, are required in all engineering curricula.

The Department's aim is to help its students to understand the growth of the society in which they live; to recognize and analyze critically some of the problems of that society; to think logically and express themselves lucidly; to appreciate great works of literature; and to develop social and philosophical concepts which will help them lead effective lives as professional men, citizens, and individuals. To this end the Department offers an integrated program of study which begins in the sophomore year and continues through the senior year.

Certain nontechnical courses offered in other colleges of the University are required or are elective in the various engineering curricula: Business Law 307 (Business Law), Human Relations in Business and Industry 365 (Human Behavior in Organizations), and Economics 211 (General Economics).

COURSES FOR UNDERGRADUATES

- 265 Techniques of Communication (3)** **Hunner, Trimble**
Organization, development, and expression of ideas. Prerequisite, passing of tests.
- 270 Engineering Report Writing (2)** **Souther, Trimble**
Practical problems in making a logical, concise, and attractive presentation of technical materials; periodicals and reference works; the requirements of the reader; style; principles of spacing; illustrations; accepted abbreviations, proper bibliographical usages. Prerequisite, 265 and sophomore standing, or permission.
- 302 Technical Writing (3)** **Souther**
An advanced course focusing on various types of technical and scientific writing: reports, articles, technical papers, manuals, proposals, books. Prerequisite, 270 or permission.
- 331 Origins of Western Cultural Institutions (3)** **Skeels, White**
The nature of man and the nature of culture. Historical study of selected cultures, such as Mesopotamia, Greece, Rome, and medieval Europe; consideration of the social character of these cultures through their myth and literature. Prerequisite, 270 or permission.
- 332 Development of Western Cultural Institutions (3)** **Botting, Elliott, Higbee**
The growth of modern institutions and of the ideas underlying them during the periods of the Renaissance, the Protestant Revolt, the Commercial Revolution, the Enlightenment, and the Industrial Revolution. Major emphasis is on political, economic, religious, and intellectual change. Prerequisite, 331 or permission.
- 333 Contemporary Political and Social Problems (3)** **Botting, Higbee, Rustad**
Twentieth-century background and development of contemporary political and social problems; comparison of competing political philosophies and systems, democracy, Fascism, Communism; current international and national events and issues. Prerequisite, 332 or permission.
- 491, 492, 493 Literary Heritage of the Western World I, II, III (3,3,3)** **Hunner, Skeels, White**
The nature of literature and its role in culture, studied in an historical sequence of selected literary figures and works of Western civilization. 491: French medieval romance, Chaucer, Shakespeare, seventeenth-century poetry, Racine; 492: Voltaire, Goethe, Wordsworth, Flaubert, Tennyson; 493: twentieth-century literary figures. Prerequisites, 270 for 491; 491 for 492; 492 for 493.

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 210 (Fundamentals of Accounting) as an elective subject for the first bachelor's degree. Those who fail to do so will need to take Accounting 210 as a prerequisite to the accounting courses listed below, during their fifth year. This will require completion of Accounting 311 (Cost Accounting) in extension study or in residence during the fourth quarter.

BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING

The second bachelor's degree is granted when 45 credits in the curriculum outlined below are successfully completed. In case of 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
ME 410 Engr. Admin.	3	ME 411 Engr. Economy ..	3	Acctg. 311 Cost Acctg. ..	3
ME 417 Meth. Anal.	3	ME 415 Stat. Quality Control	3	Fin. 350 Bus. Finance	4
Acctg. 220 Fundamentals	3	Acctg. 230 Basic Acctg. Analysis	3	Technical Electives	9
Technical Electives	7	Fin. 320 Money, Fin. Inst., and Income	4		16
	16		13		

MECHANICAL ENGINEERING

Chairman: BRYAN T. McMINN, 142 Mechanical Engineering Hall

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 37), Master of Science in Mechanical Engineering, and Doctor of Philosophy.

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 38).

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
ME 201 Metal Casting ...	1	ME 202 Welding	1	ME 203 Machining	1
ME 263 Mech. Syst's. ...	3	ME 222 ME Lab.	1	ME 260 Mechanism	3
HSS 265 Tech. of Commun.	3	CE 291 Dynamics	3	CE 292 Mech. of Mt'ls. ...	3
Math. 126 Calc. with Analytic Geometry	5	HSS 270 Report Writing	2	HSS 331 Orig. West Cult. Inst.	3
Phys. 218 Engr. Physics ..	4	Math. 224 Interm. Anal. ...	3	Math. 225 Interm. Anal. ...	3
	16	Phys. 219 Engr. Physics ...	4	Mtl. E 250 Materials	4
ROTC	†		14		17
		ROTC	†	ROTC	†

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
ME 305 Prod. Tooling ...	1	ME 306 Prod. Techniques. 1		ME 307 Prod. Planning ..	1
ME 320 Thermodynamics I	5	ME 321 Thermodynamics II	5	ME 330 Exper. Thermodynamics	4
ME 340 Materials	3	ME 361 Mach. Design	3	ME 362 Mach. Design	3
CE 293 Mech. of Mt'ls. ...	3	ME 367 Dynamics	3	EE 303 Elements	4
HSS 332 Dev. West. Cult. Inst.	3	Econ. 211 General	3	EE 304 EE Lab.	1
Math. 221 Diff. Equat.	3	HSS 333 Contemp. Pol. and Soc. Problems	3	HSS 491 Lit. Heritage West. World I	3
	18		18		16

† See page 29 for ROTC requirement.

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
ME 430 Heat Trans.	3	ME 434 Adv. ME Lab. ...	3	Tech. Electives	6
CE 342 Fluid Mechanics .	4	ME 468 Mach. Design ...	3	Electives	9
EE 305 Elect. Mach. or		H. Rel. 365 Hum. Behav.			
EE 400 Vacuum Tubes		in Organizations	3		15
and Electron.	5	HSS 493 Lit. Heritage			
HSS 492 Lit. Heritage		West. World III	3		
West. World II	3	Tech. Elective	3		
	15		15		

ADVANCED DEGREES

Students who intend to work toward the master's degree must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate School Bulletin*.

MASTER OF SCIENCE IN MECHANICAL ENGINEERING. 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, heat transfer, gas dynamics, air conditioning, refrigeration, nuclear power, instrumentation and automation, stress analysis, 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 aeronautical, civil, and electrical engineering is permitted, and sometimes required. A minimum of 39 credits, of which a 9-credit thesis is a part, is required for the master's degree. No foreign language is required.

DOCTOR OF PHILOSOPHY. Candidates for this degree must complete an approved program of studies and a research program which makes a definite contribution to knowledge.

COURSES FOR UNDERGRADUATES

- 201 Metal Casting (1)** **Setchfield**
Theory and application of the science of producing metal castings; preparation and testing of foundry sands; manual and machine preparations of sand molds and cores; gravity casting of gray cast iron and aluminum alloys into sand, shell, and permanent molds. Lecture and laboratory.
- 202 Welding (1)** **Anderson, Holt**
Basic theory and application of the art and science of thermal metal-joining processes; fundamentals of weld design, sequence and distortion; flame cutting and flame bending. Lecture and laboratory.
- 203 Metal Machining (1)** **Anderson**
Introduction to basic machining methods used in industrial metal processing. Fundamental concepts of the use of machine tools, layout methods, and measuring tools. Lecture and laboratory.
- 222 Introduction to Mechanical Engineering Laboratory (1)**
A laboratory course emphasizing measurements, interpretation of instrument readings, and analysis of errors. Special topics such as thermometry, piezometry, and dynamometry. Study of basic mechanical engineering equipment. Prerequisite, sophomore standing in engineering.
- 260 Mechanism (3)** **Day, Fritz, Kieling**
Analysis of displacement, velocity, and acceleration in linkages, gearing, cams, and other mechanisms. Linkage synthesis, space and analog computing mechanisms. Prerequisites, General Engineering 103 and Mathematics 125.
- 263 Mechanical Systems (3)** **Balise, Childs, Mills, Morrison**
Study of the mathematically common ground in basic engineering principles. Transient and steady-state solutions; validity of approximations; vector representations. Illustrative use of analog computer. Prerequisite, Mathematics 125.
- 305 Production Tooling (1)** **Anderson**
Design and fabrication of tooling for economical engineering manufacture, including production and special purpose machining methods. Lecture and laboratory. Prerequisites, 201, 202, 203.
- 306 Production Techniques (1)** **Schaller**
Application of techniques and engineering standards to founding, welding, forging, stamping and heat-treating of engineering metals. Lecture. Prerequisite, 305.
- 307 Production Planning (1)** **Schaller**
Layout of a manufacturing plant designed to meet specific production requirements. Materials handling and processing are especially stressed. Field trips to local industrial operations. Laboratory. Prerequisite, 305.

- 312 Machine Tool Fundamentals (3)** **Anderson**
Study of machine tools and machining processes, including exercises on all principal tools. Laboratory. Not open to engineering students. Prerequisite, junior standing in industrial education or permission.
- 320 Thermodynamics I (5)** **Childs, Gallo, McMinn, Nordquist**
A study of the basic thermodynamic laws covering the relationships between heat energy and work, with particular emphasis on the application of these laws to engineering problems. Prerequisite, 222.
- 321 Thermodynamics II (5)** **Childs, Gallo, McMinn, Nordquist**
Application of the basic laws of thermodynamics to advanced problems and to the study of properties of pure substances. Analysis of power and refrigeration cycles and psychrometric processes. Prerequisite, 320.
- 325 Thermodynamics (4)** **Childs, Depow, Nordquist, Waibler**
An introduction to macroscopic thermodynamics, including properties, equations of state, processes, the zeroth, first and second laws, the combined laws, and elementary cycles. The MKS system of units is used. Prerequisite, junior standing in Electrical Engineering or permission.
- 330 Experimental Thermodynamics (4)** **Crain, Firoy, Guidon**
Experimental demonstration of the basic principles of mechanical engineering thermodynamics. Tests for energy balances of boilers, turbines, refrigeration plants, and air compressors. Lecture and laboratory. Prerequisite, 321.
- 340 Engineering Materials (3)** **Day, Ford, Mills, Taggart**
Fundamental aspects of the behavior of engineering materials. Elastic and plastic deformation, fracture, creep, fatigue, impact, temperature effects, and corrosion. Destructive and nondestructive evaluation. Prerequisites, Materials Engineering 250, Civil Engineering 292.
- 341 Aircraft Materials (2)** **Schaller**
Selection, processing, and heat treatment of nonferrous and ferrous materials in airframe and missile construction. Lecture. Prerequisites, 201, 202, 203.
- 342 Industrial Materials and Processes (3)** **Ford, Mills**
The nature, properties, and behavior of materials and finishes used in industrial design and their effects on processing or fabrication methods. Factors involved in materials selection for design adequacy and processing suitability. Not open to engineering students. Lecture, laboratory, and field trips. Prerequisite, junior standing in industrial design or permission.
- 361, 362 Machine Design (3,3)** **Crain, Fritz, Kieling, Morrison**
Introduction to the synthesis of mechanical components and systems, emphasizing principles of mechanics, properties of materials, and manufacturing methods as they relate to design. Lecture and laboratory. Prerequisites, 260, 340, and Civil Engineering 292 for 361; 361 for 362.
- 367 Dynamics of Machines (3)** **Balise, Morrison, Nordquist, Sherrer**
A study of the principles of dynamics as applied to the analysis and design of machinery. Includes force, momentum, and energy analysis of linkages and rotating machinery. Prerequisites, 263 and Civil Engineering 291.
- 368 Kinematics (3)** **Day, Kieling, Morrison**
Motion, force, momentum, and energy analysis of mechanical components and systems, including introduction to mechanical vibration problems. For nonmechanical engineering majors. Prerequisite, Civil Engineering 291.
- 403 Tool Design (3)**
The study and design of specialized tooling from the standpoint of economical manufacture. Fundamental concepts of the press working of metals, of jigs and fixtures, and of production measuring tools. Application of these concepts to the design of production tools. Lecture and laboratory. Prerequisites, 306, 340.
- 410 Engineering Administration (3)** **Schaller**
Structure, organization, management, and operation of manufacturing enterprises as related to production planning and control, methods analysis, product development, and industrial and human relations. Prerequisite, senior standing.
- 411 Engineering Economy (3)** **Schaller, Setchfield**
The evaluation of engineering alternatives. Use of interest computations, valuation, depreciation, and operating cost estimates to predict the economic result of the application of engineered products or processes. Prerequisite, senior standing in engineering or permission.
- 414 Industrial Safety (2)** **Anderson**
Recognition of hazards; analysis of industrial accidents, their costs, and fundamentals of prevention; organization of safety programs; personnel training for safety. Prerequisite, senior standing in engineering or permission.
- 415 Statistical Quality Control (3)** **Drui, Fritz, Owens**
Elementary industrial statistics, with special application to the control of manufacturing processes. Statistical methods involving sampling procedure, calculations of probabilities, properties of normal distribution, control charts, and analysis of variance. Prerequisite, senior standing in engineering or business, or permission.

- 417 Methods Analysis (3)** **Drui, Owens**
Motion and time-study principles; flow-process charts; operation studies measuring human performance and the effects of fatigue on time required; delay and time-utilization studies; policies involved in using methods analysis; economic and morale limitations upon the use of motion and time study. Lecture and laboratory. Prerequisite, senior standing in engineering or business, or permission.
- 418 Work Simplification (2)** **Owens**
For majors in nursing, home economics, and allied fields. Principles of motion economy; work distribution and human-activity analysis; flow-process charts and diagrams; layout of work areas; economic and human factors involved in methods-study applications. Lecture and laboratory. Prerequisite, senior standing in nursing or home economics, or permission.
- 420 Engineering Reliability (3)**
An introductory course in reliability technology, covering prediction, measurement, control, reporting, and analysis of failure modes and failure rates. Prerequisite, senior standing in engineering or permission.
- 424 Power Plants (5)** **Nordquist, Waibler**
The application of the elements of thermodynamics, heat transfer, and fluid mechanics to the analysis and design of steam power station components. Prerequisite, senior standing in mechanical engineering or permission.
- 425 Air Conditioning (3)** **Crain, McMinn**
Theory and practice in the field of heating, ventilating, and air conditioning for human comfort, including psychrometry, heat transfer, air distribution, humidity and temperature control, cooling and dehumidifying equipment, and air cleaning. Prerequisite, 321.
- 426 Thermodynamics for Nonmajors (4)** **Childs, Depew, McFeron, Nordquist, Waibler**
Elementary microscopic thermodynamics, including the kinetic theory of gases, an introduction to statistical mechanics, entropy and probability, and fluctuation phenomena. Prerequisite, 325.
- 428 Refrigeration (3)** **McMinn**
Theory and practice in the field of commercial and industrial refrigeration. Includes study of cycles, cooling load calculations, compressor, condenser, and evaporator analysis. Laboratory testing of refrigeration systems and field trips to representative plants. Lecture and laboratory. Prerequisite 321.
- 430 Introduction to Heat Transfer (3)** **Childs, Costello, Firey, Waibler**
Study of steady-state heat transfer by conduction, radiation, and natural and forced convection; design of elementary heat-exchangers; transient heat flow. Prerequisites, 321 or equivalent, and senior standing in engineering.
- 432 Gas Dynamics I (3)** **Childs, Costello, Kauzlarich**
A study of the dynamic and thermodynamic relationships for the flow of a gas within closed channels. Analysis of the basic flow equations; study of the effects of friction and normal shock; application to thermodynamic processes involving nozzles, diffusers, compressors, and turbines. Prerequisites, 321 and Civil Engineering 342.
- 434 Advanced Mechanical Engineering Laboratory (3)** **Costello, Firey, Guidon**
Methods of measurement and analysis in compressible fluid flow and heat transfer; laboratory investigations of prime movers and other heat power equipment. Prerequisites, 330, 430.
- 436 Friction and Lubrication (3)** **Firey, Mills, Morrison**
Study of the fundamental principles of friction and lubrication. Bearing materials and bearing design. Behavior of lubricants. Engineering applications, including plain bearings, ball and roller bearings, gears, and metal processing. Prerequisites, Civil Engineering 342 and senior standing in Mechanical Engineering, or permission.
- 441 Automatic Control (3)** **Balise, Galle**
Theory and practice of industrial process control; effects of system parameters on difficulty of control; modes of control; analysis of pneumatic components; advantages and limitation of equipment. Lecture and laboratory. Prerequisite, senior standing in engineering or permission.
- 443 Instrumentation (3)** **Baliso, Gallo**
Principles and practice of industrial measurement. Dynamics of instrument response; theory of transducers for temperature, pressure, flow, and other measurements. Indicating, recording, and telemetering in industry. Lecture and laboratory. Prerequisite, senior standing in engineering.
- 446 Theory of Welding (3)** **Holt**
Theory of arc welding and flame cutting application to structural, aircraft, and nuclear fabrication. Prerequisites, senior standing in mechanical engineering or permission.
- 445 Welding Design (3)** **Holt**
Theory of joint design, sequence, fixturing, and dimensional control in fusion welding. Prerequisite, senior standing in mechanical engineering or permission.
- 448 Machine Design (3)** **Day, Morrison, Kielsing**
Current topics in engineering design. Projects in the design of major mechanical systems. Prerequisites, 362, 367.
- 449 Dynamics of Machines (3)** **Baliso, Morrison, Nordquist, Sherrer**
Acceleration effects in machine design; equation of motion with variable mass and friction forces; elementary vibration theory; gyroscopic effects in machinery; flexible machine members in motion. Prerequisite, 367.

- 481 Internal Combustion Engines (3)** **Firey, Guidon**
Study of the fundamental principles of operation of gasoline and Diesel engines; analysis of theoretical and actual cycles; fuels; combustion; detonation; carburetion, ignition, injection and performance characteristics of typical engines. Prerequisite, 321.
- 482 Internal Combustion Engine Laboratory (3)** **Firey, Guidon**
Performance testing of gas, gasoline, and Diesel engines with special emphasis on effects of operating variables and deviations from normal operating conditions. Automobile engine tune-up analysis. Laboratory. Prerequisite, 481.
- 483 Internal Combustion Engine Design (3)** **Firey, Guidon**
Fundamental principles of engine design, laws of similitude; properties of engine materials; design of important component parts; preliminary calculations for an engine. Lecture and laboratory. Prerequisite, 481.
- 485 Rocket Propulsion (3)** **Guidon**
Study of the types of rocket engines; thermodynamic relations and nozzle theory; characteristics of gaseous, liquid, and solid propellant systems; rocket testing; performance calculations. Prerequisite, 321.
- 490 Naval Architecture (3)** **Rowlands**
Theory of naval architecture; ships' lines, displacement, stability, metacenters, curves of form, and displacement sheet computations. Prerequisite, junior standing in engineering.
- 491 Naval Architecture (3)** **Rowlands**
Theory of naval architecture; weights, strength, A.B.S. Rules, construction, resistance, powering, model tests, steering, and launching. Prerequisite, 490.
- 492 Naval Architecture (3)** **Rowlands**
Ship model making and model testing. Prerequisite, 491.
- 499 Special Projects (2-5, maximum 6)**

COURSES FOR GRADUATES ONLY

- 516 Statistical Analysis of Engineering Measurements (3)** **Owens**
Application of statistical techniques to engineering problems; design of engineering test procedures so as to evaluate experimental error; investigation of inherent variability of processes and systems. Prerequisite, 415 or equivalent.
- N518-N519-520 Seminar (0-0-1, maximum 6)**
- 521 Thermodynamics III** **Childs, Costello, Waibler**
The fundamental concepts of temperature, thermodynamic properties, and systems. The first, second, and combined laws. The general form of the energy equation, and applications. Development of the relations of classical thermodynamics. Prerequisites, 321 and graduate standing in engineering.
- 522 Thermodynamics IV (3)** **Waibler**
Selected topics from the thermodynamics and dynamics of fluid flow. The thermodynamics of reactive systems. Introduction to the kinetic theory of gases. Prerequisite, 521.
- 524 Combustion (3)** **Firey**
Chemical and physical processes of combustion, sources, and preparation of fuels, applications, design of combustion equipment. Prerequisite, 521.
- 526 Air Conditioning (3)**
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 Advanced Refrigeration (3)**
Review of basic cycles and equipment, cold storage practice, refrigeration in food manufacture and distribution, industrial applications, frozen foods and other low temperature applications, capital and operating cost studies, and design problems. Prerequisites, 428 and graduate standing, or permission.
- 530 Radiative Heat Transfer (3)** **Depew, McFeron**
Fundamentals of thermal radiation for black, gray, non-gray, diffuse, and specular surfaces. Gaseous radiation and special applications of thermal radiation. Prerequisite, graduate standing in Mechanical Engineering or permission.
- 531 Heat Transfer (3)** **Costello, McFeron, Waibler**
Fundamentals of the conduction process. The analysis of steady-state and transient heat conduction in single and multidimensional systems by mathematical, graphical, numerical, and analogical methods. Solutions for transient systems with unsteady boundary conditions, and with moving or fixed heat sources. Prerequisites, 430, and differential equations.
- 532 Convective Heat Transfer (3)** **Childs, Waibler**
An introduction to fluid flow and boundary layer theory as applicable to forced- and natural-convection heat transfer. Dimensional analysis. Condensation and boiling heat transfer. The design of heat exchangers. Prerequisites, 531 or permission.
- 533 Gas Dynamics II (3)** **Childs, Costello, Kauzlarich**
A continuation of Mechanical Engineering 432. A study of the dynamic and thermodynamic relationships for the flow of fluids; application of basic laws to flow processes in pipes, nozzles, diffusers, compressors, and turbines; wave phenomena; introduction to multidimensional flow; experimental techniques and measurements. Prerequisites, 432 and graduate standing, or permission.

- 534 Experimental Heat Transfer (3)** **Costello, Depew, McFeron, Waibler**
Study of instrumentation and techniques used in heat transfer measurements; investigation of conduction, radiation, and convection phenomena. Liquid metal and water heat-transfer loops will be used for experiments to determine heat flux, film coefficients, boiling pressure drops, and other phenomena of current interest. Prerequisites, 531 or 532, or permission.
- 536 Gas Dynamics III (3)** **Childs**
A study of the dynamic and thermodynamic relationships in the flow of fluids; application of the basic laws in multidimensional flow; unsteady one-dimensional flow. Prerequisite, 533.
- 537 Boundary Layer Theory (3)** **Childs**
A study of the dynamic and thermodynamic relationships for the flow of real fluids considering effects of viscosity and heat conductivity; applications of basic laws to problems in flow through nozzles, diffusers, and ducts; free turbulence; jets and wakes. Prerequisite, 533.
- 538 Turbulent Boundary Layer Theory (3)** **Childs**
A continuation of 537 with special emphasis on turbulent boundary layers. The origin of turbulence; turbulent flow through pipes; influence of pressure gradient on turbulent boundary layers; free turbulent flows, jets and wakes; application to base pressure and base heating problems. Prerequisite, 537.
- 541 Advanced Engineering Materials (3)** **Mills, Taggart**
Behavior of engineering materials as affected by various conditions of loading and environment. Lecture, laboratory, and studies of technical literature. Prerequisite, 340, graduate standing in Mechanical Engineering, or permission.
- 542 Topics in Engineering Materials (3)** **Mills, Taggart**
Selected topics of current importance concerning the nature and behavior of engineering materials. Lecture, laboratory, and studies of technical literature. Prerequisite, 541 or permission.
- 545 Automation (3)** **Balise**
Concepts in addition to feedback that are important in automatic production, including automatic data processing, computers, numerical control of machine tools, and integrated manufacturing systems. Prerequisite, 564 or permission.
- 549 Fluid Power Control (3)** **Balise**
An analytical treatment of hydraulic and pneumatic power applied in control systems. Valve actuators, hydraulic transmissions, block diagram representation, steady-state and dynamic analysis, applications, recent developments. Prerequisite, 545 or 571, or permission.
- 551 Applied Elasticity (3)** **Kobayashi, Shorrer**
General equilibrium and stress-strain relations in homogeneous, isotropic, elastic materials. Elastic stress distributions in machine components; plane-stress and plane-strain problems; torsion and bending in machine members; problems in thermal stresses. Prerequisite, graduate standing in Mechanical Engineering or permission.
- 552 Applied Plasticity (3)** **Kobayashi, Shorrer**
Elastic-plastic stress distributions in machine components; stress-strain relations in the plastic range; yield in thick-walled pressure vessels, rotating cylinders and disks; torsion and bending of machine members with plastic flow; thermal stresses in shells, rotating disks and plates. Prerequisite, 551 or permission.
- 553 Applied Viscoelasticity (3)** **Kobayashi, Shorrer**
Time-dependent aspects of stress and strain, and stability in mechanical engineering design. Stress analysis in the presence of creep and stress relaxation. Uniaxial loading, pressure vessels, rotating disks, plates, columns. Cyclic variation of load and temperature. Prerequisite, 551 or permission.
- 554 Advanced Theory of Plasticity (3)** **Kobayashi**
Basic equations for three-dimensional problems of perfectly plastic solid, general consideration of discontinuous solutions, problems in plane strain and plane stress, problems in elastic-plastic solids and rigid-plastic solids. Prerequisites, 552, Civil Engineering 579, or permission.
- 556 Experimental Stress Analysis (3)** **Day**
Studies of stress and strain relationships under static and dynamic loading. Analytical methods for determination of stress and loading. Analytical methods for determination of stress and strains in irregular members. Theory and practice of the photoelastic method. Brittle lacquer method for study of strain. Application of resistance wire strain gauges to measurement of dynamic and static strain. Interferometry as a tool in stress analysis. Principles and application of mechanical strain gauges. Lecture and laboratory. Prerequisite, graduate standing in engineering or permission.
- 557 Experimental Stress Analysis (3)** **Day**
Study of structural similitude, dimensional analysis, and brittle models as they apply to experimental stress analysis. Use of nomographs with electric strain-rosettes, study of principles and application of instrumentation available for strain-sensitive pickups. Non-destructive methods of testing and inspecting structures and machine parts. Calibration of stress-analysis instruments. Prerequisite, 556.
- 558 Experimental Stress Analysis (3)** **Day**
Seminar and individual research on special problems in experimental stress analysis. Prerequisite, 557 or permission.

- 564 Mechanical Engineering Analysis (3)** **Baliso**
Application of complex variable theory and vector analysis to various fields in mechanical engineering; analogs in heat transfer, fluid flow, stress distribution, dynamics, and feedback control systems. Prerequisite, graduate standing or permission.
- 567 Advanced Dynamics of Machines (3)** **Kobayashi, Sherrer**
Dynamics of particles and of rigid bodies, with emphasis upon applications involving machine parts and other engineering components. Generalized coordinates, Lagrange's equations, Hamilton's principle. Prerequisite, 564 or permission.
- 568 Vibrations of Machinery (3)** **Mills**
Study of vibration phenomena, with emphasis on application to practical problems. Systems of one and two degrees of freedom, with and without damping, in translational and torsional vibration. Systems of many degrees of freedom in torsional vibration. Free and forced vibration. Prerequisite, permission.
- 571 Servomechanisms I (3)** **Baliso, Gallo**
Linear and introductory nonlinear closed-loop system analysis and design on the complex plane and by frequency response; application to mechanical components; analogs. Prerequisite, 564 or permission.
- 572 Servomechanisms II (3)** **Baliso, Gallo**
Continuation of 571 to include topics of current importance. Further study of nonlinear control, statistical analysis of feedback systems, sampled-data methods, self-adaptive systems. Prerequisite, 571.
- 581 Magneto-Gasdynamics (3)** **Kauzlarich**
The dynamics of ionized gases in magnetic fields. The properties of dissociated and ionized gases. Penetration and driving of shock waves. Experimental observations and applications. Magneto-gasdynamics power generation and electric propulsion. Prerequisite, 537 or permission.
- 584 Gas Turbines (3)** **Guidon**
Applications of the gas turbine; gas turbine cycles (theoretical Brayton, simple open, regenerative, reheat, intercooling, and closed cycles); axial-flow compressors; centrifugal compressors; turbines; combustion systems; gas turbine power plant materials; plant performance. Prerequisites, 432, graduate standing in engineering, or permission.
- 589 Nonlinear Mechanical Vibrations (3)** **Sherrer**
Study of systems with nonlinear damping and restoring forces, applications of the phase-plane delta and the Ritz averaging method, and stability of nonlinear oscillations. Prerequisite, 568 or permission.
- 590 Random Mechanical Vibrations (3)** **Sherrer**
The study of the problems in measuring random vibrations, in designing simulation equipment, and in mechanical design for random vibration in aircraft and missiles. Prerequisite, 568 or permission.
- 599 Special Projects (1-5, maximum 9)**
Prerequisite, permission of Department Chairman.
- 600 Research (*)**
Prerequisite, permission of Department Chairman.
- 700 Thesis (*)**

MINERAL ENGINEERING

Director: DRURY A. PIFER, 328 Roberts Hall

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 engineering and geological engineering); Bachelor of Science in Metallurgical Engineering; Bachelor of Science in Ceramic Engineering; Master of Science in Engineering (see page 37), Master of Science in Mining, Coal Mining, Metallurgical, or Ceramic Engineering; Master of Science in Ceramics or Metallurgy; and Doctor of Philosophy in the field of metallurgy.

Materials Engineering

Courses in materials engineering are offered jointly by the several degree-granting divisions of the School of Mineral Engineering. These courses are part of a core which constitutes the base in materials science upon which the specific branches are founded.

COURSES FOR UNDERGRADUATES

- 250 Fundamentals of Materials Science (4)** **Polonis, Archbold**
Basic principles underlying the structure and properties of engineering materials. Internal structures of crystalline and noncrystalline materials, including metals and alloys, nonmetallic materials and polymers; phase diagrams; rate processes including diffusion and phase transformation; behavior under mechanical stress, elevated temperature, corrosive conditions, irradiation and electromagnetic fields. Prerequisites, Physics 217 and Chemistry 160.
- 351 Mineral Processing I (4)** **Brien**
Physical and chemical principles of mineral preparation and concentration. Comminution; classification, thickening, filtering of mineral suspensions; sampling; transport; and related physical processes. Physical and chemical theory applied to concentration processes: surface phenomena, electromagnetic, electrostatic, phase change, solution and precipitation. Laboratory illustrates fundamental principles. Prerequisites, Chemistry 160 and Physics 218.
- 352 Mineral Processing II (2)** **Brien**
Continuation of 351. More detailed development of fundamentals of particular concentration processes with pertinent laboratory exercises. Prerequisite, 351.
- 412 Introduction to X-ray Diffraction (3)** **Mueller**
Theory and application of X-ray diffraction and spectroscopic techniques to the study of materials. Prerequisite, 250 or equivalent.
- 481 Mineral Industry Economics (3)** **Pifer**
World mineral resources, their distribution, utilization, and depletion; social, economic, and political effects; international control and trade, industrial organization, government policies, taxation, tariffs; markets and prices; elements of costs in production; legal and economic position of the engineer. Prerequisites, Economics 211 and upper-division standing.

COURSES FOR GRADUATES ONLY

- 512 X-ray Diffraction Analysis (3)** **Mueller**
Application of X-ray diffraction and spectroscopic techniques and their evaluation in the structure and properties of materials. Laboratory practice in analysis, line broadening and displacement phenomena, structural effects on intensity. Prerequisite, 412 or equivalent.
- 513 X-ray Diffraction Analysis (3)** **Flanagan**
Advanced theory of diffraction by crystals and amorphous materials. Utilization of the reciprocal lattice concept and Fourier analysis in the study of defects and atomic arrangements in crystals. Laboratory in single crystal techniques. Prerequisite, 512 or equivalent.
- N520 Engineering Materials Science Colloquium (0)**
Discussion of theoretical and fundamental aspects of engineering materials.

Ceramic Engineering**BACHELOR OF SCIENCE IN CERAMIC ENGINEERING**

The curriculum for the first year is administered by the Department of General Engineering (see page 38), General Engineering 121 (Plane Surveying and Measurements) should be omitted in the third quarter and Chemistry 170 (Qualitative Analysis) substituted. 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 of Mineral Engineering.

As part of their course, students should have ceramic industrial experience during the summer vacation following their sophomore and junior years and must participate in scheduled field excursions. Technical electives are courses in the College of Engineering and science courses in the College of Arts and Sciences.

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Cer. E 201 Introduction	1	Cer. E 202 Raw Materials	3	Cer. E 203 Measurements	3
HSS 265 Tech. of Commun.	3	HSS 270 Report Writing	2	CE 292 Mech. of Mt'ls.	3
ME 203 Metal Machining	1	Mt'l. E 250 Mt'ls. Science	4	HSS 302 Tech. Writing	3
Econ. 211 General	3	Math. 221 Diff. Equat.	3	Math. 224 Interm. Anal.	3
Math. 126 Calc. with Analytic Geometry	5	Phys. 218 Engr. Physics	4	Phys. 219 Engr. Physics	4
Phys. 217 Engr. Physics	4	ROTC	†	ROTC	†
	<u>17</u>		<u>16</u>		<u>16</u>
ROTC	4				

† See page 29 for ROTC requirement.

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Cer.E 306 Excursion	1	Cer.E 314 Equilibria	3	Cer.E 315 Vitreous State	4
Cer.E 312 Structure and Rheology	5	Ch.E 385 Thermodynamics	4	Ch.E 470 Transport. Proc. Prin.	4
Ch.E 384 Stoichiometry	4	EE 303 Elements of EE	4	HSS 332 Dev. West. Cult. Inst.	3
Mtl.E 351 Mineral Processing I	4	EE 304 EE Lab.	1	HSS 357 Physical	3
Chem. 355 Physical	4	HSS 331 Orig. West. Cult. Inst.	3	Phys. 320 Modern Physics	3
	18	Chem. 356 Physical	3		17

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Cer.E N307 Excursion	0	Cer.E 402- Plant Design	2-	Cer.E -403 Plant Design	-2
Cer.E 401 Drying and Firing	4	Cer.E 421 Bodies Lab.	3	Cer.E 441 Seminar	1
Cer.E 441 Seminar	1	Cer.E 441 Seminar	1	Cer.E 499 Special Projects	2
Cer.E 470 Refractories	3	Cer.E 499 Special Projects	2	HSS 493 Lit. Heritage West. World III	3
Cer.E 499 Special Projects	1	HSS 333 Contemp. Pol. and Soc. Problems	3	Electives	8
HSS 491 Lit. Heritage West. World I	3	HSS 492 Lit. Heritage West. World II	3		16
Mtl.E 412 X-ray Diffraction	3	Technical Elective	3		
Technical Elective	3		17		
	18				

ADVANCED DEGREES

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate School Bulletin*. No foreign language is required for the master's degrees.

MASTER OF SCIENCE IN CERAMIC ENGINEERING. A total of 45 credits of which 36 credits are in course work and a suitable thesis for 9 credits is required for this degree. A comprehensive oral examination completes the requirements. Candidates may select courses and research in accordance with their special interests and objectives. Graduate work is largely concerned with advanced materials science as applied to ceramics; however, courses may be selected which also prepare for plant operation and management. Graduates of accredited ceramic engineering curricula and graduates of other accredited engineering curricula who complete the basic undergraduate courses in ceramic engineering and in science 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

- 201 Introduction to Ceramics (1)**
Scope of ceramic materials and ceramic industries; use of ceramics as engineering materials; economic importance.
- 202 Ceramic Raw Materials (3)**
Natural and synthetic materials used in ceramic products; their mineralogy, physical properties, compositions, and sources.
- 203 Ceramic Measurements (3)** Campbell
Theory and methods used in measuring properties of ceramic materials; control of ceramic processes.
- 306 Ceramic Engineering Excursion (1)**
Plant inspection trip; junior year.
- N307 Ceramic Engineering Excursion (0)**
Plant inspection trip; senior year.
- 312 Physical Ceramics: Structure and Rheology (5)** Mueller
Crystalline and glassy state; physical-chemical reactions of ceramic materials. Colloidal and rheological phenomena and their effects on ceramic materials. Prerequisite, Materials Engineering 250 or permission.

- 314 Physical Ceramics: Ceramic Equilibria I (3)** **McNeilly**
Equilibrium diagrams and their applications to ceramic research and control problems. Prerequisite, 312 or permission.
- 315 Vitreous State (4)** **McNeilly**
Chemistry and physics of glass, glazes, and porcelain enamels; structure and properties of vitreous materials. Prerequisite, 312 or permission.
- 401 Process Ceramics: Drying and Firing (4)** **Campbell**
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.
- 402-403 Equipment and Plant Design (2-2)** **Campbell**
402-: application of the theory of drying and firing to the calculation and design of dryers and kilns. Studied on the basis of projects designed for specific performance. Prerequisite, 401. -403: equipment selection, layout plans, and economics applied to specific problems.
- 410 Physical Ceramics: Ceramic Equilibria II (3)** **McNeilly**
Derivation of phase equilibrium relations in ceramics; studies of crystalline solutions and analytical treatment of multicomponent phase equilibrium systems. Prerequisite, 314.
- 421 Ceramic Bodies Laboratory (3)** **Campbell**
Quantitative determination of physical properties of ceramic bodies; study of the effects of variables in composition, forming, and firing. Prerequisite, 401.
- 422 Ceramic Petrography (3)** **Brien**
Polarizing microscope study of natural and artificial minerals peculiar to the ceramic industry.
- 440 Glass Technology (3)**
Raw materials; chemistry and physics of glass; batches and calculations; melting and fabrication practices; physical properties; special glasses. Prerequisites, 315 or equivalent.
- 441 Undergraduate Seminar (1, maximum 3)**
- 450 Pyroprocessing of Nonmetallics (3)** **Bauer**
Composition; reactions; plant control; grinding and burning; manufacture; chemistry and physics of processes. Prerequisites, junior standing and permission.
- 460 Ceramic-Metal Systems (3)** **Shevlin**
Vitreous and crystalline coatings for metals; ceramic-metal composites. Prerequisite, junior standing.
- 470 Refractories (3)**
Physical and chemical composition; properties under service conditions; testing; utilization.
- 499 Special Projects (*, maximum 5)**
Problems in ceramics; laboratory investigations and bibliographic research. A total of 5 credits is required.

COURSES FOR GRADUATES ONLY

- 502 Process Ceramics: Unit Process Control (3)** **Campbell**
Principles of process control as applied to the ceramic 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 atmosphere and pressures, time-temperature relationships, body and glaze textures, and imperfection causes; application of control data to plant production.
- 503 Research Techniques (3)** **Campbell**
Principles and methods for deriving heat transfer, optical characteristics, electrical response, surface dependent properties, rheological behavior, and dynamic, thermal, gravimetric, and mechanical analyses in ceramic research.
- 511 Advanced Physical Ceramics I (3)** **McNeilly**
Theories and principles of diffusion; concepts of sintering and solid state reactions with emphasis upon the role of diffusion; the effect of the defect nature of solids upon these phenomena.
- 512 Advanced Physical Ceramics II (3)** **Shevlin**
Multiphase high temperature reactions: phase equilibria involving gas, liquid, and solid phases; material balance interpretation; kinetics as related to equilibrium; surface phenomena.
- 513 Advanced Physical Ceramics III (3)** **Mueller**
Ceramic vitreology: composition and formation of glasses in ceramic bodies; their effect on such properties as mechanical and dielectric strength, porosity, hardness, chemical durability, refractoriness, and resistance to erosion. Prerequisite, 511 or 512.
- 521 Mechanical Behavior of Ceramics (3)** **Shevlin**
Internal stresses; composites in terms of ceramic constituents; theory of glass, adherence to ceramic and metal surfaces; deformations and fracture. Prerequisite, 511 or permission.
- 522 Transducer Ceramics (3)** **Campbell**
Principles and theory of conductive, ferro-magnetic, ferro-electric, piezo-electric, thermo-electric, and electro-luminescent ceramic materials. Prerequisite, 512 or permission.

- 523 Solid State Ceramics (3)** **McNeilly**
Modern bonding concepts and wave mechanics are used to study solid state aspects of ceramic systems. Selected phenomena are examined from the viewpoint of crystal chemistry. Prerequisite, Metallurgical Engineering 460.
- 520 Seminar (1, maximum 6)**
Required for all graduate students.
- 590 Industrial Minerals Research (*)**
- 599 Special Topics in Ceramics (*)**
- 600 Research (*)**
Prerequisite, permission of Director.
- 700 Thesis (*)**

Metallurgical Engineering

BACHELOR OF SCIENCE IN METALLURGICAL ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (page 38). General Engineering 121 (Plane Surveying and Measurements) should be omitted in the third quarter and Physics 217 (Physics for Engineers) substituted. Students who transfer into metallurgical engineering may complete the requirements by rearranging the curriculum in consultation with the Director of the School of Mineral Engineering.

As part of their instruction, students are encouraged to have experience in metallurgical or industrial plants during the summer vacation; they must also participate in field excursions as part of the course content.

In the fourth year, students may choose electives in physical metallurgy, chemical metallurgy, or mineral processing and make their senior investigation in one of these fields. Electives in labor relations and economics are recommended for students interested in plant operation and administration. Accounting 210 (Fundamentals of Accounting) is recommended for those intending to study Industrial Engineering.

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
CE 291 Dynamics	3	Met.E 203 Chem. Met.:		Met.E 204 Stoichiometry	3
Econ. 211 General	3	Introduction	2	Met.E 224 Intro. Met.	
HSS 265 Tech. of		ME 201 Metal Casting	1	Lab.	2
Commun.	3	Mt.E 250 Mt'ls. Science	4	CE 292 Mech. of Mt'ls.	3
Math. 126 Calc. with		Chem. 170 Qual. Anal.	3	HSS 270 Report Writing	2
Analytic Geometry	5	Math. 221 Diff. Equat.	3	Chem. 355 Physical	4
Phys. 218 Engr. Physics	4	Phys. 219 Engr. Physics	4	Math. 224 Interm. Anal.	3
	18		17		17
ROTC	†	ROTC	†	ROTC	†

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Met.E 321 Stoichiometry II	2	Met.E 322 Thermodynamics I	3	Met.E 306 Excursion	1
Met.E 361 Physical	4	Met.E 362 Physical	4	Met.E 324 Chem.	
HSS 331 Orig. West.		HSS 332 Dev. West.		Met. Lab.	1
Cult. Inst.	3	Cult. Inst.	3	Met.E 363 Physical	4
Chem. 356 Physical	3	Mt.E 351 Mineral Processing I	4	Ch.E 470 Transport.	
Phys. 320 Modern Physics	3	Chem. 357 Physical	3	Proc. Prin.	4
	15		17	EE 303 Elements of EE	4
				EE 304 EE Lab.	1
				HSS 333 Contemp. Pol. and Soc. Problems	3
					18

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Met.E 421 Thermodynamics II	4	HSS 492 Lit. Heritage		Met.E 306 Excursion	1
Met.E 468 Seminar	1	West. World II	3	Met.E 468 Seminar	1
HSS 491 Lit. Heritage		Mt.E 412 X-ray		HSS 493 Lit. Heritage	
West. World I	3	Diffra.	3	West. World III	3
Technical Electives	8	Mt.E 481 Mineral Indust. Econ.	3	Technical Electives	6
	16	Technical Electives	6	Electives	5
			15		16

† See page 29 for ROTC requirement.

In the senior year students majoring in physical metallurgy must elect Metallurgical Engineering 460, 461, 464, 466. Chemical metallurgy majors must elect Mining Engineering 464 (Mineral Processing: Hydrometallurgy).

MINERAL PROCESSING ENGINEERING OPTION. Students electing this option will, in the third year, substitute Materials Engineering 352 (Mineral Processing II) and Mining Engineering 464 (Mineral Processing: Hydrometallurgy) for Metallurgy 324 and 363.

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Min.E 463 Flotation	3	Min.E 465 Microscopy	2	Min.E 306 Excursion	1
Geol. 423 Optical Minerology	5	Min.E 499 Special Projects	2	Min.E 466 Mineral Processing Practices	2
HSS 491 Lit. Heritage	3	HSS 492 Lit. Heritage	3	Min.E 467 Mineral Process Plant Design	2
West. World I	3	West. World II	3	Min.E 499 Special Projects	2
Electives	5	Mtl.E 412 X-ray Diffraction	3	HSS 493 Lit. Heritage	3
	16	Mtl.E 481 Mineral Indust. Econ.	3	West. World III	3
		H. Rel 365 Hum. Behav. in Organizations	3	ME 145 Stat. Quality Control	3
			16	Electives	3
					16

ADVANCED DEGREES

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate School Bulletin*.

MASTER OF SCIENCE IN METALLURGICAL ENGINEERING. A total of 45 credits of which 36 credits are in course work and a suitable thesis for 9 credits are required for this degree; and a comprehensive oral examination completes the requirements. Candidates may select courses in accordance with their special interests and objectives. Graduate work is largely concerned with advanced materials science as applied to physical metallurgy, extractive metallurgy, or mineral processing. However, courses may also be selected which prepare for 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.

DOCTOR OF PHILOSOPHY. Students who have completed one year of graduate work may request an examination to determine whether or not the faculty will advise proceeding to the Ph.D. General Examination. A critical examination of the applicant's record, recommendations, and proposed course of study will be pertinent to this decision. The language requirement will be satisfied by passing the scheduled examinations in any two of either German, French, or Russian. In addition to course work, a candidate will be expected to study independently for examination on a list of subjects prepared by his Supervisory Committee. General Examinations will be taken at the end of the second year or during the third year of residence. The General Examinations will be sufficiently comprehensive to demonstrate the candidate's ability to deal with broad aspects of materials science, as well as his specialized subject area. Each candidate will present a written dissertation based on his research program which makes an original and independent contribution to knowledge. Proficiency in basic research will be of paramount importance and the research will be conducted in the University laboratories. The Final Examination will consist of the candidate's oral defense of his dissertation.

COURSES FOR UNDERGRADUATES

- 203 Chemical Metallurgy: Introduction (2)**
Principles and unit processes in extractive metallurgy. Chemical reactions, description of equipment, and unique aspects of hydrometallurgy, pyrometallurgy, and electrometallurgy. Prerequisite, Chemistry 160.
- 204 Metallurgical Stoichiometry I (3)**
Principles of material and heat balances in metallurgical processes. Prerequisite, Chemistry 160.
- 224 Introductory Metallurgical Laboratory (2)** **Archbold**
Basic techniques in metallography, pyrometry, and measurements essential to the study of materials. Prerequisite, Materials Engineering 250 or taken concurrently.
- 306 Metallurgy Excursion (1, maximum 2)**
Plant inspection trip; junior and senior years.
- 321 Metallurgical Stoichiometry II (2)**
Material and heat balances in metallurgical processes. Prerequisite, 204.
- 322 Metallurgical Thermodynamics I (3)** **Archbold**
The quantitative application of thermodynamics in fluids of interest to metallurgists: metals, slags, and gases; and to refractories. Prerequisites, 321, 361, Chemistry 356.
- 324 Chemical Metallurgy Laboratory (1)**
Experimental methods in metallurgy adapted from physical chemistry. Prerequisites, 203, Chemistry 356 or taken concurrently.
- 361 Physical Metallurgy (4)** **Archbold**
An introduction to the fundamentals of physical metallurgy: classifications of metals and the periodic chart; atomic structure, interatomic relationships and crystallography of metals; alloys and alloying, binary equilibrium diagrams, solid solutions and intermetallic compounds. Laboratory practice in the preparation and examination of metallographic specimens, photomicrography, simple phase diagram determination, and studies of alloys. Prerequisite, Physics 219.
- 362 Physical Metallurgy (4)** **Polonis**
The physical metallurgy of iron and steel: Preparation, atomic nature and allotropic change in iron; metastable binary phase diagrams, alloying behavior of iron, iron-graphite and iron-Fe₃C phase diagrams; equilibrium relations in plain carbon steels, the metallurgy of cast iron, reaction kinetics of phase transformations in steels, the mechanism of formation of subcritical substances; alloy steels, hardenability. Laboratory work on the metallography of iron and steels, dilatometric studies of phase changes, transformation diagram determination, and tempering phenomena. Prerequisite, 361 or 441.
- 363 Physical Metallurgy (4)** **Roberts**
Metallurgical phenomena of industrial importance; casting and solidification, hot and cold working, recovery and recrystallization, age hardening, surface treatment, failures in metals, joining of metals; ternary equilibrium diagrams. Laboratory investigations of industrial metallurgical problems such as casting and solidification, cold working and annealing, age hardening, stress corrosion cracking, creep. Prerequisite, 362.
- 421 Metallurgical Thermodynamics II (4)**
Continuation of 322 on an advanced basis. Prerequisites, 322, 324, Chemical Engineering 470.
- 422 Chemical Metallurgy: Process Calculations (3)**
Calculations in the physical chemistry aspects of chemical metallurgy.
- 424 Metallurgical Experimental Techniques (2)** **Flanagan**
Laboratory experiments illustrating precision measurements of physical property changes in metals and research techniques for developing and studying unique metal structures. Prerequisite, 363.
- 441 Engineering Physical Metallurgy (3)** **Archbold**
For mechanical, chemical, and civil engineers and other nonmajors. Solidification of metals and alloys; precipitation hardening phenomena; metallurgy and heat treatment of steels and cast irons; the casting, forming, mechanical properties, the effects of working, and the corrosion of metals; effect of radioactive radiation on metal properties. For laboratory, register for 442. Prerequisite, Materials Engineering 250.
- 442 Engineering Metallurgy Laboratory (1)**
Laboratory work to accompany 441 may be taken concurrently. The preparation and examination of metallographic specimens; photomicrography; simple phase diagram determination; cold working and annealing; age hardening; heat treatment of steels.
- 450 Light Metals (3)** **Roberts**
A detailed study of the metallurgy of aluminum, magnesium, titanium, and their alloys. Prerequisite, 361 or 441.
- 460 Deformation of Metals (3)** **Polonis**
Principles of mechanical metallurgy: Behavior of metals under conditions of combined stress; stress-strain relations; theories of strength; microscopic and atomistic mechanisms of plastic deformation including dislocation theory; effects of composition and temperature on mechanical properties; residual stresses. Prerequisites, 363 or 441, and Civil Engineering 292.
- 461 Advanced Physical Metallurgy (3)** **Roberts**
Advanced ternary diagrams; corrosion and oxidation; intermetallic phases. Prerequisite, 363.

- 464 Applied Physical Metallurgy (3)** **Flanagan**
Interpretation of microstructure as it affects properties; metallographic analysis of normal and defective commercial alloys; metallurgical principles applied to commercially important metals and alloys. Prerequisite, 363 or 441.
- 466 Theory of Metals (3)** **Roberts**
Elementary study of the free electron theory and Brillouin zone theory; application of principles to conductivity, magnetic behavior, cohesion, alloy phases; theory of insulators and semi-conductors. Prerequisite, 363.
- 468 Undergraduate Seminar (1, maximum 3)**
- 499 Special Projects (*, maximum 5)**
Laboratory investigation of a metallurgical problem on an independent basis. Total of 5 credits required.

COURSES FOR GRADUATES ONLY

- 520 Seminar (1, maximum 6)**
Review of research problems and recent literature. Required for all graduate students.
- 525 Thermodynamic Topics in Metallurgy (3)**
Selected topics in application of classical and statistical thermodynamics to systems of current metallurgical interest. Prerequisite, 422.
- 531 Advanced Metallurgy (*)**
Study of selected problems, with particular attention to recent publications and scientific applications in physical or extractive metallurgy.
- 541 Theoretical Structural Metallurgy (3)** **Polonis**
Detailed study of structural imperfections in metal-crystals; vacant lattice sites; influence of foreign atoms; fundamentals of dislocation theory including geometry, motion, interactions, and stress fields of dislocations; correlation of theory with experimental evidence of dislocation. Prerequisite, 363.
- 542 Theoretical Structural Metallurgy (3)** **Polonis**
Structure of liquid metals; thermodynamics and kinetics of vapor-solid and liquid-solid transformations; metal crystal growth from vapors and aqueous solutions; detailed consideration of solidification including single crystal growth, substructure, segregation phenomena, and zone melting; interface and internal boundaries. Prerequisite, 541.
- 543 Theoretical Structural Metallurgy (3)** **Polonis**
The fundamental view of mechanical properties and deformation of metals; elasticity, anelasticity, and internal friction; anisotropy; plastic deformation of single crystals and polycrystalline aggregates; theories of plastic flow and work hardening involving applications of dislocation theory; effects of temperature and composition on deformation behavior of metals and alloys. Prerequisite, 541.
- 551 Special Topics in Advanced Physical Metallurgy (*, maximum 6)** **Flanagan**
Prerequisite, 363 or equivalent.
- 561 Phase Transformations in Solid Metals (3)** **Roberts**
An advanced treatment of phase transformations from the standpoint of crystallography, and thermodynamics. Prerequisite, 363.
- 562 Phase Transformations in Solid Metals (3)** **Roberts**
Kinetics of solid state reactions in metals. Basic equations and their derivation. Applications to specific metal and alloy transformations. Growth-controlled reactions and reactions dependent on both nucleation and growth. Prerequisite, 561.
- 563 Phase Transformations in Solid Metals (3)** **Roberts**
Nucleation in solid state transformations. Theories of nucleation and grain growth. Transition lattices and other metastable phenomena. Prerequisite, 562.
- 566 Advanced Theory of Metals (3)** **Flanagan**
Modern theories of the metallic state and their relationship to the physical properties of metals. Prerequisite, 466.
- 599 Special Topics in Metallurgy (*)** **Flanagan**
- 600 Research (*)**
Prerequisite, permission of Director.
- 700 Thesis (*)**

NUCLEAR ENGINEERING COURSES OFFERED IN METALLURGICAL ENGINEERING

- 444 Nuclear Materials (4)** **Polonis**
- 445 Nuclear Metallurgy Laboratory (2)** **Polonis**
(Not offered 1961-62.)

Mining Engineering

BACHELOR OF SCIENCE IN MINING ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 38).

As part of their course, students have experience in mining, milling, or geology during the summer vacations and must participate in field excursions scheduled as part of specific courses. A work-study program is offered in cooperation with certain Northwest mining companies and involves six months work at a mine, alternated with a like period at the University.

In the third and fourth years, students may take the regular curriculum or may elect an option in either geological engineering or mineral processing engineering. Courses in labor relations, business administration, and economics are recommended to students interested in mine administration.

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
HSS 265 Tech. of Commun.	3	Min.E 221 Explosives and Rock Drilling	2	Min.E 330 Mine Surveying	3
Geol. 220 Mineralogy	5	HSS 270 Report Writing	2	CE 291 Dynamics	3
Math. 126 Calc. with Analytic Geometry	5	Geol. 225 Igneous and Metamorphic Petrol.	5	Mtl. E 250 Mt'ls. Science	4
Phys. 217 Engr. Physics	4	Math. 221 Diff. Equat.	3	Math. 224 Interm. Anal.	3
	17	Phys. 218 Engr. Physics	4	Phys. 219 Engr. Physics	4
ROTC	†	ROTC	16	ROTC	17
			†		†

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Min.E 322 Methods	4	Min.E 325 Land Valuation	2	Min.E 306 Excursion	1
CE 292 Mech. of Mt'ls. I	3	EE 400 Vacuum Tubes and Electron.	5	Min.E 331 Mine Mapping	1
EE 303 Elements of EE	4	HSS 332 Dev. West. Cult. Inst.	3	CE 293 Mech. of Mt'ls. II	3
EE 304 EE Lab.	1	ME 415 Stat. Quality Control	3	CE 342 Fluid Mechanics I	4
HSS 331 Orig. West. Cult. Inst.	3	Mtl.E 351 Mineral Processing I	4	HSS 333 Contemp. Pol. and Soc. Problems	3
Math. 114 Computer Program.	2			Mtl.E 352 Mineral Processing II	2
	17		17	Econ. 211 General	3
					17

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Min. E 425 Rock Mechanics	2	Min. E 481 Mineral Indust. Econ.	3	Min.E 306 Excursion	1
Min.E 433 Mine Ventilation	3	HSS 492 Lit. Heritage West. World II	3	Min.E 426 Exploration	3
HSS 491 Lit. Heritage West. World I	3	Geol. 340 Structural H. Rel. 365 Hum. Behav. in Organizations	3	Min.E 432 Mine Engr.	5
ME 325 Thermodynamics	5	Elective	3	HSS 493 Lit. Heritage West. World III	3
Actg. 210 Fundamentals	3			ME 417 Methods Anal.	3
	16		17	Electives	3
					18

† See page 29 for ROTC requirement.

GEOLOGICAL ENGINEERING OPTION

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Min.E 322 Methods	4	HSS 332 Dev. West. Cult. Inst.	3	Min.E 306 Excursion	1
CE 292 Mech. of Mt'ls. I	3	ME 415 Stat. Quality Control	3	Min.E 325 Land Valuation	2
EE 303 Elements of EE	4	Mtl.E 351 Mineral Processing I	4	Min. E. 331 Mine Mapping	1
EE 304 EE Lab.	1	Econ. 211 General	3	CE 342 Fluid Mechanics I	4
HSS 331 Orig. West. Cult. Inst.	3	Geol. 340 Structural	5	HSS 333 Contemp. Pol. and Soc. Problems	3
Math. 114 Computer Program.	2		18	Geol. 326 Sediment. Petrol.	5
	17				16

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Min. E 425 Rock Mechanics	2	Min. E 427 Geophysics ..	2	Min. E 306 Excursion ..	1
HSS 491 Lit. Heritage West. World I	3	Min. E 481 Mineral Indust. Econ.	3	Min. E 426 Exploration ..	3
Geol. 423 Optical Mineralogy	5	HSS 492 Lit. Heritage West. World II	3	HSS 493 Lit. Heritage West. World III	3
Electives	5	Geol. 424 Petrog. and Petrof. of Igneous Rocks ..	5	Geol. 425 Petrog. and Petrof. of Metamorphic Rocks	5
	15	Electives	5	Geol. 487 Ore Deposits ..	5
			18		17

MINERAL PROCESSING ENGINEERING OPTION

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Min. E 322 Methods ..	4	EE 400 Vacuum Tubes and Electron.	5	Min. E 306 Excursion ..	1
CE 292 Mechs. of Mt'ls. ..	3	HSS 332 Dev. West. Cult. Inst.	3	CE 342 Fluid Mechanics I ..	4
EE 303 Elements of EE ..	4	ME 415 Stat. Quality Control	3	HSS 333 Contemp. Pol. and Soc. Problems	3
EE 304 EE Lab	1	Mtl. E 351 Mineral Processing I	4	Mtl. E 352 Mineral Processing II	2
HSS 331 Orig. West. Cult. Inst.	3			Chem. 355 Physical	4
	15		15	Econ. 211 General	3
					17

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Min. E 463 Mineral Processing: Flotation ..	3	Min. E 465 Mineral Processing: Microscopy ..	2	Min. E 306 Excursion ..	1
HSS 491 Lit. Heritage West. World I	3	Min. E 499 Special Projects	2	Min. E 464 Mineral Processing: Hydro-metallurgy	4
Chem. 356 Physical	3	HSS 492 Lit. Heritage West. World II	3	Min. E 466 Mineral Processing: Practices ..	2
Geol. 423 Optical Mineralogy	5	Mtl. E 412 X-ray Diffract.	3	Min. E 499 Special Projects	2
Electives	3	Mtl. E 481 Mineral Indust. Econ.	3	HSS 493 Lit. Heritage West. World III	3
	17	Electives	3	Electives	5
			16		17

ADVANCED DEGREES

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate School Bulletin*. No foreign language is required for the master's degrees.

MASTER OF SCIENCE IN MINING ENGINEERING. The requirements for this degree are a minimum of 45 credits, of which 36 must be in formal course work and 9 in thesis. No foreign language is required. Candidates for the degree may elect work in mining or mineral processing 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, engineering, or mining geology. Graduate studies in mineral processing 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 may 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 in order to become candidates.

COURSES FOR UNDERGRADUATES

- 221 Explosives and Rock Drilling (2) Anderson**
Principles of rock breaking and excavation. Characteristics of explosives and their selection for specific uses; theory of fragmentation; design of blast and explosive loading patterns; safe practices, and elements of cost. Applications in tunneling and open pit work. Prerequisite, General Engineering 102.
- 306 Mine Excursion (1, maximum 2)**
Five-day trip to a neighboring mining region. Required in junior and senior years during Spring Vacation, or as scheduled.
- 322 Methods of Mining (4) Anderson**
Working of open pit and underground mines. Prospecting and delineation of ore bodies; shafts and developments; level planning and underground stopping methods; support systems; surface mining of placer and ore deposits; introduction to transport, drainage, ventilation, hoisting, and mine organization. Emphasis on productivity and costs. Prerequisite, 221 or permission.
- 325 Mineral Land Valuation (2) Anderson**
Sampling methods in mines and placers; drill hole and coring methods; geological aspects; estimation of deposits and reserves; metallic and nonmetallic depletion and financial calculations; reports. Prerequisite, 322.
- 330 Mine Surveying (3) Anderson**
Practice in underground methods, use of special instruments, stope measurements, underground curves, shaft surveying, solar observations, and carrying of meridian underground. Prerequisite, General Engineering 121.
- 331 Mine Mapping (1) Anderson**
Plotting of underground field notes to complete a mine control map; production of working and geological maps and sections. Prerequisite, 330.
- 425 Rock Mechanics (2) Pifer**
Physical properties of rocks; stress around workings; fragmentation by induced forces; subsidence; extracting pillars and remnants. Prerequisites, 322 and Civil Engineering 292, or permission.
- 426 Exploration and Development of Mineral Deposits (3) Pifer**
Mining geology; procurement of data by geologic mapping and drilling; solution of mine structural and fault problems; physiographic, mineralogical and structural guides to ore applied to mine exploration; exploration and development programs; evaluation of prospects. Prerequisite, Geology 427 or permission.
- 427 Exploration Geophysics: Introduction (2) Anderson**
Elementary principles of seismic, resistivity, electro-magnetic, magnetic, radiometric, and gravitational methods in exploration for ore; applications and limitations of methods. Prerequisite, junior standing.
- 432 Mine Engineering (5) Anderson**
Principles and application; design of transport systems; air compression practice and distribution; pumping plant and mine water handling; electrical equipment and distribution systems in mines; plant design and construction. Prerequisites, 322 and Electrical Engineering 303.
- 433 Mine Ventilation (3) Anderson**
Principles and practices. Physical and chemical aspects of mine atmosphere, gases, and dusts; physiological considerations, and air flow and measurement; mechanical ventilation, equipment, and systems. Prerequisite, 322.
- 463 Mineral Processing: Flotation (3) Brien**
Flotation theory and practice. Applied surface chemistry, adsorption, surface tension, theory of flocculation and dispersion and related fundamentals. Laboratory problems designed to illustrate basic chemical and physical phenomena; practical testing and investigation of flotation variables. Prerequisite, Materials Engineering 351.
- 464 Mineral Processing: Hydrometallurgy (4) Brien**
Physical-chemical principles of solution processes; acid, carbonate, ammonia leaching, cyanidation and related processes. Fundamental theory applied to effects of pressure, temperature, diffusion rates, pyrometallurgical pretreatment, activities, oxidation and reducing conditions, impurities, contact time, interphase areas and associated variables. Principles of ion exchange and solvent extraction; their application to hydrometallurgical processes. Laboratory experiments illustrate application of basic principles and demonstrate testing techniques. Prerequisites, Materials Engineering 250, Chemistry 170.
- 465 Mineral Processing: Microscopy (2) Brien**
Elements of quantitative mineragraphy, microchemistry, and mineral association and liberation studies of polished ore sections and mounted mill products; grain-count studies of mineral processing products. Prerequisites, Materials Engineering 250, 351.
- 466 Mineral Processing Practices (2) Brien**
Methods of laboratory investigation; advanced quantitative mineragraphy and research; plant operations. Prerequisites, 463 and 465.
- 467 Mineral Process Plant Design (2) Brien**
General arrangement planning and design calculations for beneficiation plants on a project basis. Prerequisites, 463, 465.

- 476 Coal Preparation (2)** **Brien**
Dry and wet cleaning processes; washability characteristics; control by float-and-sink methods; characteristics of coal and associated impurities; economics of preparation; market requirements. Prerequisite, Materials Engineering 351.
- 483 Mining Laws (1)** **Anderson**
Mineral land laws of the United States; federal, Washington State, and territorial laws. Oil and gas acts. Federal and state mine safety regulations. Canadian and other foreign laws of importance. Prerequisite, 325.
- 485 Industrial Minerals (3)** **Brien**
Nonmetallic mineral industry; sources of raw materials; processing technology and product specifications; marketing; economics, and utilization. Prerequisite, Materials Engineering 351 or equivalent.
- 499 Special Projects (*, maximum 5)**
Problems in mining or mineral processing; field or laboratory investigations on an independent basis. Total of 5 credits required.

COURSES FOR GRADUATES ONLY

- 520 Seminar (1, maximum 6)**
Lectures and discussions; review of research problems and recent literature. Required for all graduate students.
- 521 Metal Mining (*)** **Anderson, Pifer**
Production methods; mining control; support; 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)** **Pifer**
Location and design, surface plant, collar preparation; sinking, mechanization and organization, support, concrete lining, stations and bottoms, equipment and maintenance, safety and costs; special attention to modern circular shafts.
- 523 Mining Stratified Deposits (*)** **Pifer**
Studies in mining, with particular reference to mechanization. Prerequisite, graduate standing.
- 525 Rock Mechanics (3)** **Pifer**
Physical characteristics and mechanics of response by rocks under stress; theories of stress distribution around underground structures; application of theory and practical application to mine design and operation sequence; rock fragmentation; methods of experimental investigation. Prerequisite, 425.
- 560 Mineral Processing (*)** **Brien**
Special problems and research.
- 561 Advanced Mineral Processing Preparation (*)** **Brien**
Unit process studies in comminution, sizing, classifying, and auxiliary processes.
- 562 Advanced Mineral Processing Laboratory (*)** **Brien**
Experimental study of theoretical principles of preparation and concentration. Arranged concurrently with 561 and 563, or as required.
- 563 Advanced Mineral Processing Theory (*)** **Brien**
Physics and chemistry of beneficiation.
- 564 Advanced Mineral Processing Design (*)** **Brien**
Plant layout studies, economics, and equipment design.
- 571 Cooperative Research with United States Bureau of Mines (6)**
- 600 Research (*)**
Prerequisite, permission of Director.
- 700 Thesis (*)**

PROSPECTOR'S COURSE

MINING ENGINEERING

- 10 Prospecting and Mining (0)** **Anderson**
Equipment for field work; prospecting methods; staking claims and mining law; sampling; mineral identification and mineralogy; map reading; blasting; timbering; prospect shafts and tunnels; mine gases and elementary ventilation. (Offered by Division of Evening Classes only.)

ENGINEERING MECHANICS

Requests for information concerning Engineering Mechanics should be addressed to Dr. E. H. Dill, Department of Aeronautical Engineering, University of Washington, Seattle 5.

The Engineering Mechanics program consists of graduate work leading to the degrees of Master of Science in Engineering and Doctor of Philosophy. The pro-

gram is a cooperative undertaking of the Departments of Aeronautical, Civil, Mechanical, and Metallurgical Engineering. It is administered by the Graduate School through a committee of members of the faculty from these departments under the chairmanship of Dr. E. H. Dill.

Students entering this program should have completed an undergraduate degree in a field such as aeronautical, civil, or mechanical engineering, physics, engineering physics, or mathematics, or an equivalent.

A student will normally enroll in one of several departments participating in the Engineering Mechanics program. A student must meet certain departmental and University requirements. For the Ph.D. degree he must also present a thesis representing original and independent investigation.

NUCLEAR ENGINEERING

Requests for information concerning the program in Nuclear Engineering should be addressed to Dr. Albert L. Babb, Department of Chemical Engineering, Nuclear Reactor Building, University of Washington, Seattle 5.

The College of Engineering offers a graduate program in Nuclear Engineering leading to the degrees of Master of Science in Engineering and Doctor of Philosophy. The Master of Science degree is designated as Major: Nuclear Engineering.

The program is a cooperative undertaking of the Departments of Chemical, Civil, Electrical, Mechanical, and Metallurgical Engineering and is administered by a faculty committee composed of representatives from these departments under the chairmanship of Dr. Albert L. Babb.

Students entering the Master of Science program should have completed in their undergraduate programs the following courses or their equivalents: Mathematics 221 (Elements of Differential Equations); Physics 320 (Introduction to Modern Physics), Physics 323 (Introduction to Nuclear Physics); Materials Engineering 250 (Fundamentals of Materials Science).

To be admitted as a candidate for the Doctor of Philosophy degree, a student must meet certain departmental and University requirements. A student will normally enroll in one of the several departments participating in the nuclear engineering program and comply with its candidacy requirements. The University requires that the student must present a thesis representing original and independent investigation and successfully pass a final examination.

REQUIREMENTS FOR THE MASTER OF SCIENCE IN ENGINEERING DEGREE (MAJOR: NUCLEAR ENGINEERING)

Nuclear Engineering	18 credits (minimum)
Advanced Mathematics	6 - 9
Physics	6 - 9
Technical Electives	6 - 0
Thesis	9
Total.....	45 credits

It is recommended that candidates for this degree include 484, 500, 501, 502, 510, and 539 among their courses. Attendance at the Graduate Seminar will normally be required for three quarters. Minor electives in a student's program may be chosen in accordance with the candidate's field of specialty. Suggested fields of study might include such courses as: Control Systems and Servomechanisms; Electronics, Chemical Separations Processes; Diffusional Operations; Numerical Analysis; Power Plant Engineering; Physical Metallurgy; Sanitary Engineering.

FACILITIES AND LABORATORIES

The following laboratories have been equipped for training and research in nuclear technology and engineering:

- Heat Transfer Laboratory
- Nuclear Instrumentation Laboratory
- Nuclear Metallurgy Laboratory
- Radioactive Tracer Laboratory
- Radioactive Waste Laboratory
- Radiochemistry Laboratory
- Reactor Theory Laboratory
- Nuclear Reactor Laboratory

At present a natural uranium-graphite subcritical reactor is used in the Reactor Theory Laboratory. An analog computer is also used here and in the Nuclear Instrumentation Laboratory to simulate the time behavior of nuclear reactor systems. An IBM 650 digital computer is used by students in conjunction with buckling, diffusion length, and effective size determinations for the subcritical reactor. In addition, an IBM 709 computer is available to students in Nuclear Engineering 510, 539, and research projects.

The nuclear engineering laboratory features a 10-kw nuclear reactor and supporting facilities housed in a new building.

The heat transfer laboratory is equipped with a complete forced circulating boiling water loop which is capable of simulating many nuclear reactor conditions. A liquid-metal heat transfer loop utilizing NaK is also available to nuclear engineering students.

Experimental programs and facilities are available from which students may select master's thesis projects for the investigation of two-phase flow, boiling heat transfer, ion exchange separations, solvent extraction in pulsed columns, engine wear problems, radiation dosimetry, waste disposal problems, metallurgy of reactor materials, reactor physics, lattice constants, effect of gamma radiation on chemical reactions and materials, and radiochemical separations.

NUCLEAR REACTOR

The University of Washington Nuclear Reactor is similar to the Argonaut reactor developed at Argonne National Laboratory. It has an initial steady-state power rating of 10 kilowatts and a maximum thermal neutron flux level of 3×10^{11} neutrons per sq. cm. per sec. The reactor is housed in a striking glass and concrete structure. The lower part of the construction is embedded in a sloping bank; whereas the upper part is completely framed in aluminum, glass, and reinforced concrete. The main laboratory and the operating console room are completely visible from the outside plaza on the upper level.

CENTER FOR GRADUATE STUDY AT HANFORD

The University of Washington assumed the administration of the school formerly known as the General Electric School of Nuclear Engineering at Richland, Washington, on July 1, 1958. This facility is now operated as the University of Washington Center for Graduate Study at Hanford. This transfer of administration was made to enhance the opportunities for continuing graduate and upper-division study available to employees of the Atomic Energy Commission and other government agencies in the area near the General Electric Company plant at Richland. In addition to the above, this facility provides further opportunities for training and experience to graduate students enrolled on the Seattle campus who desire to take advantage of them.

COURSES

444 Nuclear Materials (4)

Polonis

A lecture course covering the structure, properties, and performance of materials in

nuclear reactor applications; engineering requirements and selection of materials for reactors; technology of materials for reactor fuels, moderators, shields, control elements, and structural components; corrosion and oxidation; effects of radiation on the structure and properties of materials. Prerequisites, Physics 320, and Materials Engineering 250 or equivalent. (Offered Winter Quarter.)

445 Nuclear Materials Laboratory (2) Polonis

This course comprises a series of experiments to supplement the lecture material of 444. The experiments are designed to illustrate fundamental behavior of metals important in nuclear engineering. The principles of melting, casting, and heat treatment are covered, together with the more basic aspects of structural changes and transformation kinetics. The course will require six hours of laboratory work per week. Prerequisite, Materials Engineering 442 or 444 or permission.

484 Introduction to Nuclear Engineering (4) Babb

A survey course in nuclear engineering for seniors, graduate students, and practicing engineers. The course covers elements of reactor nuclear physics; elementary nuclear reactor theory; radiation shielding; materials of construction; chemical processes associated with nuclear reactors; heat transfer and fluid flow problems; mechanical accessories and controls; thermonuclear reactions. Prerequisites, Physics 320 and Mathematics 221. (Offered Autumn Quarter.)

485 Nuclear Instruments (3) Wilson

A lecture and laboratory course devoted to the basic design and operation of the instruments used in nuclear engineering, such as badges, dosimeters, Geiger counters, proportional counters, survey meters, scalars, radiation monitors, scintillation spectrometers, etc. Experiments will demonstrate the characteristics of nuclear instruments and associated circuitry. The operating characteristics of the 10-kw nuclear reactor will also be demonstrated. Safety practices will be emphasized throughout the course. Prerequisite, 484 or permission. (Offered Autumn and Spring Quarters.)

486 Nuclear Power Plants (3) McFeron

Study of the design, construction, operation, and maintenance of different types of nuclear power plants. Characteristics of various kinds of reactors as related to the heat-power cycle. Heat transfer problems. Engineering management of nuclear power plants. Prerequisite, senior standing in engineering or permission. (Offered Winter Quarter.)

487 Tracer Techniques in Engineering Measurements (3) Firey

A combined lecture and laboratory course demonstrating the use of radioactive materials for various engineering measurements, including mechanical wear, fluid flow, and thickness. Particular laboratory experiments will measure engine wear, engine deposits, and engine oil consumption. Prerequisite, senior standing in engineering or permission. (Offered Spring Quarter.)

500 Nuclear Reactor Theory I (5) Garlid

A lecture course in nuclear reactor physics covering nuclear reactions; production of neutrons; diffusion of neutrons, slowing down of neutrons; Fermi Age theory and applications; general theory of homogeneous multiplying systems and heterogeneous reactors. Prerequisites, Physics 323 and Mathematics 221, or permission. Equivalent of 484 and Mathematics 428 recommended. (Offered Autumn Quarter.)

501 Nuclear Reactor Theory II and Laboratory (4) Albrecht, Babb, Garlid

A continuation of 500, covering time behavior of nuclear reactors; fundamentals of reactor control; elements of perturbation and transport theory. The laboratory work will center around the natural uranium-graphite subcritical assembly. Experiments will include measurements of the scattering and absorption of neutrons, flux distributions in the subcritical assembly, lattice parameters, and studies with a reactor simulator and reactor control circuits. Diffusion length measurements will be made in the graphite thermal column and water shield tank of the 10-kw nuclear reactor. Prerequisite, 500. (Offered Winter Quarter.)

502 Nuclear Engineering Laboratory (5) Babb, Wilson

An advanced laboratory course centered around a 10-kw nuclear reactor of the Argonaut type. The first part of the laboratory course will be devoted to experiments utilizing the steady and unsteady state characteristics of the reactor, while the second part will be devoted to experiments utilizing the reactor as a source of radiation. Prerequisite, 501. (Offered Spring Quarter.)

510 Nuclear Reactor Engineering (3) Babb

An advanced course in engineering analysis of nuclear reactor systems. The course covers core design methods; heat generation and distribution in nuclear reactor systems; the removal and utilization of heat for power production; fuel cycles and processing of irradiated reactor fuels; shielding of nuclear radiations. Prerequisite, 500. (Offered Winter Quarter.)

N521, N522, 523 Graduate Seminar (0,0,1)
(Offered Autumn, Winter, and Spring Quarters.)

539 Nuclear Reactor Design (3) McFeron

A design laboratory course involving the synthesis of reactor theory, engineering analysis, material specifications, and economics to meet the design specifications for a complete nuclear reactor facility. Emphasis upon cycle analysis, hazards, arrangements, and requirements peculiar to nuclear reactor plants. Prerequisite, 510. (Offered Spring Quarter.)

550 Neutron Transport Theory (3) Garlid

A lecture course in which detailed consideration is given to neutron migration and slowing down in a variety of media and the validity of and basis for approximations currently in use. Prerequisite, 501. (Offered Autumn Quarter.)

- 559 Control of Radioactive Wastes (3)** **Bogan**
Environmental problems resulting from utilization of nuclear reactions; radioactive waste disposal practice; decontamination of water supplies; reactor site location, and control of stream and atmosphere pollution. Prerequisite, Physics 320 or permission. (Offered Winter Quarter.)
- 560 Nuclear Reactor Dynamics I (3)** **Albrecht**
Nuclear reactor dynamic equations, delayed neutron representations, response of reactors to various perturbations, operational techniques of system analysis, feedback mechanisms, stability criteria, power coefficients. Prerequisites, 501, Mathematics 427, 428. (Offered Winter Quarter.)
- 561 Nuclear Reactor Dynamics II (3)** **Albrecht**
Experimental nuclear reactor dynamics, oscillators, pulsed neutrons, stochastic processes; dynamics of heat removal system components, analysis of closed loop system, space dependent dynamics. Prerequisite, 560. (Offered Spring Quarter.)
- 588J Nuclear Chemical Separations Processes (3)** **Babb**
Application of chemical engineering principles to processing of nuclear reactor materials and irradiated fuels. Fuel cycles; properties of irradiated fuel; theory of molecular separations processes; analysis of steady state and transient characteristics of chemical processing operations. Offered jointly with Chemical Engineering. Prerequisites, 484, Chemical Engineering 570, 572, or permission. (Offered Autumn Quarter.)
- 599 Special Topics in Nuclear Engineering (*)**
Discussions and readings of topics of current interest in the field of nuclear engineering research. Subject matter may include reactor fuels and materials, reactor dynamics and control, instrumentation, thermonuclear processes, direct conversion problems. Prerequisite, permission—Dr. Albert L. Babb.
- 700 Thesis (*)**
Prerequisite, permission—Dr. Albert L. Babb.

ADDITIONAL COURSES

The following additional complementary courses are offered.

AERONAUTICAL ENGINEERING

- 567, 568 Analysis in Engineering (3,3)**
Mathematical methods for solving problems arising in engineering. 567: vector analysis, matrices, tensors, complex variables; 568: calculus of variations, Sturm-Liouville problems, series solutions and special functions for ordinary differential equations, orthogonal functions.

CHEMISTRY

- 418 Radiochemistry (3)** **Fairhall**
Natural radioactivity, nuclear systematics and reactions, radioactive decay processes, decay laws, statistical considerations, applications of radioactivity. Prerequisites, 170 and 356 or permission.
- 419 Radiochemistry Laboratory (2)** **Fairhall**
Safe handling and quantitative measurement of radioactivity, radiochemical separations, preparation of radioactive tracers, nuclear fission. Prerequisites, 395, 418 (which may be taken concurrently) or permission.

MATHEMATICS

- 427, 428, 429 Topics in Applied Analysis (3,3,3)**
427: Elementary complex variable. Prerequisite, 225 or 136.
428, 429: Orthogonal functions and boundary value problems, calculus of variations. Prerequisites, 332 or 236 for 428; 428 for 429.

MECHANICAL ENGINEERING

- 530 Radiative Heat Transfer (3)** **Dopew, McFeron**
Fundamentals of thermal radiation for black, gray, nongray, diffuse, and specular surfaces. Gaseous radiation and special applications of thermal radiation. Prerequisites, a course in differential equations and 430 or permission.
- 531 Heat Transfer (3)** **Costello, McFeron, Waibler**
Fundamentals of the conduction process and measurements. The analysis of steady-state and transient heat conduction in single and multidimensional systems by mathematical, graphical, numerical, and analogical methods. Solutions for transient systems with unsteady boundary conditions and with moving or fixed heat sources. Prerequisites, a course in differential equations and 430.
- 532 Convective Heat Transfer (3)** **Childs, Waibler**
An introduction to fluid flow and boundary layer theory as applicable to forced- and natural-convection heat transfer. Dimensional analysis. Condensation and boiling heat transfer. The design of heat exchangers. Prerequisites, a course in differential equations and 430.

534 Experimental Heat Transfer (3)**Costello, Depew, McFeron, Waibler**

Study of instrumentation and techniques used in heat transfer measurements; investigation of conduction, radiation, and convection phenomena. Liquid metal and water heat-transfer loops will be used for experiments to determine heat flux, film coefficients, boiling pressure drops, and other phenomena of current interest. Prerequisites, 530, 531, or 532, or permission.

PHYSICS**461, 462, 463 Introduction to Atomic and Nuclear Physics (3,3,3)**

Foundations of modern atomic and nuclear physics; elementary quantum theory, elementary particles; high energy physics; solid state. Prerequisites, 327 and Mathematics 322.

RADIOLOGY**485 Radiation Dosimetry (4)****Roesch**

The measurement of radiation energy loss relationships in gases and solids; detection; techniques and circuits; units; consideration of human exposure limits. Prerequisite, permission.

FACULTY

R. W. Albrecht, *Assistant Professor; Ph.D., Michigan*

A. L. Babb, *Professor; Ph.D., Illinois*

R. H. Bogan, *Associate Professor; Sc.D., Massachusetts Institute of Technology*

M. E. Childs, *Professor; Ph.D., Illinois*

C. P. Costello, *Associate Professor; Ph.D., Stanford*

C. A. Depew, *Assistant Professor; Ph.D., California*

A. W. Fairhall, *Associate Professor; Ph.D., Massachusetts Institute of Technology*

J. C. Firey, *Professor; M.S., Wisconsin*

K. L. Garlid, *Assistant Professor; Ph.D., Minnesota*

D. E. McFeron, *Professor; Ph.D., Illinois*

R. W. Moulton, *Professor; Ph.D., Washington*

D. H. Polonis, *Associate Professor; Ph.D., British Columbia*

W. C. Roesch, *Clinical Instructor; Ph.D., California Institute of Technology*

P. J. Waibler, *Professor; Ph.D., Illinois*

W. E. Wilson, Jr., *Associate Nuclear Reactor Engineer, M.S., Washington*

COURSES INCLUDED IN ENGINEERING PROGRAMS**COLLEGE OF ARTS AND SCIENCES****CHEMISTRY****100 Chemical Science (5)**

Atoms, molecules, and chemical reactions. A survey of fundamental principles. Designed both as a terminal course for nonscience majors and as an introductory course for those who wish to continue with 101 or 140. (Note Mathematics prerequisite for 140). No credit to those who have had one unit or more of high school chemistry.

140 General Chemistry (3)

For science, engineering, and other majors who plan to take a year or more of chemistry courses. The structure of matter, atomic and molecular theory, the elements, valence and quantitative relationships. (Formerly 110.) Prerequisites, high school chemistry or 100, Mathematics 101 or passing score on algebra qualifying test.

150 General Chemistry (3)

Stoichiometry, aqueous solutions, kinetics, acid and base equilibria, electrochemistry, oxidation and reduction. Prerequisite, 140.

151 General Chemistry Laboratory (2)

Experiments illustrating the quantitative relationships in chemistry. Prerequisites, 140 and concurrent registration in 150.

160 General Chemistry (3)

Periodic System, phase equilibria, metals and nonmetals, metallurgy, and nuclear reactions. Prerequisite, 150.

170 Qualitative Analysis (3)

Semi-microqualitative analysis for common cations and anions; separation and identification procedures. Prerequisite, 160, which may be taken concurrently.

221 Quantitative Analysis (5)

Volumetric and gravimetric. Prerequisite, 170.

231 Organic Chemistry (3)

For students planning only two quarters of organic chemistry. Structure, nomenclature, reactions, and synthesis of the main types of organic compounds. Prerequisite, 101 or 150.

- 232 Organic Chemistry (3)**
Continuation of 231. Prerequisite, 231.
- 241 Organic Chemistry Laboratory (2)**
Usually to accompany 231. Preparation of representative compounds. Prerequisite, 231, which may be taken concurrently.
- 242 Organic Chemistry Laboratory (2)**
Usually to accompany 232. Preparations and qualitative organic analysis. Prerequisites, 232 (which may be taken concurrently) and 241.
- 335 Organic Chemistry (3)**
For chemistry and chemical engineering majors and other qualified students planning three or more quarters of organic chemistry. Structure, nomenclature, reactions, and synthesis of organic compounds. Theory and mechanism of organic reactions. Prerequisite, 170, which may be taken concurrently.
- 336 Organic Chemistry (3)**
Continuation of 335. Prerequisite, 335.
- 337 Organic Chemistry (3)**
Continuation of 336. Prerequisite, 336.
- 345 Organic Chemistry Laboratory (1)**
Usually to accompany 335. Organic synthesis. Prerequisite, 335 (which may be taken concurrently).
- 346 Organic Chemistry Laboratory (1)**
Continuation of 345. Usually to accompany 336. Prerequisites, 336 (which may be taken concurrently) and 345.
- 347 Organic Chemistry Laboratory (2)**
Continuation of 346. Usually to accompany 337. Prerequisites, 337 (which may be taken concurrently) and 346.
- 355 Physical Chemistry (4)**
Introduction to quantum chemistry, statistical mechanics, kinetic theory of gases, thermodynamics. Prerequisites, 160, Mathematics 125, and college physics.
- 356 Physical Chemistry (3)**
Phase equilibria, colligative properties of solutions, chemical thermodynamics, electrolytes and electrochemistry. Prerequisites, 355 and Mathematics 126.
- 357 Physical Chemistry (3)**
Chemical kinetics, transport properties, molecular structure, the solid state, surfaces, and macromolecules. Prerequisite, 356.
- 358 Physical Chemistry Laboratory (4)**
Prerequisite, 357, or taken concurrently.
- 415 The Chemical Bond (3)**
The nature of the chemical bond, complex compounds. Prerequisite, 357.
- 416 Inorganic Chemistry (3)**
Study of the elements in relation to the periodic system. Prerequisite, 357.
- 550, 551, 552 Advanced Physical Chemistry (3,3,3)**
Thermodynamics and statistical mechanics, atomic and molecular structure, kinetic theory, and chemical kinetics. Prerequisite, 357, 415 for 551, 550 for 552, or permission.

ECONOMICS

- 211 General Economics (3)**
Condensation of 200. Primarily for engineering and forestry students; other students by permission. No credit is allowed if 200 has been taken.

GEOLOGY

- 205 Physical Geology (5)** Ellis
Prerequisite, high school chemistry.
- 206 Elements of Physiography (5)** Mackin
Processes and agencies affecting the earth's surface; relationship of topography to structure. Prerequisite, 101 or 205.
- 207 Historical Geology (5)** Wheeler
Origin and evolution of the earth, with emphasis on general geological history of North America. Prerequisites, 205 or permission.
- 221 Crystallography and Sulfide Mineralogy (3)** Ellis
Study of crystal morphology, the relation of crystal form to the space lattice, and introduction of mineralogy of the sulfides. Prerequisite, 205.
- 222 Mineralogy (3)** Ellis
Descriptive mineralogy of more than one hundred common minerals (excluding sulfides). Prerequisite, 221.
- 310 Geology for Engineers (5)** Barksdale
Elements for civil engineers. Prerequisite, civil engineering major or permission.
- 340 Structural Geology (5)** McKee
Interpretation of rock structures and their genesis. Prerequisites, 205, 206, 207, and General Engineering 103. (Formerly 308.)

- 361 Stratigraphy (5)** **Wheeler**
Systematic study of spatial relations of surface-accumulated rocks and their space-time implications. Prerequisites, 205, 206, 207, and 320.
- 423 Optical Mineralogy (5)** **Vance**
Petrographic microscope and recognition of common minerals in thin section. Prerequisites, 205 and 221.
- 424 Petrography and Petrology of Igneous Rocks (5)** **Vance**
Systematic study of rocks with the petrographic microscope. Prerequisite, 423.
- 425 Petrography and Petrology of Metamorphic Rocks (5)** **Vance**
Systematic study of metamorphic rocks and their origin. Prerequisite, 424.
- 487 Ore Deposits (5)** **Ellis**
Form, structure, mineralogy, petrology, and mode of origin. Prerequisites, 222 and 424. (Formerly 427.)

MATHEMATICS

- 103 Intermediate Algebra and Trigonometry (3)**
Meets five hours per week. First four weeks, review of intermediate algebra. Last six weeks, plane trigonometry, equivalent to 104. Not open for credit to students who have taken trigonometry in high school. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101, and one year of plane geometry.
- 104 Plane Trigonometry (3)**
Trigonometric functions, identities, equations, inverse functions, graphs, logarithms, and solution of triangles. Not open for credit to students who have taken trigonometry in high school. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101, and one year of plane geometry.
- 105 College Algebra (5)**
Real and complex number systems; sets and equations; simultaneous equations and matrices; inequalities; functions and relations; algebraic, exponential and logarithmic functions. Not open to students who have taken 155, 156. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101, or 103.
- 114 Elementary Computer Programming (2)**
Programming and coding of problems for automatic digital computers. Flow charts, loops, subroutines. Codes written will be executed by machine. Prerequisite, 101 or equivalent.
- 124, 125, 126 Calculus with Analytic Geometry (5,5,5)**
Plane analytic geometry, differentiation of algebraic and transcendental functions, anti-derivatives, definite integrals, technique of integration, vector algebra, solid analytic geometry, multiple integrals, partial derivatives, simple differential equations. Applications. Prerequisites, four years of high school mathematics and qualifying test, or 104 (or 103 or exemption by qualifying test) and 105 (or 156) for 124; 124 or 134 for 125; 125 or 135 for 126.
- 134, 135, 136 Calculus with Analytic Geometry (5,5,5)**
Honors sections of 124, 125, 126 Prerequisites, four years of high school mathematics and permission.
- 221 Elements of Differential Equations (3)**
Elementary methods of solution, linear differential equations of second and higher order. Students planning to take 224 and 225 are advised to skip this course and to take 322 after the completion of 225. Prerequisite, 126 or 136.
- 224, 225 Intermediate Analysis (3,3)**
Real numbers, induction, functions, sequences, limits, continuity, infinite series, power series, Taylor series, series of functions, Rolle's theorem, mean value theorem, inverse functions, l'Hospital's rule, fundamental theorem of calculus, improper integrals. Prerequisites, 126 or 136 for 224; 224 for 225.
- 322 Principles of Differential Equations (3)**
Linear systems, existence of solutions, solution by series, special functions. Prerequisite, 225 or 136.
- 324 Advanced Calculus I (3)**
Functions of several variables, transformations and mappings, implicit function theorem. Prerequisite, 225 or 136.
- 325 Advanced Calculus II (3)**
Vector analysis, theorems of Stokes, Gauss, and Green. Prerequisite, 225 or 136; (324 desirable).
- 374 Principles of Digital Computers and Coding (5)**
High-speed digital computation, number systems, machine components, programming, operation. Three hours lecture, four hours laboratory per week with problems run on a high-speed machine. Prerequisites, 114 and 124 (or 134), and permission of instructor.
- 391 Elementary Probability (3)**
Sample space, random variables, laws of probability. Combinatorial probabilities. Distributions: binomial, normal; expectation, variance. Prerequisite, 126 or 136.
- 401 Matrices (3)**
Determinants; the algebra of matrices; groups of transformations. Prerequisite, 126, or 136, or 130

427, 428, 429 Topics in Applied Analysis (3,3,3)

427: Elementary complex variable. Prerequisite, 225 or 136. 428, 429: Orthogonal functions and boundary value problems, calculus of variations. Prerequisites, 322 or 236 for 428; 428 for 429.

464 Numerical Analysis I (3)

Basic principles of numerical analysis, classical interpolation and approximation formulas, finite differences and difference equations. Laboratory work on desk calculators. Prerequisite or corequisite, 221 or 322.

465 Numerical Analysis II (5)

Numerical methods in algebra. Systems of linear equations, matrix inversion, successive approximations, iterative and relaxation methods. Three hours lecture and four hours laboratory per week on a high-speed machine. Prerequisites, 374, 401, 404, and 464.

466 Numerical Analysis III (5)

Numerical differentiation and integration. Solution of differential equations and systems of such equations. Three hours lecture and four hours laboratory per week on a high-speed machine. Prerequisites, 374 and 464.

481 Calculus of Probabilities (5)

Fundamental concepts; discrete and continuous random variables; mathematical expectations; law of large numbers; important types of distributions; characteristic functions; central limit theorem. Prerequisites, 225 and 391, or permission.

PHYSICAL AND HEALTH EDUCATION**Health Education****110 Health Education (Women) (2)****Gaines, Horne**

Current health information, with emphasis on women's responsibilities in application of health knowledge to attitudes and practices in modern and future life. Required of all freshman women; exemption without credit by examination.

175 Personal Health (Men) (2)

Health information that affords a basis for intelligent guidance in the formation of health habits and attitudes. Required of all freshman men; exemption without credit by examination.

Physical Education Activities**101 through 255 Physical Education Activities (Men) (1 each)**

101, adapted activities; 106, handball; 107, basketball; 108, tennis; 109, softball; 110, golf (\$1.50 per quarter); 111, track; 112, crew (class), prerequisite, swimming; 114, boxing; 115, gymnastics; 117, wrestling; 118, volleyball; 119, swimming; 121, touch football; 122, badminton; 123, archery; 124, calisthenics (body conditioning); 125, skiing; 126, aerial ball; 127, bowling (\$5.00 per quarter); 128, weight-training; 129, sailing; 131, beginning, 134 intermediate, folk and square dancing; 151, modern dance; 154, social dance; 157, canoeing (\$3.00 per quarter); 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; 152, freshman, 252, varsity, gymnastics; 155, freshman, 255, varsity, wrestling.

111 through 162; 211 through 267 Physical Education Activities (Women) (1 each)

111, adapted activities (restricted); 112, basic activities (general); 114, basic activities (applied); 115, archery; 118, badminton; 119, body conditioning; 121, bowling (\$5.00 per quarter); 124, fencing; 126, golf (\$1.50 per quarter); 128, riding; 129, sailing; 131, ski conditioning; 132, elementary skiing; 133, tumbling and apparatus; 134, rebound tumbling; 135, tennis; 141, basketball; 142, field sports; 143, hockey; 144, softball; 145, volleyball; 148, folk and square dance; 149, international folk dance; 151, contemporary dance; 154, social dance; 155, tap dance; 157, canoeing (\$3.00 per quarter); 160, adapted swimming; 161, beginning swimming; 162, elementary swimming; 215, intermediate archery; 218, intermediate badminton; 221, intermediate bowling (\$5.00 per quarter); 222, advanced bowling (\$5.00 per quarter); 224, intermediate fencing; 228, intermediate riding; 230, ski racing; 231, intermediate skiing; 232, advanced skiing; 235, intermediate tennis; 248, intermediate folk and square dance; 251, intermediate contemporary dance; 252, advanced contemporary dance; 257, intermediate canoeing (\$3.00 per quarter); 263, intermediate swimming; 264, advanced swimming; 265, aquatic art; 266, diving; 267, lifesaving.

PHYSICS**217, 218, 219 Physics for Engineers (4,4,4)****Lord**

217: mechanics. Principles of statics are assumed. Dynamics of both point masses and rigid bodies is developed by calculus methods. Elasticity and simple harmonic motion. Elementary hydrodynamics. Many illustrative problems are used. Prerequisites, high school physics. General Engineering 112, introductory calculus, and a concurrent calculus course. 218: electricity and magnetism. Alternating currents. Prerequisites, 217 and a concurrent calculus course. 219: heat, sound, and light. Geometrical and physical optics. Prerequisites, 217 and calculus.

320 Introduction to Modern Physics (3)

Discoveries in modern physics particularly basic to engineering and physics, including the electrical nature of matter, elementary particles, interaction of radiation with matter, nuclear disintegrations. Solid state, semiconductors, and nuclear reactors are especially treated. Prerequisites, 123, 219, or permission.

323 Introduction to Nuclear Physics (3)

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. Prerequisite, 320 or permission.

461, 462, 463 Introduction to Atomic and Nuclear Physics (3,3,3)

Foundations of modern atomic and nuclear physics; elementary quantum theory; elementary particles; high energy physics; solid state. Prerequisites, 327 and Mathematics 322.

SPEECH**327 Extempore Speaking (3)****Franzke**

A course in public speaking primarily for students in engineering and industrial design. Audience analysis, choice and organization of material, oral style, and delivery. Frequent speeches before the class, followed by conferences with instructor.

COLLEGE OF BUSINESS ADMINISTRATION**ACCOUNTING****210 Fundamentals of Accounting (3)**

Basic principles and procedures including recording of business transactions and preparation of financial statements. (Formerly 150.) Prerequisite, sophomore standing.

220 Fundamentals of Accounting (3)

Elements of manufacturing, partnership, and corporation accounting. (Formerly 151.) Prerequisite, 210.

230 Basic Accounting Analysis (3)

Financial and cost analysis and interpretation. (Formerly 255.) Prerequisite, 220.

311 Cost Accounting (3)

Theory of cost accounting; accumulation and allocation of costs; managerial control through cost data. (Formerly 330.) Prerequisite, 230.

BUSINESS LAW**307 Business Law (3)**

A survey for non-Business Administration students who are unable to take more than 3 credits in business law. Not open for credit to Business Administration students. Prerequisite, permission.

FINANCE**320 Money, Financial Institutions, and Income (4)**

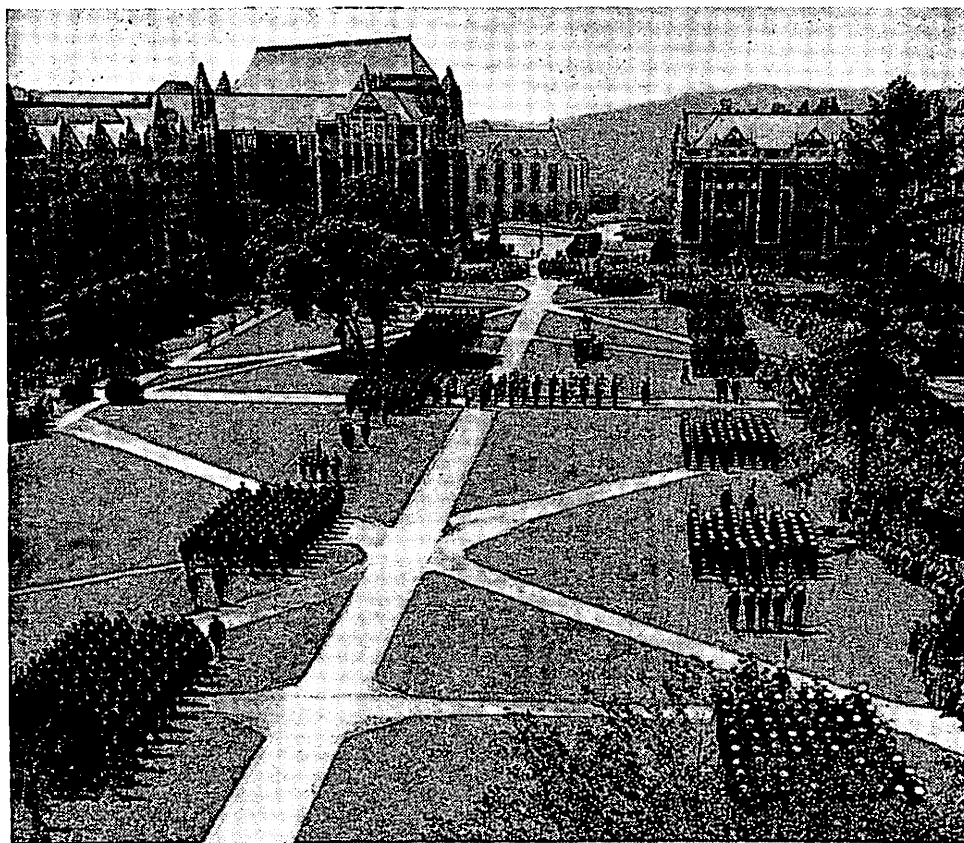
Nature and functions of money, debt and credit, and liquidity; financial institutions and the flow of funds in the economy; income and monetary theory; and introduction to money market analysis. (Formerly 201.) Prerequisites, Economics 200, Accounting 230.

350 Business Finance (4)

Sources, uses, cost, and control of funds in business enterprises; financial importance of the enterprise (especially the corporation) in the economy; internal management of working capital and income; sources and cost of long-term funds; financing of growth and expansion of business enterprises; government regulation of the financial process. (Formerly 301.) Prerequisite, 320.

HUMAN RELATIONS IN BUSINESS AND INDUSTRY**365 Human Behavior in Organizations (3)**

Contents and instructional approach similar to 460 with emphasis on human aspects of labor relations and on administrative behavior. Not open to Business Administration students.



RESERVE OFFICERS TRAINING PROGRAMS

RESERVE OFFICERS TRAINING PROGRAMS

THE DEPARTMENTS of Military Science, Naval Science, and Air Science conduct the ROTC programs under agreements between the University and the United States Army, Navy, and Air Force. At the University these programs are coordinated by the Dean of the College of Engineering.

The University requires male students to take at least two years of ROTC training. (For exemptions, see page 112.) The two-year basic programs offered by the Departments of Military Science and Air Science, and the four-year course offered by the Department of Naval Science, satisfy this requirement. In addition to the basic courses, the Department of Military Science and the Department of Air Science each offers for selected students, an advanced course which leads to commissioning in the Army or Air Force. The four-year course of the Department of Naval Science, also for selected students, leads to commissioning in the Navy or Marine Corps.

Students enrolling in Naval ROTC, and those who take the advanced course of Army or Air Force ROTC must agree in writing to complete the course of training and accept a commission in the service for which they are trained. *The honoring of this commitment is a condition of graduation from the University.*

MILITARY SCIENCE

Professor of Military Science COL. GUINN B. GOODRICH, 318 Miller Hall

The basic program (freshmen and sophomores) of the Military Science Department requires drill one hour each week. Classroom military studies for freshmen are not required Autumn Quarter. One hour per week is required Winter Quarter, and two hours of classroom work are required Spring Quarter. As a substitute for these classroom hours in Autumn Quarter of the freshman year, registration is required in a selected 3-credit or 5-credit course in another department. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*. Sophomores are required to attend two hours per week of classroom military studies. The advanced course requires classroom attendance four hours each week, drill one hour each week, and a summer camp of six weeks in the Summer Quarter following the junior year. In addition to the regular courses of instruction, light aircraft flight instruction is offered to a limited number of senior cadets, when federal funds are available.

When a cadet completes the advanced course, and is graduated from the University, he receives a commission as second lieutenant in the United States Army Reserve. A cadet graduating with a high academic rating and an outstanding ROTC record may be designated a Distinguished Military Graduate and may, thereby, be qualified for commissioning in the Regular Army.

Cadets for the advanced course are selected from applicants who show special aptitude during the basic course. In certain cases, previous active service in the army may be substituted for the basic course in qualifying for enrollment in the advanced course. To enroll in the advanced course, a cadet must meet requirements as to scholarship, physical fitness, and leadership potential, and must be of such an age that he may qualify for graduation and completion of ROTC training before his twenty-eighth birthday. The advanced ROTC cadet receives an allowance of approximately \$27.00 per month throughout the two years in which he is under contract and is paid approximately \$106 for summer-camp training.

Cadets are issued the regulation U.S. Army uniform, with distinctive ROTC insignia, and are required to wear the uniform on drill day each week. Upon registration a deposit of \$25.00 is required for the uniform and other government equipment issued. Upon return of the uniform and other equipment, a refund is made. The Army furnishes textbooks and equipment needed for military science instruction.

Inquiries about the Army ROTC should be addressed to the Professor of Military Science.

COURSES FOR UNDERGRADUATES

- 101, 102, 103 Military Science I—Basic (0,1,2)**
Organization of the Army and ROTC; United States Army and National Security; individual weapons and marksmanship; leadership training.
- 201, 202, 203 Military Science II—Basic (2,2,2)**
American military history; map and aerial photograph reading; introduction to basic tactics and techniques; leadership training and exercise of command.
- 301, 302, 303 Military Science III—Advanced (3,3,3)**
Small unit tactics and communication; organization, function, and mission of the arms and services; military teaching principles; leadership; exercise of command.
- 360 Military Science III—Advanced Camp (3)**
Six-weeks training at an army installation. Emphasis is placed on field training and the practical application of subjects taught during the academic year. (Offered Summer Quarter only.)
- 401, 402, 403 Military Science IV—Advanced (3,3,3)**
Supply and evacuation; troop movements; motor transportation, command and staff; estimate of the situation and combat orders; military intelligence; the military team; training management; military administration; military justice; role of the United States in world affairs and the present situation; leadership; officer indoctrination; and exercise of command.

NAVAL SCIENCE

Professor of Naval Science: CAPT. HAROLD P. GERDON, USN, 309 Clark Hall

The Department of Naval Science offers to selected students a four-year program, taken concurrently with their work toward a baccalaureate or higher degree, which prepares them for commissions in the regular or reserve components of the United States Navy or Marine Corps.

NAVAL ROTC STUDENTS (CONTRACT PROGRAM)

At the beginning of Autumn Quarter each year the Professor of Naval Science selects approximately fifty students to enter the Naval ROTC contract program. These students must have the following general qualifications:

1. Be eligible for admission to the University.
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, which include vision of 20/20, no cavities in teeth, and height between 64 and 78 inches.

4. Be unmarried and agree to remain unmarried until commissioned.

In addition, with the consent of their parents, they must agree to complete the four-year course unless released by the Secretary of the Navy, and to make one summer cruise of approximately three weeks. This cruise is normally scheduled during the summer between the junior and senior years.

Students who attain junior or senior standing in the Naval ROTC must complete the program as a condition of graduation from the University unless excused or dismissed from this requirement by authority of the Secretary of the Navy.

Entrance to the Naval ROTC program entitles students to deferment from the draft under the Selective Service Act of 1948 as amended. The Naval ROTC student, upon completion of program requirements, is required to accept a commission in the United States Naval Reserve or Marine Corps Reserve, if offered. Active duty of reserve officers commissioned from the Naval ROTC contract program is contingent upon the needs of the service at the time of graduation.

Naval ROTC students have the status of civilians entering into a mutual agreement 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 the uniforms and books used in naval science courses.

Students in the Naval ROTC program may enter any University curriculum that can normally be completed in four years. Students working toward a bachelor's degree in certain fields which may require more than four years for completion, such as engineering, architecture, and education are eligible for entrance to the program. The Navy Class A swimming test must be passed and basic psychology and mathematics through trigonometry satisfactorily completed (unless previously completed in high school) by the end of the second year.

All Naval ROTC students take the same naval science courses for the first two years. Students who plan to be commissioned in the Marine Corps or Marine Corps Reserve take Marine Corps 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 the Naval Reserve take Supply Corps subjects during this period.

High school graduates interested in entering the Naval ROTC program should write to the Professor of Naval Science during the summer before University entrance.

MIDSHIPMEN, USNR (REGULAR PROGRAM)

Each year, at the beginning of Autumn Quarter, the Navy assigns a limited number of students to the Naval ROTC Unit, University of Washington, for appointment as midshipmen in the Naval Reserve. Qualifications are, in general, the same as those listed above for contract students. Midshipmen are appointed after a nation-wide competitive examination held in December of each year and selection by state selection committees. They are deferred from induction until graduation and receive tuition, all textbooks, uniforms, and \$50.00 per month for four years. Application to take the annual examination must reach the appropriate Naval Examining Section before a deadline date set in November of each year for entrance to college the following year.

Applications and further information about the regular program may be obtained from the University Naval ROTC headquarters.

COURSES FOR UNDERGRADUATES

111, 112, 113 Naval Orientation (3,3,3)

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)**
Gun ammunition; principles of gun construction; semi-automatic and rapid fire guns; introduction to fire control; theory and operation of fire control systems; general concept of anti-submarine warfare.
- 212 Naval Weapons (1)**
Practical work on naval weapons and fire control computers.
- 213 Naval Weapons (3)**
Guided missiles; nuclear weapons; concept and organization of the attack carrier striking force; mine warfare; concept and organization of amphibious warfare; space technology.

LINE

- 311 Naval Engineering (3)**
Principles of ship propulsion, marine steam power plants and auxiliary systems; elements of stability and damage control.
- 312 Naval Engineering and Navigation (3)**
Engineering department organization and administration plus marine internal combustion and nuclear power plants; terrestrial navigation including dead reckoning, piloting and electronic developments.
- 313 Navigation (3)**
Celestial navigation; theory and practical work required in the daily work of the navigator at sea.
- 411 Naval Operations (3)**
Tactical communications; rules of the nautical road; maneuvering board; screening instructions.
- 412 Naval Operations and Administration (3)**
Combination of fleet communications, weather, and management.
- 413 Naval Administration (3)**
Leadership, management, and the naval judicial system.

MARINE CORPS

- 321 Evolution of the Art of War (3)**
Introduction to the art of war; broad resumé of the evolution and history of warfare from the earliest recorded battles through the Mexican War.
- 322 Evolution of the Art of War (3)**
A continuation of the resumé of the history of warfare with emphasis on the Civil War; brief coverage of the Spanish American War, World War I, and World War II.
- 323 The Study of Modern Basic Strategy and Tactics (3)**
An introduction to the theoretical principles of modern strategy and tactics; brief resumé of U.S. foreign and military policy; extensive discussion of marine division organization.
- 421 Amphibious Warfare (3)**
Introduction to the development of amphibious warfare; detailed study of the amphibious campaigns of World War II; resumé of the Korean conflict.
- 422 Amphibious Warfare (3)**
A study of the detailed planning for an amphibious operation including Marine Corps Staff organizations, command relationship and task organizations.
- 423 Military Justice and Leadership (3)**
Introduction to the basic principles of the Uniform Code of Military Justice; a study of the principles of military leadership.

SUPPLY CORPS

- 331 Organization and Logistics Navy Accounting and Finance (3)**
Introduction to supply corps; national security organization; Navy Bureau system; supply demand control point concepts; naval finance, appropriation, property, and cost accounting.
- 332 Advanced Navy Accounting and Basic Supply Afloat (3)**
Navy accounting, balance sheet reconciliation; reports and returns; organization and administration of supply afloat; afloat requirements determination and stock control.
- 333 Advanced Supply Afloat (3)**
Afloat custody and stowage and security of material; surveys, issues, transfers, and financial management of afloat inventories; special supply system.
- 431 Ship's Store Afloat; Clothing and Small Stores (3)**
Operating procedure, records, reports, and returns for ship's store afloat; operating procedures, records, reports, and returns for clothing and small stores afloat.

AIR SCIENCE

Professor of Air Science: COL. ROY W. GUSTAFSON, Physics Annex 3

The basic program of the Department of Air Science consists of three quarters of military classroom instruction on the Foundations of Air Power. These are offered in the Spring Quarter of the first year and the Autumn and Winter Quarters of the second year. During each of the other three quarters, the student must

substitute an approved University course in lieu of Air Science. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*. Leadership laboratory is required each of the six quarters of the basic program and is conducted one hour each week.

After completing the basic program, students may apply for entrance to the Advanced Air Force ROTC, which is designed to select and train college men as future Air Force officers. A limited number of outstanding students, including veterans are selected for the advanced program, and each student selected must:

1. Successfully complete the two-year Basic Air Force ROTC program or, if a veteran, complete as much of the basic program as determined by the Professor of Air Science.
2. Execute a written agreement with the government to complete the advanced program, contingent upon remaining at the University, and to attend a summer training camp at the time specified.
3. Request immediate discharge from any reserve or National Guard organization other than the Air Force Reserve (according to law, discharge from any reserve unit must be granted).
4. Agree to complete all requirements for appointment as a second lieutenant before his twenty-eighth birthday. This age requirement is reduced to twenty-six and one-half years for flying personnel.
5. Successfully complete general survey and screening tests as prescribed.
6. Be selected by the Professor of Air Science and the President of the University.
7. Complete the advanced program as a prerequisite for graduation from the University.

The two-year advanced course requires classroom attendance four hours a week, plus one hour of practice in the leadership laboratory. In the first year of the advanced course, cadets study the knowledge and skills required of a junior officer in the Air Force with special emphasis on staff duties and leadership. This includes Air Force leadership doctrine, staff organization and functions, communicating, instructing, problem solving techniques, leadership principles and practices, and the military justice system. Between the junior and senior years, advanced-course cadets are required to attend a four-week summer camp. During the senior year, cadets participate in a study of global relations of special concern to the Air Force officer with attention to such aspects as weather, navigation, geography, international relations and their service as commissioned officers.

Advanced Air Force ROTC students are paid subsistence allowances of approximately \$27.00 a month. While attending summer camp they are paid at the rate of \$75.00 a month and are furnished travel to and from the camp, subsistence, housing, uniforms, and medical attention.

Students in the basic program are furnished complete uniforms of the type worn by Air Force personnel. Students in the advanced program are furnished officers' uniforms which become their personal property when commissioned. They are normally required to wear the uniform on drill days; wearing it to ROTC classes other than drill is optional. The Air Force furnishes all textbooks used in air science courses. At the time of registration each student must make a \$25.00 deposit, which, except for a \$2.50 laundry and cleaning charge to students in the basic program, is refunded when the uniform and textbooks are returned undamaged.

Inquiries about enrollment or other information should be addressed to the Professor of Air Science, Physics Annex 3, University of Washington.

COURSES FOR UNDERGRADUATES

FOUNDATIONS OF AIR POWER AND FUNDAMENTALS OF AEROSPACE WEAPON SYSTEMS

133 Air Science 1—Basic (2)

A general survey of air power designed to provide an understanding of the elements and potentials of aerospace power. An introduction to elements of aircraft, aerodynamics, and space vehicles. Leadership laboratory.

231 Air Science 2—Basic (2)

An outline of professional opportunities in the USAF. Also included are the background of the military policy of the United States and the current national organization for defense. Aerospace missiles and aircraft, their propulsion systems, and the types of warheads used with aerospace weapon systems are also introduced. Cadet noncommissioned officer training.

232 Air Science 2—Basic (2)

An introduction to the principles, mechanics, and implications of chemical, biological, and nuclear weapons and warfare; and the defensive, strategic, and tactical organizations and operations of the USAF, including modern targeting and electronic warfare. Also introduces problems, mechanics, and military implications of future space operations, and contemporary aerospace military thought. Cadet noncommissioned officer training.

AIR FORCE OFFICER DEVELOPMENT**301 Air Science 3—Advanced (3)**

Staff organization and functions and the skills required for effective staff work, with emphasis on communication. The course includes both principles and practice. Cadet junior officer training.

302 Air Science 3—Advanced (3)

Continuation of the study of staff work with emphasis on report writing and group problem solving. The course includes an introduction to military justice. Cadet junior officer training.

303 Air Science 3—Advanced (3)

Basic psychological and sociological principles of leadership and their application to leadership practice and problems. Cadet junior officer training.

304 Air Science 3—Advanced Camp (3)

Four weeks training at an Air Force base; familiarization with the duties and problems encountered by the Air Force junior officer.

491, 492, 493, Air Science 4—Advanced (3,3,3)

Military application of weather and aerial navigation; military aspects of the geography of climate, political geography, and international relations; flight training for pilot candidates; preparation for commissioned service; and cadet senior officer training.

**FACULTY OF THE
COLLEGE OF ENGINEERING**

FACULTY OF THE COLLEGE OF ENGINEERING

COLLEGE OF ENGINEERING FACULTY

A single date following the name indicates the beginning of service in the University. When two dates are given, the second, in parentheses, is the date of promotion to present rank.

AERONAUTICAL ENGINEERING

- Bagnall, Leslie M., 1961, *Instructor in Aeronautical Engineering*
B.S. in A.E., 1951, Michigan; M.S. in Engr., 1957, Southern Methodist
- Bollard, Richard John H. 1961, *Professor of Aeronautical Engineering*;
Chairman of the Department of Aeronautical Engineering
B.E. in C.E., 1948, M.E. in Struct. E., 1949, University of New Zealand; Ph.D. 1954, Purdue
- Dill, Ellis Harold, 1956 (1959), *Associate Professor of Aeronautical Engineering*
B.S. in C.E., 1954, California; M.S. in C.E., California; Ph.D. in C.E., 1956, California
- Dusto, Arthur R., 1961, *Instructor in Aeronautical Engineering*
B.S. in Eng. Mech., 1952, Purdue; M.S. in A.E., 1961, Washington
- Eastman, Fred Scoville, 1927 (1943), *Professor of Aeronautical Engineering*
B.S. in E.E., 1925, Washington; M.S. 1929, Massachusetts Institute of Technology.
- Fyfe, Ian Millar, 1959, *Assistant Professor of Aeronautical Engineering*
A.R.T.C. in M.E., 1950, The Royal College of Science and Technology, Scotland; M.M.E. in M.E., 1954, Delaware; Ph.D. in Engineering Mechanics, 1958, Stanford University
- Ganzer, Victor Martin, 1947 (1953), *Professor of Aeronautical Engineering*
B.A. in Math., 1933, Augustana College (Illinois); B.S. in A.E., 1941, Washington
- Joppa, Robert Glenn, 1945 (1957), *Associate Professor of Aeronautical Engineering*
B.S. in A.E., 1945, M.S. in A.E., 1951, Washington
- Martin, Harold Clifford, 1948 (1952), *Professor of Aeronautical Engineering*
B.S. in M.E., 1934, M.S., 1937, New York; Ph.D., 1950, California Institute of Technology
- Miele, Angelo, 1962, *Visiting Professor of Aeronautical Engineering*
Dr. C.E., 1944, Dr. Ae.E., 1946, University of Rome, Italy
- O'Brien, Timothy Frederick, 1956 (1958), *Associate Professor of Aeronautical Engineering*
B.S. in A.E., 1947, M.S. in A.E., 1951 Massachusetts Institute of Technology
- Rae, William Howard, Jr., 1956 (1959), *Assistant Professor of Aeronautical Engineering*
B.S. in A.E., 1953, M.S. in A.E., 1959, Washington
- Street, Robert Elliott, 1948 (1955) *Professor of Aeronautical Engineering*
B.S. in Physics, 1933, Rensselaer Polytechnic Institute; A.M., 1934, Ph.D. 1939, Harvard

CHEMICAL ENGINEERING

- Atwood, Glenn Arthur, 1959, *Instructor in Chemical Engineering*
B.S. in Ch.E., 1957, M.S. in Chem.E., 1959, Iowa State College
- Babb, Albert Leslie, 1952 (1960), *Professor of Chemical Engineering;*
Director of the Nuclear Reactor Laboratories
B.A.Sc., 1948, British Columbia; M.S., 1949, Ph.D., 1951, Illinois
- David, Morton Morris, 1953 (1957), *Associate Professor of Chemical Engineering*
B.S., 1942, Colorado; D.Eng. in Ch.E., 1950, Yale
- Fosberg, Theodore Michael, 1960, *Instructor in Chemical Engineering*
B.S. in Chem.E., 1959, Washington
- Carlid, Kermit L., 1960, *Assistant Professor of Chemical Engineering*
B.S. in Chem.E., 1956, Ph.D., 1961, Minnesota
- Heideger, William Joseph, 1957, *Assistant Professor of Chemical Engineering*
B.S., 1954, Carnegie Institute of Technology; M.S.E., 1955, Princeton; Ph.D., 1959, Princeton
- Johanson, Lennart Nobel, 1951 (1956), *Associate Professor of Chemical Engineering*
B.S., 1942, Utah; M.S., 1943, Ph.D. 1948, Wisconsin
- McCarthy, Joseph Le Page, 1941 (1952), *Professor of Chemical Engineering;*
Dean of the Graduate School
B.S. in Ch.E., 1934, Washington; M.S., 1936, Idaho; Ph.D., 1938, McGill
- Moulton, Ralph Wells, 1941 (1950), *Professor of Chemical Engineering;*
Chairman of the Department of Chemical Engineering
B.S. in Ch.E., 1932, M.S. in Ch.E., 1934, Ph.D., 1938, Washington
- Sarkanen, Kyosti Vilho, 1961, *Lecturer in Chemical Engineering*
B.Sc., 1947, Helsinki, M.Sc., 1952, Ph.D. 1956, State University College of Forestry (New York)
- Sleicher, Charles A., Jr., 1960 (1961), *Associate Professor of Chemical Engineering*
Sc.B., 1944, Brown; S.M., 1949, Massachusetts Institute of Technology; Ph.D., 1955, Michigan

CIVIL ENGINEERING

- Bogan, Richard Herbert, 1954 (1957), *Associate Professor of Civil Engineering*
B.S. in C.E., 1949, Washington; S.M., 1952, Sc.D., 1954, Massachusetts Institute of Technology
- Campbell, Thomas Herbert, 1945 (1955), *Professor of Civil Engineering*
B.S. in C.E., 1934, Washington; M.S. in C.E., 1938, Massachusetts Institute of Technology
- Carlson, Dale Arvid, 1955 (1961), *Associate Professor of Civil Engineering*
B.S. in C.E., 1950, M.S. in C.E., 1951, Washington; Ph.D. 1960, Wisconsin
- Chenoweth Harry Holt, 1946 (1957), *Associate Professor of Civil Engineering*
B.S. in C.E., 1937, M.S. in C.E., 1957, Washington
- Chittenden, Hiram Martin, 1923 (1949), *Associate Professor of Topographic Surveying*
B.S. in C.E., 1920, C.E., 1935, Washington
- Clanton, Jack Reed, 1947 (1958), *Professor of Civil Engineering*
B.S. in C.E., 1936, Missouri School of Mines; M.S. in C.E., 1939, Pittsburgh
- Colcord, Josiah Edward, Jr., 1949 (1957), *Associate Professor of Civil Engineering*
B.S., 1947, Maine; M.S. in C.E., 1949, Minnesota
- Ekse, Martin Ingvald, 1948 (1957), *Professor of Civil Engineering*
B.S., 1932, South Dakota State; M.S., 1948, Wisconsin
- Farquharson, Frederick Burt, 1925 (1940), *Professor of Civil Engineering;*
Director of the Engineering Experiment Station
B.S. in M.E., 1923, M.E., 1927, Washington
- Harris, Charles William, 1906 (1951), *Professor Emeritus of Hydraulic Engineering;*
Research Consultant
B.S. in C.E., 1903, Washington; C.E., 1905, Cornell
- Hartz, Billy J., 1955 (1957), *Associate Professor of Civil Engineering*
B.S. (C.E.), 1952, M.S. (C.E.), 1954, Ph.D., 1955, California
- Hennes, Robert Graham, 1934 (1947), *Professor of Civil Engineering*
B.S. in C.E., 1927, Notre Dame; M.S., 1928, Massachusetts Institute of Technology

- Horwood, Edgar Miller, 1946 (1957), *Associate Professor of Civil Engineering*
B.S. in M.E., 1942, Georgia Institute of Technology; M.S. in Regional Planning, 1951, Washington; Ph.D., 1959, Pennsylvania
- Kent, Joseph Chan, 1952 (1961), *Associate Professor of Civil Engineering*
B.S. in C.E., 1945, British Columbia; M.S. in C.E., 1948, Stanford; Ph.D., 1952, California
- Meese, Richard Hunt, 1946 (1955), *Associate Professor of Civil Engineering*
B.S. in C.E., 1939, Washington; S.M., 1941, Harvard
- Miller, Alfred Lawrence, 1923 (1937), *Professor of Mechanics and Structures*
B.S. in C.E., 1920, C.E., 1926, Washington
- Miller, William Mackay, 1951 (1959), *Associate Professor of Civil Engineering*
B.S. in C.E., 1951, M.S. in C.E., 1952, Washington
- Mittet, Holger Peder, 1946 (1955), *Associate Professor of Civil Engineering*
B.S. in C.E., 1937, Washington; M.S. in C.E., 1938, Massachusetts Institute of Technology
- Moritz, Harold Kennedy, 1928 (1949), *Professor of Hydraulics*
B.S. in M.E., 1921, Massachusetts Institute of Technology
- Nece, Ronald Elliott, 1959 (1961), *Associate Professor of Civil Engineering*
B.S. in C.E., 1949, Washington; M.S. in C.E., 1951, Lehigh; Sc.D., 1958, Massachusetts Institute of Technology
- Niklaus, John Lewis, 1960, *Acting Instructor in Civil Engineering*
B.S. in C.E., 1955, M.S. in C.E., 1960, Tulane
- Norris, Charles Head, (1962), *Professor of Civil Engineering;*
Chairman of the Department of Civil Engineering
B.S. in C.E., 1931, Washington; S.M. in C.E., 1932, Sc.D. in Structural Engineering, 1942, Massachusetts Institute of Technology
- Paris, Paul Croce, 1957, *Assistant Professor of Civil Engineering*
B.S. in C.E., 1953, Michigan; M.S., 1955, Lehigh
- Rhodes, Fred Harold, Jr., 1927 (1951), *Professor of Civil Engineering*
B.S. in C.E., 1926, B.S. in M.E., 1926, C.E., 1935, Washington
- Richey, Eugene Porter, 1954 (1956), *Associate Professor of Civil Engineering*
B.S. in C.E., 1941, Alaska; M.S. (Meteorology), 1947, M.S. in C.E., 1948, California Institute of Technology; Ph.D., 1955, Stanford
- Sawhill, Roy Bond, 1956 (1960), *Associate Professor of Civil Engineering*
B.S. in C.E., 1950, Washington; M. of E., 1952, California
- Sergev, Sergius Ivan, 1923 (1946), *Professor of Engineering Mechanics*
B.S. in M.E., 1923, M.E., 1931, Washington
- Strausser, Howard Samuel, Jr., 1955 (1957), *Associate Professor of Civil Engineering*
B.S. in C.E., 1942, Virginia Military Institute; M.S.E., 1950, Johns Hopkins
- Sylvester, Robert Ohrum, 1947 (1957), *Professor of Sanitary Engineering*
B.S. in C.E., 1936, Washington; S.M., 1941, Harvard
- Thiers, Gerald Raymond, 1959, *Acting Assistant Professor of Civil Engineering*
B.S. in C.E., M.S. in C.E., California
- Tyler, Richard Gaines, 1929 (1954), *Professor Emeritus of Sanitary Engineering*
C.E., 1908, Texas; B.S. in C.E., 1910, Massachusetts Institute of Technology
- Van Horn, Robert Bowman, 1925 (1936), *Professor Emeritus of Civil Engineering*
B.S. in C.E., 1916, C.E., 1926, Washington
- Vasarhelyi, Dezsoe, 1949 (1961), *Professor of Civil Engineering*
B.A., 1928, Ref. Collegium Kolozsvár; Dipl. Ingr., 1932, Dr. Ingr., 1944, Technical University (Budapest)
- Wessman, Harold Everett, 1948, *Professor of Civil Engineering; Dean of the College of Engineering*
B.S., 1924, M.S., 1925, C.E., 1929, Ph.D., 1936, Illinois

ELECTRICAL ENGINEERING

- Aggarwal, Rajinder Pal, 1960, *Acting Instructor of Electrical Engineering*
B.S., 1952, Delhi University; M.S. in E.E., 1958, Minnesota
- Albrecht, Robert William, 1961, *Assistant Professor of Electrical Engineering*
B.S. in E.E., 1957, Purdue; M.S. in N.E., 1958, Ph.D. 1961, Michigan
- Bergseth, Frederick Robert, 1947 (1957), *Professor of Electrical Engineering*
B.S. in E.E., 1937, Washington; S.M. in E.E., 1938, Massachusetts Institute of Technology
- Bjorkstam, John Ludwig, 1955 (1960), *Associate Professor of Electrical Engineering*
B.S. in E.E., 1949, M.S. in E.E., 1952, Ph.D., 1958, Washington

- Carswell, Mary Irene, 1961, *Assistant Professor of Electrical Engineering*
B.S. in EE, 1947, Colorado; Ph.D., 1962, Stanford
- Clark, Robert Newhall, 1957, *Associate Professor of Electrical Engineering*
B.S. in E.E., 1950, M.S. in E.E., 1951, Michigan
- Cochran, Lyall Baker, 1934 (1952), *Professor of Electrical Engineering*
B.S. in E.E., 1923, E.E., 1936, Washington
- Cooley, William W., 1958, *Acting Instructor of Electrical Engineering*
B.S. in E.E., 1954, Washington
- Creedon, William E., 1960, *Acting Instructor of Electrical Engineering*
B.S. in E.E., 1929, Massachusetts Institute of Technology; M.S. in M.E., 1938, California
- Dearholt, Donald William, 1960, *Acting Instructor of Electrical Engineering*
B.S. in E.E., 1958, M.S. in E.E., 1960, New Mexico
- Domingos, Henry, 1960, *Acting Instructor of Electrical Engineering*
B.E.E., 1956, Clarkson; M.S. in E.E., 1958, Southern California
- Eastman, Austin Vitruvius, 1924 (1942), *Professor of Electrical Engineering;*
Chairman of the Department of Electrical Engineering
B.S. in E.E., 1922, M.S. in E.E., 1929, Washington
- Giarola, Attilio Jose, 1960, *Acting Instructor of Electrical Engineering*
B.S. in E.E., 1954, Polytechnic Institute of Sao Paulo, Brazil; M.S. in E.E., 1959, Washington
- Golde, Hellmut, 1959, *Assistant Professor of Electrical Engineering*
Dip.-Ing., 1953, Technische Hochschule; M.S., 1955, Ph.D., 1959, Stanford
- Guilford, Edward Charles, 1959 (1961), *Associate Professor of Electrical Engineering*
B.A., 1942, M.A., 1950, Utah; Ph.D., 1959, California
- Hanson, Gordon Harold, 1960, *Assistant Professor of Electrical Engineering*
B.A., 1949, M.A., 1951, British Columbia; Ph.D., 1957, Minnesota
- Harrison, Arthur Elliot, 1948 (1952), *Professor of Electrical Engineering*
B.S. in E.E., 1936, California; M.S., 1937, Ph.D., 1940, California Institute of Technology
- Hill, William Ryland, Jr., 1941 (1953), *Professor of Electrical Engineering;*
Associate Dean of the College of Engineering
B.S. in E.E., 1934, Washington; M.S. in E.E., 1938, E.E., 1941, California
- Hoard, George Lisle, 1920 (1941), *Professor of Electrical Engineering*
B.S. in E.E., 1917, M.S. in E.E., 1926, Washington
- Holden, Alistair David Craig, 1958, *Acting Instructor of Electrical Engineering*
B.S., 1955, Glasgow University; M.S., 1958, Yale
- Hsu, Chih-Chi, 1958, *Assistant Professor of Electrical Engineering*
B.S. in E.E., 1945, Chiao-Tung University; M.S. in E.E., 1949, Michigan; Ph.D., 1951, Ohio State
- Ishimaru, Akira, 1954 (1961), *Associate Professor of Electrical Engineering*
B.S. in E.E., 1951, Tokyo; Ph.D., 1958, Washington
- Johnson, David Laurence, 1955 (1961), *Professor of Electrical Engineering*
B.S. in E.E., 1948, Idaho; Ph.D., 1955, Purdue
- Kozdrowicki, Edward Walter, 1960, *Acting Instructor of Electrical Engineering*
B.S. in E.E., 1959, M.S. in E.E., 1960, Oklahoma
- Lewis, Laurel Jones, 1946 (1954), *Professor of Electrical Engineering*
A.B., 1933, E.E., 1935, Ph.D., 1947, Stanford
- Loew, Edgar Allan, 1909 (1948), *Professor Emeritus of Electrical Engineering;*
Dean Emeritus of the College of Engineering
B.S. in E.E., 1906, E.E., 1922, Wisconsin
- Lytle, Dean Winton, 1958, *Assistant Professor of Electrical Engineering*
B.S. in E.E., 1950, California; M.S. in E.E., 1954, Ph.D., 1957, Stanford
- Madhu, Swaminathan, 1957, *Acting Instructor of Electrical Engineering*
B.S., 1951, University of Madras; M.S. 1957, Tennessee
- Menon, Premachandran Rama, 1958, *Acting Instructor of Electrical Engineering*
B.S. in E.E., 1953, Banaras Hindu University
- Metz, Peter Robert, 1961, *Acting Instructor in Electrical Engineering*
B.S. in E.E., 1956, Washington; S.M. in E.E., 1958, Massachusetts Institute of Technology
- Noges, Endrik, 1958, *Assistant Professor of Electrical Engineering*
B.S. in E.E., 1954, M.S. in E.E. 1956, Ph.D., 1959, Northwestern

- Rao, N. Narayana, 1961, *Acting Instructor of Electrical Engineering*
B.S., 1952, India; M.S. in E.E., 1960, Washington
- Reynolds, Donald Kelly, 1959 (1960), *Professor of Electrical Engineering*
B.A., 1941, M.A., 1942, Stanford; Ph.D., 1948, Harvard
- Robbins, Floyd David, 1946 (1957), *Associate Professor of Electrical Engineering*
B.S. in E.E., 1925, E.E., 1949, Washington
- Robinson, Wesley A., 1961, *Lecturer in Electrical Engineering*
B.S., 1950, M.S., 1953, Ph.D., 1956, Washington
- Rogers, Walter Edwin, 1946 (1956), *Professor of Electrical Engineering*
B.S. in E.E., 1934, California; M.S. in E.E., 1948, Washington
- Saugen, John Louis, 1958, *Acting Instructor of Electrical Engineering*
B.S. in E.E., 1955, M.S. in E.E., 1958, Washington
- Schrader, David Hawley, 1954, *Acting Instructor in Electrical Engineering*
B.S. in E.E., 1951, Kansas
- Shimada, Katsunori, 1958, *Assistant Professor of Electrical Engineering*
B.S., 1945, Tokyo University; M.S. in E.E., 1954, Ph.D., 1958, Minnesota
- Sigelmann, Rubens Adolpho, 1959, *Acting Instructor in Electrical Engineering*
M.E. in E.E., 1952, Universidade do Sao Paulo
- Smith, George Shermann, 1921 (1960), *Professor Emeritus of Electrical Engineering*
B.S. in E.E., 1916, E.E., 1924, Washington
- Sokkappa, Balraj Gnana, 1956, *Acting Instructor in Electrical Engineering*
B.S., 1952, University of Madras; M.S., 1955, California
- Swarm, Howard Myron, 1947 (1955), *Professor of Electrical Engineering*
B.S. in E.E., 1940, M.S. in E.E., 1950, Washington; Ph.D., 1960, Stanford
- Tighe, Robert Francis, 1960, *Acting Instructor of Electrical Engineering*
B.S. in E.E., 1955, Washington
- Turner, Richard Lewis, Jr., 1955, *Instructor in Electrical Engineering*
B.S. in E.E., 1946; M.S. in E.E., 1952, Drexel Institute of Technology
- Wang, Charles Chen-ding, 1960, *Assistant Professor of Electrical Engineering*
B.S., 1957, Taiwan College; M.S., 1959, Brown; Ph.D., 1961, Stanford
- Watt, Lynn Alexander Keeling, 1959, *Assistant Professor of Electrical Engineering*
B.S., 1947, Manitoba; S. M., 1951, Chicago; Ph.D., 1959, Minnesota

GENERAL ENGINEERING

- Albrecht, Robert George, 1960 (1961), *Assistant Professor of General Engineering*
B.S. in C.E., 1956, Washington; M.S. in Structural Engr., 1960, Massachusetts Institute of Technology
- Alexander, Daniel Edward, 1954 (1961), *Associate Professor of General Engineering*
B.S. in M.E., 1947, M.S. in M.E., 1954, Washington
- Bartlett, Francis Grindall, 1956, *Assistant Professor General Engineering*
B.S.E. in Nav. Arch. and Marine Engrg., 1952, M.S.E. in Nav. Arch. and Marine Engrg., 1956, Michigan
- Boehmer, Herbert, 1937 (1961), *Professor of General Engineering*
Dipl. Engr., M.E., 1928, German Technical University, Brunswick; M.S. in A.E., 1933, Washington
- Bonow, Walter Burnett, 1956 (1958), *Assistant Professor of General Engineering*
B.S., 1948, Antioch College
- Brown, Robert Quixote, 1919 (1947), *Professor of General Engineering*
B.S. in E.E., 1916, Washington
- Chalk, William S., 1961, *Assistant Professor of General Engineering*
B.S. in M.E., 1950, M.S. in M.E., 1961, Washington
- Collins, James Douglass, 1958, *Assistant Professor of General Engineering*
B.S. in M.E., 1938, Michigan State; M.S. in I.E., 1958, Purdue
- Douglass, Clarence Eader, 1939 (1961), *Professor of General Engineering*
B.S., 1927, Washington State
- Douthwaite, Geoffrey Kingsley, 1961, *Instructor in General Engineering*
B.S. in E.E., 1952, Washington

- Dunn, Walter Lee, 1954 (1960), *Associate Professor of General Engineering*
B.S. in C.E., 1949, Montana State; M.P.H., 1953, California
- Hammer, Vernon Benjamin, 1947 (1957), *Associate Professor of General Engineering; Chairman of the Department of General Engineering*
B.S. in C.E., 1940, Washington; M.S. in S.E., 1941, Harvard
- Hoag, Albert Lynn, 1946 (1957), *Associate Professor of General Engineering*
B.S.F., 1941, B.S. in C.E., 1952, Washington
- Jacobsen, Philip Amunds, 1927 (1939), *Assistant Professor of General Engineering*
B.S. in Engr., 1926, Washington
- Konichek, Dorland Henry, 1954, (1960), *Associate Professor of General Engineering*
B.S. in C.E., 1930, North Dakota State College
- Macartney, Thomas Wakefield, 1946 (1957), *Associate Professor of General Engineering*
B.S. in C.E., 1939, B.S. in Com.E., 1946, M.S. in CE., 1956, Washington
- McCready, Roy Allison, 1958, *Instructor in General Engineering*
B.S. in Min., 1939, Montana School of Mines
- McNeese, Donald Charles, 1946 (1956), *Associate Professor of General Engineering*
B.S. in C.E., 1940, C.E., 1951, Wyoming
- Messer, Rowland Enlow, 1946 (1957), *Associate Professor of General Engineering*
B.S. in M.E., 1935, Washington
- Nelson, George Alvin, 1957, *Assistant Professor of General Engineering*
B.S. in C.E., 1925, Minnesota
- Prouty, Richard Allen, 1956 (1958), *Assistant Professor of General Engineering*
B.S. in M.E., 1952, Washington State; M.S. in M.E., Washington
- Pye, William Vincent, 1961, *Instructor in General Engineering*
B.S. in C.E., 1958, Washington; M.S. in C.E., 1961, Washington
- Rowlands, Thomas McKie, 1928 (1954), *Professor of General Engineering*
B.S. in Nav. Arch. and Marine Engr., 1926, Massachusetts Institute of Technology
- Seabloom, Robert Wendell, 1954 (1961), *Associate Professor of General Engineering*
B.S. in C.E., 1950, M.S. in C.E., 1956, Washington
- Seed, Richard Warren, 1951, *Lecturer in General Engineering*
B.S. in M.E., 1944, California Institute of Technology; LL.B., 1949, George Washington
- Stern, Paul Herman, 1956, *Instructor in General Engineering*
B.C.E., 1954, Cooper Union; M.S. in C.E., 1956, Washington
- Thompson, Wells, 1958 (1960), *Assistant Professor of General Engineering*
B.S., 1928, U.S. Naval Academy; M.S., 1938, California
- Warner, Frank Melville, 1913 (1954), *Professor Emeritus of General Engineering*
B.S. in M.E., 1907, Wisconsin
- Wilcox, Elgin Roscoe, 1921 (1936), *Professor of General Engineering*
B.S., 1915, Met.E., 1919, Washington

HUMANISTIC-SOCIAL STUDIES

- Botting, David Charles, Jr., 1955 (1961), *Associate Professor of Humanistic-Social Studies*
B.A., 1940, M.A., 1947, Washington; Ph.D., 1950, Chicago
- Chapman, Stuart Webster, 1947 (1954), *Professor of Humanistic-Social Studies; Chairman of the Department of Humanistic-Social Studies*
A.B., 1927, Boston; Ph.D., 1939, Yale
- Elliott, Eugene Clinton, 1953 (1959), *Associate Professor of Humanistic-Social Studies*
B.A., 1936, M.A., 1941, Washington; Doctor of the University of Paris, Sorbonne, 1952
- Higbee, Jay Anders, 1952 (1956), *Assistant Professor of Humanistic-Social Studies*
B.A., 1941, Iowa; M.A., 1949, Washington; D.S.S., 1955, Syracuse
- Hunner, Wesley Louis, 1957, *Assistant Professor of Humanistic-Social Studies*
B.A., 1935, M.A., 1938, Ph.D., 1950, Washington

- Leahy, Jack Thomas, 1959, *Instructor in Humanistic-Social Studies*
B.A., 1954, M.A., 1957, Washington
- Mise, Raymond Winfield, 1961, *Instructor in Humanistic-Social Studies*
B.A., 1957, Washington
- Rustad, John Ronald, 1948 (1955), *Assistant Professor of Humanistic-Social Studies*
B.A., 1948, M.A., 1949, Washington
- Skeels, Dell Roy, 1946 (1957), *Associate Professor of Humanistic-Social Studies*
B.A., 1941, M.A., 1942, Idaho; Ph.D., 1949, Washington
- Souther, James Walter, 1948 (1957), *Associate Professor of Humanistic-Social Studies; Assistant Dean of the College of Engineering*
B.A., 1947, M.A., 1948, Washington
- Trimble, Louis Preston, 1956 (1959), *Assistant Professor of Humanistic-Social Studies*
B.A., 1950, Ed.M., 1953, Eastern Washington
- White, Myron Lester, 1947 (1959), *Assistant Professor of Humanistic-Social Studies*
B.A., 1943, Ph.D., 1958, Washington

MECHANICAL ENGINEERING

- Anderson, Jay W., 1956 (1961), *Assistant Professor of Mechanical Engineering*
B.S. in M.E., 1955, M.S. in M.E., 1961, Washington
- Balise, Peter Louis, Jr., 1950 (1961), *Professor of Mechanical Engineering*
S.B., 1948, S.M., 1950, Massachusetts Institute of Technology
- Browne, Oscar Morrison, Jr., 1959 (1961), *Assistant Professor of Mechanical Engineering*
B.S., 1930, U.S. Naval Academy; M.S. in Naval Construction, 1935, Massachusetts Institute of Technology
- Childs, Morris Elsmere, 1954 (1961), *Professor of Mechanical Engineering*
B.S. in M.E., 1944, Oklahoma; M.S. in M.E., 1947, Ph.D., 1956, Illinois
- Costello, Charles Pierce, Jr., 1958 (1961), *Associate Professor of Mechanical Engineering*
B.S. in M.E., 1954, Washington; M.S. in M.E., 1955, Ph.D. in M.E., 1958, Stanford
- Crain, Richard Willson, Sr., 1936 (1953), *Associate Professor of Mechanical Engineering*
B.S. in E.E., 1930, B.S. in M.E., 1932, Colorado State; M.S. in M.E., 1946, Washington
- Day, Emmett Elbert, 1947 (1954), *Professor of Mechanical Engineering*
B.A., 1936, East Texas State Teachers College; B.S., 1945, M.S., 1946, Massachusetts Institute of Technology
- Depew, Creighton Arthur, 1960, *Assistant Professor of Mechanical Engineering*
B.S. in M.E., 1956, M.S. in M.E., 1957, Ph.D., 1960, California
- Drui, Albert Burnell, 1960, *Acting Assistant Professor of Mechanical Engineering*
B.S. in I.E., 1949, M.S. in I.E., 1957, Washington University (St. Louis)
- Emery, Ashley Francis, 1961, *Assistant Professor of Mechanical Engineering*
B.S., 1956, M.S., 1958, Ph.D., 1961, California
- Firey, Joseph Carl, 1954 (1961), *Professor of Mechanical Engineering*
B.S. in M.E., 1940, Washington; M.S. in M.E., 1941, Wisconsin
- Ford, Paul William, 1957 (1959), *Assistant Professor of Mechanical Engineering*
B.Ind.E., 1956, General Motors Institute; M.S. in M.E., 1959, Washington
- Frea, Ward John, Jr., 1961, *Acting Instructor in Mechanical Engineering*
B.S., 1954, M.S., 1961, Michigan College of Mining and Technology
- Fritz, Dale Charles, 1956 (1961), *Assistant Professor of Mechanical Engineering*
B.S. in M.E., 1955, B.S. in I.E., 1956, M.S. in M.E., 1960, Washington
- Galle, Kurt Robert, 1960, *Acting Associate Professor of Mechanical Engineering*
B.S. in A.E., 1946, B.S. in M.E., 1947, M.S. in M.E., 1949, Ph.D., 1951, Purdue
- Grimsrud, Lars, 1961, *Acting Instructor in Mechanical Engineering*
M.S. in M.E., 1955, Norwegian Institute of Technology; M.S. in Engr., 1957, Washington
- Guidon, Michael, III, 1946 (1956), *Associate Professor of Mechanical Engineering*
B.S. in M.E., 1942, Lehigh; M.S. in M.E., 1952, Washington

- Holt, Richard Edwin, 1954 (1957), *Assistant Professor of Mechanical Engineering*
B.S. in M.E., 1947, M.S. in Met.E., 1957, Washington
- Kauzlarich, James Joseph, 1961, *Associate Professor of Mechanical Engineering*
B.S., 1950, State University of Iowa; M.S., 1952, Columbia; Ph.D., 1958, Northwestern
- Kieling, William Clayton, 1956 (1959), *Assistant Professor of Mechanical Engineering*
B.S. in M.E., 1950, M.S. in M.E., 1959, Washington
- Kobayashi, Albert Satoshi, 1958 (1961), *Associate Professor of Mechanical Engineering*
B.S., 1947, Tokyo; M.S. in M.E., 1952, Washington; Ph.D., 1958, Illinois Institute of Technology
- McFeron, Dean Earl, 1958, *Professor of Mechanical Engineering*
B.S. in M.E., 1945, M.S. in M.E., 1948, Colorado; Ph.D., 1956, Illinois
- McIntyre, Harry John, 1919 (1958), *Professor Emeritus of Mechanical Engineering*
B.S. in M.E., 1915, M.B.A., 1923, Washington
- McMinn, Bryan Towne, 1920 (1946), *Professor of Mechanical Engineering; Chairman of the Department of Mechanical Engineering*
B.S. in M.E., 1918, Oregon State; M.S. in M.E., 1926, M.E., 1931, Washington
- Merchant, Howard Carl, 1961, *Assistant Professor of Mechanical Engineering*
B.S. in M.E., 1956, Washington; S.M., 1957, Massachusetts Institute of Technology; Ph.D., 1961, California Institute of Technology
- Mills, Blake David, Jr., 1946 (1947), *Professor of Mechanical Engineering*
B.S. in M.E., B.S. in E.E., 1934, M.E., 1947, Washington; M.S. in M.E., 1935, Massachusetts Institute of Technology
- Morrison, James Bryan, 1946 (1961), *Professor of Mechanical Engineering*
B.S. in M.E., 1943, Virginia Polytechnic Institute; M.S. in M.E., 1954, Washington
- Nordquist, William Bertil, 1947 (1955), *Associate Professor of Mechanical Engineering*
B.M.E., 1941, Rensselaer Polytechnic Institute; M.S., 1946, Massachusetts Institute of Technology
- Owens, Berl Winfield, 1948 (1956), *Associate Professor of Mechanical Engineering*
B.Aero.E., 1944, Minnesota; M.S. in M.E., 1953, Washington
- Schaller, Gilbert Simon, 1922 (1937), *Professor of Mechanical Engineering*
B.S. in M.E., 1916, Illinois; M.B.A., 1925, Washington
- Setchfield, Daniel Frank, 1956 (1958), *Instructor in Mechanical Engineering*
B.A., 1957, Washington
- Sherrer, Robert Eugene, 1960, *Associate Professor of Mechanical Engineering*
B.S. in M.E., 1948, Kansas; M.S. in E.M., 1953, Ph.D., 1958, Wisconsin
- Taggart, Raymond, 1959, *Assistant Professor of Mechanical Engineering*
B.S., 1948, London; Ph.D., 1956, Queens (Belfast)
- Waibler, Paul John, 1954 (1961), *Professor of Mechanical Engineering*
B.S. in M.E., 1943, Kansas State; M.S. in M.E., 1944, Yale; Ph.D., 1958, Illinois
- Winslow, Arthur Melvin, 1918 (1952), *Professor Emeritus of Mechanical Engineering; Research Consultant*
Ph.B., 1903, Brown; B.S., 1906, Massachusetts Institute of Technology

MINERAL ENGINEERING

- Anderson, Donald Lorraine, 1947 (1957), *Associate Professor of Mining Engineering*
B.S., 1938, St. Francis Xavier; B.Sc. in Min.E., 1941, Illinois
- Archbold, Thomas Frank, 1961, *Acting Assistant Professor of Metallurgical Engineering*
B.S. Met.E., 1955, M.S., 1957, Ph.D., 1961, Purdue
- Bauer, Wolf, 1954, *Lecturer in Ceramic Engineering*
B.S. in Cer.E., 1935, Washington
- Brien, Frederick Blyth, 1954 (1957), *Associate Professor of Mineral Engineering*
B.S. in Min.E., 1950, Alberta; M.S. in Mineral E., 1951, Columbia
- Campbell, Robert John, Jr., 1955, *Assistant Professor of Ceramic Engineering*
B.S., Ch.E., 1939, Oregon State; M.S. in Cer.E., 1954, Washington

Daniels, Joseph, 1911 (1954), *Professor Emeritus of Mining and Metallurgical Engineering*

S.B., 1905, Massachusetts Institute of Technology; M.S., 1908, E.M., 1933, Lehigh

Flanagan, William Francis, 1959, *Assistant Professor of Metallurgical Engineering*

B.S. in Physics, 1951, M.S., 1953, Sc.D., 1959, Massachusetts Institute of Technology

McNeilly, Clyde Emerson, 1959, *Assistant Professor of Ceramic Engineering*

B.S. in Cer.E., 1954, Alfred; Ph.D., 1959, Alfred

Morgan, David William, 1959, *Assistant Professor of Metallurgical Engineering*

B.A.Sc., 1948, M.A.Sc., 1949, British Columbia; D.I.C., 1953, Imperial College of Science and Technology (London); Ph.D., 1953, London

Mueller, James Irving, 1949 (1955), *Professor of Ceramic Engineering*

B.Cer.E., 1939, Ohio State; Ph.D., 1949, Missouri

Pifer, Drury Augustus, 1945 (1948), *Professor of Mining Engineering; Director of the School of Mineral Engineering*

B.S. in Min. E., 1930, M.S. in Min. E., 1931, Washington

Polonis, Douglas Hugh, 1955 (1958), *Associate Professor of Metallurgical Engineering*

B.S., 1951, British Columbia; M.S., 1953, Toronto; Ph.D., 1955, British Columbia

Roberts, Earl Champion, 1954 (1958), *Professor of Metallurgical Engineering*

B.S. in Met. E., 1943, Montana School of Mines; M.S. in Met.E., 1950, Ph.D., 1952, Massachusetts Institute of Technology

Roberts, Milnor, 1901 (1947), *Professor Emeritus of Mining Engineering*

B.A., 1899, Stanford

Shevlin, Thomas S., 1961, *Acting Associate Professor of Ceramic Engineering*

B.Cer.E., 1942, M.S., 1947, Ph.D., 1954, Ohio State

ENGINEERING EXPERIMENT STATION

Farquharson, Frederick Burt, 1925 (1940), *Director of the Engineering Experiment Station; Professor of Civil Engineering*

B.S. in M.E., 1923, M.E., 1927, Washington

Kelley, H. Harold, 1960, *Technical Editor*

B.S., 1930, Kansas State Teachers' College; M.A., 1938, University of Colorado

NORTHWEST EXPERIMENT STATION, UNITED STATES BUREAU OF MINES

Geer, Max Richard, 1935, *Chief Engineer; Lecturer in the School of Mineral Engineering*

B.E.M., 1934, Ohio State; M.S., 1935, E.M., 1943, Washington

FACULTY OF RESERVE OFFICERS TRAINING PROGRAM

AIR SCIENCE

Arnold, Maj. Robert C., 1959, *Assistant Professor of Air Science*

A.B., 1941, California; M.Ed., 1954, Trinity University (Texas)

Gustafson, Col. Roy W., 1961, *Professor of Air Science*

B.S., 1935, Washington; M.S., 1948, Stanford

Holloway, Maj. David T., 1959, *Assistant Professor of Air Science*

B.S., 1959, Maryland

Kilgore, Maj. Donald K., 1959, *Assistant Professor of Air Science*

B.A., 1948, Washington

Nelson, Capt. Deryl W., 1958, *Assistant Professor of Air Science*

B.A., 1951, Fresno State (California)

Pachl, Lt. Col. R. J., 1961, *Assistant Professor of Air Science*

B.S., 1940, Providence College (Rhode Island)

Robertson, Capt. John L., 1957, *Assistant Professor of Air Science*

B.A., 1952, Washington

Trowbridge, Capt. Charles E., 1958, *Assistant Professor of Air Science*

B.S., 1951, Idaho

MILITARY SCIENCE

- Collings, Lt. Col. Kent J., 1960, *Assistant Professor of Military Science*
B.S., 1939, California
- Condon, Lt. Col. Herbert Thomas, Jr., 1958, *Assistant Professor of Military Science*
B.A., 1938, Washington
- Gilchrist, Lt. Col. Charles Allen, 1959, *Assistant Professor of Military Science*
B.A., 1948, Missouri
- Goodrich, Col. Guinn Burch, 1961, *Professor of Military Science*
B.S., 1934, Tennessee
- Heinlein, Capt. Willard H., 1961, *Assistant Professor of Military Science*
B.A., 1951, Denver
- Kendrick, Maj. James O., Jr., 1961, *Assistant Professor of Military Science*
B.S., 1960, Maryland
- Kirk, Maj. Richard Laurens, 1958, *Assistant Professor of Military Science*
B.A., 1949, Washington
- Neal, Capt. William Bert, 1959, *Assistant Professor of Military Science*
B.S., 1950, Agricultural and Technical College of North Carolina
- Olson, Lt. Col. Charles Marshall, 1959, *Assistant Professor of Military Science*
B.M.S., 1958, Maryland
- Tullis, Capt. Murl Frank, 1960, *Assistant Professor of Military Science*
B.S., 1949, San Jose State
- Duncan, Master Sergeant James A., 1961, *Instructor of Military Science*
- McHendry, Specialist Fifth Class Curtis G., 1960, *Instructor of Military Science*
- Posthuma, Master Sergeant Frank A., Jr., 1960, *Instructor of Military Science*
- Schumacher, Sergeant First Class Norman J., 1960, *Instructor of Military Science*
- Shepard, Sergeant First Class William C., 1958, *Instructor of Military Science*
- Stockman, Master Sergeant Perry J., 1956, *Instructor of Military Science*
- Sutton, Sergeant First Class Richard P., 1955, *Instructor of Military Science*
- Taylor, Sergeant First Class Joseph A., 1960, *Instructor of Military Science*
- Yarberry, Sergeant Robert L., 1960, *Instructor of Military Science*

NAVAL SCIENCE

- Britain, GySgt. Fred Leonard, Jr., USMC, 1959, *Instructor in Naval Science*
- Bryan, GMC. Donald Wayne, USN, 1960, *Instructor in Naval Science*
- Christensen, Lt. Harvey Jonathan, (SC), USN, 1960, *Assistant Professor of Naval Science*
B.S., 1952, University of Minnesota
- Freeman, Lt. Albert Myrick, III, USNR, 1960, *Assistant Professor of Naval Science*
B.A., 1957, Cornell
- Gordon, Capt. Harold P., USN, 1961, *Professor of Naval Science*
B.S. A.E., 1937, Washington
- Havens, Lt. Stanley Laverne, USN, 1960, *Assistant Professor of Naval Science*
B.S., 1953, Lock Haven State College
- Keyes, Maj. Edward Burnett, Jr., USMC, 1960, *Assistant Professor of Naval Science*
B.A., 1945, California
- Kneebone, SK1. Franklin Davey, USN, 1960, *Instructor in Naval Science*
- Mills, CDR. William S., III, USNR, 1961, *Associate Professor of Naval Science*
B.A., 1942, Vanderbilt
- Nixon, Lt. Edward Calvert, USNR, 1960, *Assistant Professor of Naval Science*
B.S., 1952, Duke; M.S., 1954, North Carolina State College
- Smith, FTC. Bernard Henry, USN, 1960, *Instructor in Naval Science*
- Smith, Lt. Richards Macpherson, USN, 1959, *Assistant Professor of Naval Science*
A.B., 1953, University of Southern California
- Wright, QMC. Elmer George, USN, 1960, *Instructor in Naval Science*

APPENDIX

APPENDIX

UNDERGRADUATE ADMISSION, EXCEPTIONAL CASES

An applicant whose preparation and previous scholarship do not clearly qualify him for admission may submit additional evidence in support of his application. This may include scores on nationally recognized tests of scholastic aptitude or achievement; letters from school administrators, teachers, or counselors; and other information which may assist the Board of Admissions in evaluating his probability of success in the University.

Students admitted by special action of the Board of Admissions will be expected to achieve and maintain a satisfactory scholastic average in their University work and to fulfill any conditions specified by the Board at the time of their admission.

A student thus admitted on probation will be subject to scholarship rules given on page 27.

Furthermore, he or she may not (1) be pledged 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 regulations of the University Intercollegiate Athletics Committee.

ADVANCED STANDING AND TRANSFER OF CREDIT

1. The advanced standing for which an applicant's training appears to fit him is granted tentatively on admission. Definite advanced standing is not determined before the end of the student's first quarter in the University. The maximum that may be accepted from other colleges and universities is 135 quarter credits or senior standing. Transfer credit will not be allowed in the senior year.

2. Transfer credits will be accepted for upper-division credit *only* when earned at an accredited four-year degree-granting institution.

3. Transfer credits from institutions accredited for less than four years will not be accepted in excess of the accreditation of the school concerned.

4. Transfer of junior college credit shall apply on the 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 to completion of the first two years in the University. In no case shall the transfer of junior college credit to the University exceed 90 quarter credits exclusive of physical education activity credits.

5. The maximum number of credits obtainable by acceptance of Armed Forces training schools credits will be 30. All such credits will be counted as extension

credits and will be included in the 90-credit maximum allowed toward the bachelor's degree, but none will apply toward the work of the senior year.

6. A maximum of 45 credits earned in extension and correspondence courses at other institutions may be transferred, but none of the credits can apply in the senior year. Extension and correspondence credits from schools that are not members of the National University Extension Association are accepted only after examination.

7. Credits earned in evening and extension classes or correspondence courses at this University are accepted after the student has satisfactorily completed 35 credits of work in residence (that is, registered in regular University classes). A maximum of 90 extension and/or correspondence credits is acceptable; the 90 credits may include the 45 extension and/or correspondence credits allowable from other institutions or may consist entirely of courses taken in this University's Division of Evening Classes or Division of Correspondence Study. All credits earned in advanced-credit examinations and all acceptable Armed Forces training schools credits must be counted in the 90 extension credit maximum. Up to 10 evening class or correspondence course credits from this University can apply toward the work of the senior year.

8. For work done in unaccredited institutions, extended secondary programs in institutions whose standing is unknown, and for work with private teachers, University credit is granted only after examination. Applications for advanced-credit examinations must be filed during the first quarter in residence.

9. No credit will be granted 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. The prescribed written permission is effective only if obtained before registration. Nothing in this rule makes mandatory the granting of any credit by the University.

KOREAN VETERANS INFORMATION

Korean Certificate

Application for this certificate should be made at least four weeks prior to the beginning of University instruction. If the veteran is eligible, the Veterans Administration will issue him a Certificate for Education and Training which must be presented, along with his Program of Studies, to the Veterans Division, Safety Division Building, as soon as registration is completed. A Korean veteran should be prepared to meet all his own expenses as well as the cost of tuition, fees, and supplies for at least two months, because allowances are not made until after a full month's attendance has been established.

Quarter Credit Requirements (Public Law 550)

14 credits	Full subsistence
10 to 13 credits	Three-fourth subsistence
7 to 9 credits	One-half subsistence
6 credits or less	Established tuition and fees
or credits $\div 14 \times \$110.00$, whichever is the lesser.	

Graduate Credit Requirements (Public Law 550) 500-level Courses or Above

9 credits	Full subsistence
7 to 8 credits	Three-fourths subsistence
5 to 6 credits	One-half subsistence
4 credits or less	Established tuition and fees
or credits $\div 14 \times \$110.00$, whichever is the lesser.	

If a graduate is combining 400-level courses with 500-level courses, he should consult with the Veterans Division, Safety Division Building, to determine the scale of pay.

Termination of Training

A veteran *eligible* under Public Law 550 must complete his training by *eight years* after his release from active service, or by January 31, 1965, whichever is earlier.

WITHDRAWALS**WITHDRAWAL FROM A COURSE**

Official withdrawal from a course is made only under the following conditions: (1) during the first fifteen calendar days of a quarter, with the consent of the withdrawing student's adviser; (2) after the first fifteen calendar days of a quarter and before the end of the first six calendar weeks of a quarter, with the approval of the student's adviser, the instructor of the course from which withdrawal is sought, and of the dean of the college in which the withdrawing student is enrolled; and (3) after the first six calendar weeks of a quarter and before final examination week, only upon certification in writing to the Registrar by the dean of the college in which the withdrawing student is enrolled that, in the judgment of the dean, withdrawal is necessitated by the student's hardship. Withdrawals from courses accomplished by any other method are unofficial withdrawals which are entered on a student's record as EW, and are assigned the value of E in the computation of the student's grade-point average. No official withdrawal may be made during final examination week.

Official withdrawals are entered on a student's record as follows: (1) a withdrawal within the first fifteen calendar days of a quarter, as W; (2) a withdrawal after the first fifteen calendar days of a quarter and before final examination week, as PW, if the student's work has been satisfactory, and as E, if the student's work has been unsatisfactory. Grades of PW and W are assigned no value in the computation of grade-point averages.

WITHDRAWAL FROM THE UNIVERSITY

The student should obtain at the office of Engineering Registration, 208 Guggenheim, the Request for Withdrawal From the University form.

MILITARY TRAINING

The two-year basic programs offered by the Departments of Air Science and Military Science and the four-year program offered by the Department of Naval Science, satisfy this requirement. For a complete list of courses offered by these Departments, see the *Yearly Time Schedule*. In addition to the basic programs, the Department of Air Science and the Department of Military Science each offers for selected students an advanced program which leads to commissioning in the Air Force or the Army. The four-year program of the Department of Naval Science, also for selected students, leads to commissioning in the Navy or Marine Corps.

Students enrolling in Naval ROTC, and those who take the advanced program of Air Force or Army ROTC must agree in writing to complete the course of training and accept a commission in the service for which they are trained. *The honoring of this commitment is a condition of graduation from the University.*

The basic program of the Department of Air Science consists of three quarters of military classroom instruction on the Foundations of Air Power. These are offered in the Spring Quarter of the first year and the Autumn and Winter Quarters of the second year. During each of the other three quarters, the student must substitute an approved University course in lieu of Air Science. Leadership laboratory is required each of the six quarters of the basic program and is conducted one hour each week. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*.

The basic program (freshmen and sophomores) of the Department of Military Science requires drill one hour each week. Classroom military studies for freshmen

are not required in the Autumn Quarter. One hour per week is required in the Winter Quarter, and two hours of classroom work are required in Spring Quarter. As a substitute for these classroom hours in Autumn Quarter of the freshman year, registration is required in a selected three-credit or five-credit course in another department. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*. Sophomores are required to attend two hours per week of classroom military studies throughout the academic year.

Information concerning the Naval Science ROTC program can be found on pages 90-92.

Exemptions from the military requirement are granted to:

1. Students who are twenty-three years of age or over at the time of original entry into the University.
2. Students who enter as juniors or seniors.
3. Special students.
4. Students registered for 6 credits or less.
5. Students who are not citizens of the United States.
6. Students who, because of physical condition, are exempted by the University Health Officer.
7. Students who have equivalent military service. Complete or partial exemptions, depending on length of service, are granted for previous active service in the Armed Forces or Coast Guard.
8. Students who are active members or reserve officers of the Armed Forces or Coast Guard, or commissioned officers of the National Guard.
9. Students who are active enlisted members of the National Guard or of the Organized Reserve of the Armed Forces or Coast Guard.
10. Transfer students who present acceptable credit for military training taken in other colleges. The amount of exemption depends on the amount of previous training. Transfer students are required to take military training only for the number of quarters they need to achieve junior standing by a normal schedule.
11. Students who seek exemption on grounds other than 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 after consultation with the appropriate ROTC commander.

Those who are exempted under paragraph 5 or 11 must arrange at the time of initial entrance to substitute equivalent extra credits in other University courses to equal the number of credits they would have been required to earn in military training courses.

PHYSICAL EDUCATION ACTIVITIES

Men students may use credits earned in freshman or varsity sports to satisfy the activity course requirement.

Women students, in fulfilling the three-quarter requirement, may take a maximum of two credits in any of the following: (1) swim area; (2) dance area; (3) tennis and badminton; (4) any other specific individual, dual, or team activity.

The following students are exempt from the requirement of activity courses:

1. Students who have attained the age of twenty-five. A student who attains the age of twenty-five during a quarter in which he is registered for a required physical education activity course shall be held for the completion of that course. This rule shall not be retroactive in its application to students who entered prior to Spring Quarter, 1951, and were exempted from required physical education courses under previous rules.
2. Students who enter as sophomores, juniors, or seniors.
3. Special students.

4. Students registered for 6 credits or less.

5. Students who, because of physical condition, are exempted by the Graduation Committee upon the recommendation of the Dean of the College. Such action will be taken only when the Dean has received a joint recommendation for exemption from the University Health Officer and the Executive Officer of the Department of Physical Education for Men or for Women, whichever is appropriate. All other students who are reported by the University Health Officer as physically unfit to join regular classes will be assigned by the Executive Officer of the Department of Physical Education for Men or for Women to special programs adapted to their needs.

6. Students who are veterans of military service. Complete exemption is granted for one year or more of active duty. This exemption does not grant credit. Veterans with less than one year of service receive no exemption.

7. Transfer students who present acceptable credit for physical education activity courses taken in other colleges. The amount of exemption depends on the number of quarters for which credit is transferred.

FEES, EXTRA SERVICE CHARGES, AND RENTALS

All fees, extra service charges, and rentals are payable in United States dollars at the time of registration. The University reserves the right to change any of its fees and charges without notice.

The fee schedules for resident and nonresident students, following, apply to the academic year (Autumn, Winter, and Spring Quarters). Summer fees are listed in the *Summer Quarter Bulletin*.

EXEMPTIONS

Veterans of World Wars I or II

Exemption from tuition charges is granted resident students who either (1) served in the United States Armed Forces during World War I and received honorable discharges; or (2) served in the United States Armed Forces during World War II at any time after December 6, 1941, and before January 1, 1947, and received honorable discharges, but are no longer entitled to federal educational benefits; or (3) are United States citizens who served in the armed forces of governments associated with the United States during World Wars I or II and received honorable discharges. Nonresident students who meet one of these requirements pay one-half of the nonresident tuition. This exemption is not granted to Summer Quarter students.

Proof of eligibility should be met as follows:

- (1) World War I veterans should present copy of discharge papers to Comptroller's Office, 203 Administration Building.
- (2) World War II veterans with Korean service or who have suffered disability should present a letter from the Veterans Administration Regional Office to the Veterans Division, Safety Division Building, stating they are no longer eligible for any federal educational benefits. (Excepted are those veterans who have had both World War II benefits and Korean benefits and have expired those benefits at the University of Washington.)
- (3) World War II veterans who have not suffered any disability or served in the Korean Conflict should present an 8½-inch x 11-inch photostat of discharge papers to the Veterans Division, Safety Division Building.

Exemption must be cleared prior to student's appointment day for registration in order to prevent personal payment.

EXTRA SERVICE CHARGES

A registration service charge of \$15.00 is assessed those students: (1) eligible for Advance (mail) Registration who fail to participate; or (2) who, after the established application deadline, are granted Appointments or Permits to register by In-Person Registration by action of the Registration Appeal Board. A late registration charge of \$15.00 is assessed any student granted permission to register after the last registration day before the opening of Autumn, Winter, or Spring Quarters by action of the Registration Appeal Board. A charge of \$5.00 is made Autumn, Winter, and Spring Quarters 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.

<i>Special Examination</i>	\$1.00
<i>Removal of an Incomplete</i>	2.00
<i>Washington Pre-College Differential Guidance (Grade Prediction) Test</i>	5.00
<i>Athletic Admission Ticket</i> (optional for ASUW members)	3.50-6.50
Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.	
<i>Military Uniform Rental</i>	25.00
Paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.	
<i>Breakage Ticket</i>	3.00
Required in some laboratory courses; ticket is returnable for full or partial refund.	
<i>Locker Rental, per quarter</i>	2.00
Required of men students taking physical education activities.	
<i>Quarterly Grade Report</i>	.50
One grade report is issued at the close of each quarter without charge; the charge, payable in advance, is made for each additional copy.	
<i>Transcripts</i>	1.00
One transcript is furnished without charge; the charge, payable in advance, is made for each additional copy.	
<i>Graduation Exercises Diploma</i>	10.00

FEES FOR RESIDENT STUDENTS

A resident is one who has been domiciled in Washington for at least a year immediately prior to registration.

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

Type of Registration	Tuition Fee	Incidental Fee	ASUW Fee*	Total Fees
			Autumn, Winter, and Spring Quarters	Autumn, Winter, and Spring Quarters
Full-time students** (undergraduate and graduate except in Medical and Dental Schools)	\$35.00	\$56.50	\$8.50	\$100.00
Auditors		39.00	†	39.00
Part-time (max. 6 credits exclusive of ROTC)§	35.00	39.00	†	74.00
Ex-service personnel of World Wars I and II† (Chapter 46, Laws of 1945)		56.50	8.50	65.00
		39.00	†	39.00
Full-time				
Part-time (max. 6 credits)§				
Students registered for thesis only (for credit or final)||		56.50	†	56.50
Students registered for degree final only (non-thesis)||		56.50	†	56.50

* Athletic admission ticket is optional for ASUW members. Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.

** A \$25.00 uniform rental is paid by students in Army and Air Force ROTC, refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.

† 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 to determine eligibility.

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

|| Must be approved by the Graduate School.

MUSIC PRACTICE ROOM, per quarter: piano practice, \$3.00, one hour a day; \$5.00, two hours a day; \$6.00, three hours a day. Organ practice, \$6.00, one hour a day; \$10.00, two hours a day; \$12.00, three hours a day. Practice rooms are available only to students taking music courses.

PHYSICAL EDUCATION ACTIVITIES, per quarter: bowling, \$5.00; canoeing, \$3.00; golf instruction, \$1.50.

REFUND OF FEES, CHARGES, AND RENTALS

All fees will be refunded in full if complete withdrawal is made during the first three calendar days of the quarter; one-half the amount will be refunded if withdrawal is made during the first thirty calendar days. Refunds are not made to students withdrawing under discipline.

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

At least two weeks must elapse between payment and refund, if payment was made by check.

FEES FOR NONRESIDENT STUDENTS

Prospective students are classified as nonresidents when their credentials come from schools outside Washington. If they believe they are residents, they may petition the Residence Classification Office, 205A Administration Building, for a change of classification.

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

Type of Registration	Tuition Fee	Incidental Fee	ASUW Fee*	Total Fees
			Autumn, Winter, and Spring Quarters	Autumn, Winter, and Spring Quarters
Full-time students** (undergraduate and graduate) except in Medical and Dental Schools	\$105.00	\$186.50	\$8.50	\$200.00
Auditors		39.00	†	39.00
Part-time (max. 6 credits exclusive of ROTC)§	105.00	69.00	†	174.00
Ex-service personnel of World Wars I and II† (Chapter 46, Laws of 1945)				
Full-time	52.50	86.50	8.50	147.50
Part-time (max. 6 credits)§	52.50	69.00	†	121.50
Students registered for thesis only (for credit or final)||		56.50	†	56.50
Students registered for degree final only (non-thesis)||		56.50	†	56.50

* Athletic admission ticket is optional for ASUW members. Autumn, Winter and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.

** A \$25.00 uniform rental is paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.

† 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 to determine eligibility.

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

|| Must be approved by Graduate School.

SCHOLARSHIPS AND LOANS

ENGINEERING EXPERIMENT STATION RESEARCH ASSISTANTSHIPS. The Board of the Engineering Experiment Station each year awards a limited number of assistantships to graduate students in various departments of the College of Engineering. These assistantships are granted to students who qualify for full graduate standing at the University and who submit outstanding records of scholarship in their undergraduate courses. The assistantships amounts to \$235.00 a month for twelve months, or a total of \$2,820.00. Approximately one half time will be devoted to research leading to a thesis. Additional information and application forms may be obtained from the Director of the Engineering Experiment Station.

AMERICAN SOCIETY FOR METALS SCHOLARSHIP, \$500. Awarded to sophomore student in metallurgical engineering.

AMERICAN ROCKET SOCIETY, PACIFIC NORTHWEST SECTION, \$213. Awarded to entering freshman in engineering or science who has a demonstrated interest in rockets or space flight. Must be from Washington, Oregon, Montana, Idaho, or Alaska, with a high school grade-point average of 3.00 or better.

AMERICAN SMELTING AND REFINING COMPANY SCHOLARSHIP, \$500. Awarded to senior in metallurgical engineering.

ARVA, INC. SCHOLARSHIP IN ELECTRONICS, \$300. Awarded to senior in electrical engineering, specializing in electronics.

ASPHALT PAVING ASSOCIATION FELLOWSHIP, \$500. Awarded to graduate student in civil engineering.

ASSOCIATED GENERAL CONTRACTORS FELLOWSHIP, \$250. Awarded to two senior students in civil engineering for graduate study.

WALLACE LIPPINCOTT ATKINSON PRIZE IN MINING ENGINEERING, \$25. Awarded to student in mining engineering.

SAMUEL G. BAKER AWARD IN CHEMICAL ENGINEERING, \$100. Awarded to outstanding senior student.

BECHTEL CORPORATION SCHOLARSHIPS, \$250. Awarded to four entering freshmen.

FRIENDS OF B-E-C-K CONSTRUCTORS SCHOLARSHIP IN ENGINEERING, \$500. Awarded to a sophomore or a junior engineering student.

HENRY K. BENSON SCHOLARSHIP, variable. Awarded to students in chemical engineering.

BOEING AIRPLANE COMPANY SCHOLARSHIPS, \$300. Awarded to four freshman students in aeronautical engineering, civil engineering, electrical engineering, and mechanical engineering, and continuing for the four undergraduate years.

BOEING AIRPLANE COMPANY GRADUATE FELLOWSHIPS, \$1,350 plus tuition and fees. Awarded to two graduate students in aeronautical engineering, civil engineering, electrical engineering, or mechanical engineering.

CIBA COMPANY SCHOLARSHIP, \$500. Awarded to junior in chemical engineering.

CONVAIR FELLOWSHIP, \$1,000 per year. Awarded to aeronautical, electrical, mechanical, civil, engineering students, on the basis of academic achievement, leadership, moral character, professional objective. Awarded expressly to those students preparing for the practice of engineering rather than teaching or pure research.

DOUGLAS AIRCRAFT COMPANY SCHOLARSHIP, \$750. Awarded to senior student in aeronautical engineering or mechanical engineering.

DOW CHEMICAL COMPANY SCHOLARSHIPS. Tuition scholarships awarded to ten undergraduate students in chemical engineering.

ENGINEERING COUNCIL SERVICE AWARD. Awarded to outstanding undergraduate student in the College.

SYLVIA W. FARNEY MEMORIAL SCHOLARSHIP, \$500. Awarded to junior in mechanical engineering for senior year.

FERRO CORPORATION FELLOWSHIP, \$2,500. Awarded to graduate student in ceramic engineering.

MAJOR REUBEN H. FLEET SCHOLARSHIP, \$500. Awarded to an undergraduate aeronautical engineering student.

GLADDING McBEAN & COMPANY SCHOLARSHIPS IN CERAMICS, \$350. Awarded to two freshman students in ceramic engineering and continuing for the four undergraduate years.

HEWLETT-PACKARD WASHINGTON ALUMNI SCHOLARSHIP, Tuition and fees. Awarded to undergraduate students in engineering, industrial design, or science.

HOOKE ELECTROCHEMICAL COMPANY RESEARCH FELLOWSHIP IN CHEMICAL ENGINEERING, \$2,500. For graduate students.

CLIFFORD A. HOULAHAN SCHOLARSHIP IN CERAMIC ENGINEERING, \$100. Awarded to undergraduate student in ceramic engineering.

IDEAL CEMENT COMPANY GRADUATE FELLOWSHIP IN CIVIL ENGINEERING, \$550 per quarter for four quarters. Awarded to graduate student in civil engineering interested in the field of cement or concrete technology.

IRE-AIEE SCHOLARSHIP, \$225. Awarded to student beginning his sophomore year in electrical engineering.

KAISER ALUMINUM AND CHEMICAL CORPORATION FELLOWSHIP, \$1,500 plus tuition and fees. Awarded to a graduate student in mechanical engineering.

LADIES AUXILIARY SEATTLE SECTION AMERICAN SOCIETY OF CIVIL ENGINEERS SCHOLARSHIP, \$100. Awarded to undergraduate student in civil engineering.

LIVINGSTON WERNECKE MEMORIAL SCHOLARSHIP IN MINERAL ENGINEERING, stipend variable. For undergraduate students, including freshmen.

LONGVIEW FIBRE COMPANY SCHOLARSHIP, \$200. Awarded to student in chemical engineering and to student in mechanical engineering.

WILLIAM MCKAY SCHOLARSHIP IN MINERAL ENGINEERING, stipend variable. For upper-division undergraduate students.

EDWARD ORTON, JR. CERAMIC FOUNDATION FELLOWSHIP, \$1,845 plus tuition. Awarded to graduate student in ceramic engineering.

PACIFIC COAST DIVISION PULP & PAPER MILL ASSOCIATION SCHOLARSHIP, tuition and fees. Awarded to freshman students in chemical engineering.

PAPER INDUSTRY MANAGEMENT ASSOCIATION SCHOLARSHIP, tuition. Awarded to undergraduate in chemical engineering.

LARRY PENBERTHY SCHOLARSHIP IN CERAMIC ENGINEERING, \$350. Awarded to a student in ceramic engineering.

PENNSYLVANIA GLASS SAND CORPORATION SCHOLARSHIP IN CERAMIC ENGINEERING, tuition only. Awarded to junior student in ceramic engineering.

BURT PORTER COMPANY SCHOLARSHIP, \$500. Awarded to entering freshman in electrical engineering.

PROCTOR & GAMBLE FELLOWSHIP IN CHEMICAL ENGINEERING, \$2,000-\$3,000. Awarded to graduate student. Not awarded every year.

PUGET SOUND CHAPTER AMERICAN SOCIETY OF METALS, \$200. Awarded to undergraduate student in metallurgical engineering.

PUGET SOUND ELECTRIC LEAGUE SCHOLARSHIP, \$250. Awarded to sophomore, junior, or senior in electrical engineering.

RAYONIER FOUNDATION SCHOLARSHIP, \$500. Awarded to two senior students in chemical engineering, electrical engineering, or mechanical engineering.

RAYONIER FOUNDATION FELLOWSHIP IN CHEMICAL ENGINEERING, \$2,500. Awarded to graduate student.

RICHFIELD OIL CORPORATION FELLOWSHIP IN CHEMICAL ENGINEERING, \$1,500. Awarded to graduate student.

MARJORIE ROTHERMEL MEMORIAL SCHOLARSHIP, \$750. Awarded to mechanical engineering student for senior year.

SQUARE D. SCHOLARSHIP, \$300. Awarded to a junior and senior in electrical engineering, industrial engineering, or mechanical engineering.

STANDARD OIL COMPANY OF CALIFORNIA SCHOLARSHIP IN MECHANICAL ENGINEERING, \$750. Awarded to undergraduate student in mechanical engineering.

STANDARD OIL COMPANY OF CALIFORNIA FELLOWSHIP IN CHEMICAL ENGINEERING, \$1,500. Awarded to graduate student.

SUNSHINE MINING COMPANY SCHOLARSHIP IN MINING ENGINEERING, \$300 per year for three years. Awarded to student registering in mining engineering.

MELVIN O. SYLLIAASEN MEMORIAL SCHOLARSHIPS, \$500. Awarded to two students in civil engineering.

TECHNICAL ASSOCIATION OF PULP AND PAPER INDUSTRY FELLOWSHIP IN CHEMICAL ENGINEERING, \$2,025. Awarded to graduate student.

TEXAS COMPANY FELLOWSHIP IN CHEMICAL ENGINEERING, \$2,025. Awarded to graduate student.

TODD-HICKOK MEMORIAL SCHOLARSHIP, \$250. Awarded to freshman student after first quarter in residence. A continuing scholarship awarded every four years.

VERMICULITE AWARDS IN CERAMIC ENGINEERING, \$150, \$75, \$25. Awarded to undergraduate or graduate students registering in ceramic engineering.

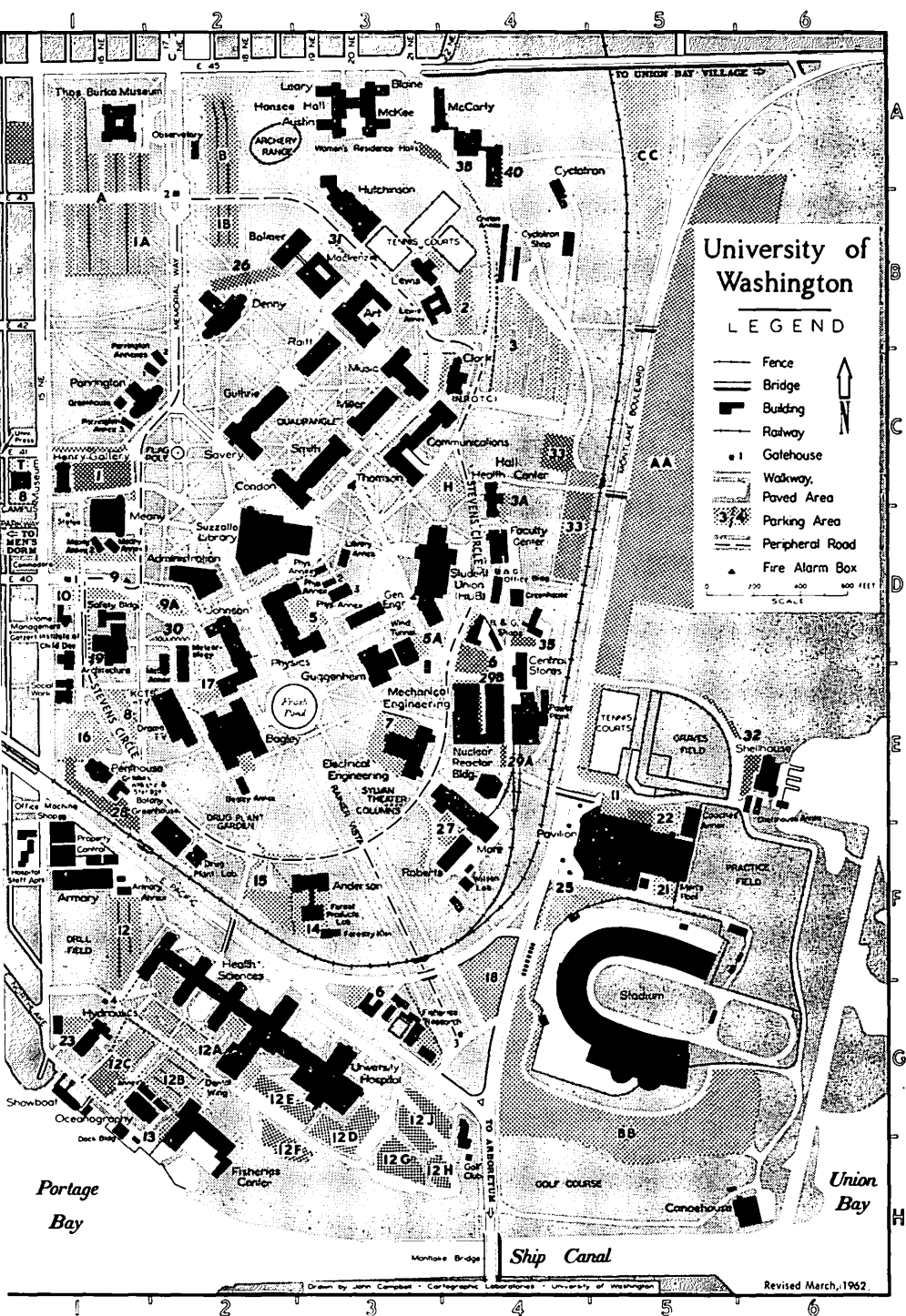
RUSSELL GIBSON WAYLAND SCHOLARSHIP IN MINING ENGINEERING, \$250. Awarded to student registered in mining engineering.

WEST COAST ELECTRONIC MANUFACTURERS' ASSOCIATION SCHOLARSHIP IN ELECTRICAL ENGINEERING, \$600. Awarded to undergraduate student in electrical engineering.

WESTERN ELECTRIC COMPANY SCHOLARSHIP, minimum \$400. Awarded to undergraduate student in electrical or mechanical engineering.

EUGENE AINSWORTH WHITE SCHOLARSHIP IN METALLURGICAL ENGINEERING, \$250. Awarded to student registered in metallurgical engineering.

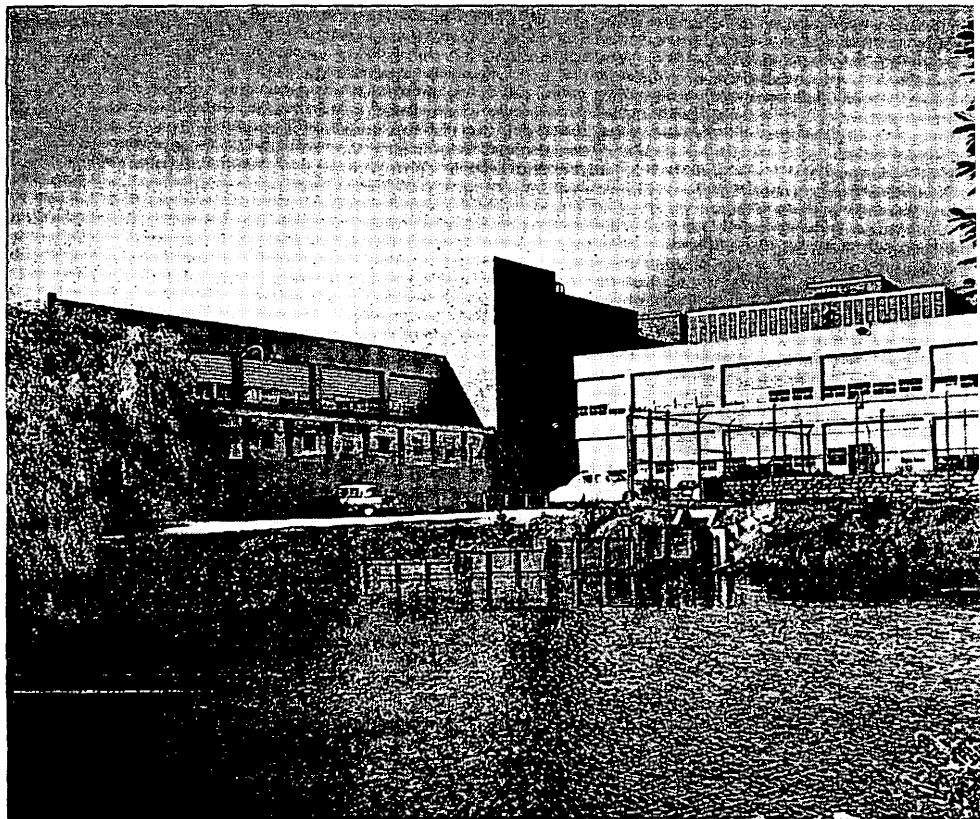
Engineering Student Loan Fund, administered through the Office of the Dean of the College. Loans up to \$200 may be made to students who find it difficult to continue in school because of insufficient funds. Other emergency loans are made through the Office of the Dean of Students. See page 30.



Drawn by John Campbell • Cartographic Laboratories • University of Washington

Revised March, 1962

BULLETIN • UNIVERSITY OF WASHINGTON



COLLEGE OF FISHERIES

1962-1964

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes three general bulletins; bulletins of the colleges and schools; Summer Quarter Bulletin; the bulletin of the Center for Graduate Study at Hanford; and bulletins of the Division of Correspondence Study and the Division of Evening Classes.

INTRODUCTION TO THE UNIVERSITY, one of the general bulletins, is especially prepared for new and prospective students. It lists all the University curricula, with their admission requirements, and presents information on other phases of student life, including services for students, student activities, and expenses. UNIVERSITY RULES AND REGULATIONS, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as registered students. HANDBOOK OF SCHOLARSHIPS, the third general bulletin, lists the various scholarships available.

Curricula, courses, and scholarship requirements in each field of study are described in the college and school bulletins. Each of these bulletins also discusses services, organizations, and expenses as they relate to students in the particular college or school.

Requests for copies of any of the bulletins should be addressed to the Addressograph Service.

General Bulletins

HANDBOOK OF SCHOLARSHIPS (RESTRICTED DISTRIBUTION)

INTRODUCTION TO THE UNIVERSITY

UNIVERSITY RULES AND REGULATIONS (FOR REGISTERED STUDENTS ONLY)

Bulletins of the Colleges and Schools

COLLEGE OF ARCHITECTURE AND URBAN PLANNING

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF BUSINESS ADMINISTRATION

SCHOOL OF DENTISTRY

COLLEGE OF EDUCATION

COLLEGE OF ENGINEERING

COLLEGE OF FISHERIES

COLLEGE OF FORESTRY

GRADUATE SCHOOL

SCHOOL OF LAW

SCHOOL OF MEDICINE

SCHOOL OF NURSING

COLLEGE OF PHARMACY

SCHOOL OF SOCIAL WORK

Other Bulletins

SUMMER QUARTER

CENTER FOR GRADUATE STUDY AT HANFORD

CORRESPONDENCE STUDY

EVENING CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 983
June, 1962

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CALENDAR

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this bulletin.

AUTUMN QUARTER, 1962

REGISTRATION PERIOD

- APR. 30-MAY 25 Advance Registration only for students in residence Spring Quarter, 1962. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
- SEPT. 10-27 In-Person Registration for students in residence Spring Quarter, 1962, who did not complete Autumn Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
- SEPT. 10-27 In-Person Registration for former students not in residence Spring Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Appointments or Permits is September 1.*
- JULY 15 Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointments will be mailed with Official Notice of Admission.
- SEPT. 1 Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
- SEPT. 11-27 In-Person Registration for ALL new students.
- SEPT. 27 Last day to register for Autumn Quarter, 1962. Note application deadlines above.
- OCT. 1-5. Change of registration by appointment only.

ACADEMIC PERIOD

- OCT. 1-MONDAY Instruction begins.
- OCT. 5-FRIDAY Last day to add a course
- NOV. 1-THURSDAY Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1963, due at Registrar's Office.
- NOV. 12-MONDAY State Admission Day holiday
- NOV. 21-WEDNESDAY Last day to submit applications for advanced credit examinations
- NOV. 21-26 Thanksgiving recess (6:30 p.m. to 7:30 a.m.)
- DEC. 8-SATURDAY Advanced credit examinations
- DEC. 12-18 Final examinations
- DEC. 18-TUESDAY Quarter ends

WINTER QUARTER, 1963

REGISTRATION PERIOD

- OCT. 29-Nov. 27 Advance Registration only for students in residence Autumn Quarter, 1962. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.

JAN. 2-4	In-Person Registration for students in residence Autumn Quarter, 1962, who did not complete Winter Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
JAN. 2-4	In-Person Registration for former students not in residence Autumn Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 1.</i>
DEC. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
DEC. 20	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
JAN. 2-4	In-Person Registration for ALL new students.
JAN. 4	Last day to register for Winter Quarter, 1963. Note application deadlines above.
JAN. 7-11	Change of registration by appointment only.

ACADEMIC PERIOD

JAN. 7—MONDAY	Instruction begins
JAN. 11—FRIDAY	Last day to add a course
FEB. 21—THURSDAY	Last day to submit applications for advanced credit examinations
FEB. 22—FRIDAY	Washington's Birthday and Founder's Day holiday
MAR. 9—SATURDAY	Advanced credit examinations
MAR. 15-21	Final examinations
MAR. 21—THURSDAY	Quarter ends

SPRING QUARTER, 1963**REGISTRATION PERIOD**

JAN. 28-FEB. 21	Advance Registration only for students in residence Winter Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
MAR. 26-28	In-Person Registration for students in residence Winter Quarter, 1963, who did not complete Spring Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
MAR. 26-28	In-Person Registration for former students not in residence Winter Quarter, 1963. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is March 1.</i>
MAR. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
MAR. 15	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former

MAR. 26-28

MAR. 28

APRIL 1-5

ACADEMIC PERIOD

APRIL 1—MONDAY

APRIL 5—FRIDAY

MAY 10—FRIDAY

MAY 25—SATURDAY

MAY 30—THURSDAY

JUNE 7-13

JUNE 9—SUNDAY

JUNE 13—THURSDAY

JUNE 15—SATURDAY

students who are returning after an absence of one or more calendar years.

In-Person Registration for ALL new students.

Last day to register for Spring Quarter, 1963. Note application deadlines above.

Change of registration by appointment only.

Instruction begins

Last day to add a course

Last day to submit applications for advanced credit examinations

Advanced credit examinations

Memorial Day holiday

Final examinations

Baccalaureate Sunday

Quarter ends

Commencement

SUMMER QUARTER, 1963**REGISTRATION PERIOD**

General In-Person Registration for ALL students (*by appointment only*):

June 6-10

June 17-21

New students. Admission to the University is a prerequisite for registration in Summer Quarter classes. Complete credentials must be filed with the Office of Admissions by May 15 to be considered for admission with *Regular* standing. See *Summer Quarter Bulletin* regarding admission as a *nondegree* candidate with status *Summer Quarter Only*. New (entering) students will be mailed Registration Appointments with their Official Notice of Admission.

Students in residence Spring Quarter, 1963:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates.....Monday, April 22, 8 a.m. to 5 p.m.

JuniorsTuesday, April 23, 8 a.m. to 5 p.m.

SophomoresWednesday, April 24, 8 a.m. to 5 p.m.

FreshmenThursday, April 25, 8 a.m. to 5 p.m.

Former Students not in residence Spring Quarter, 1963, may obtain an Application for Appointment or Permit by writing to, or calling in person at, the Registrar's Office, Room 109, Administration Building, or telephoning LAkeview 4-6000, Extension 2551, beginning April 22 and preferably *no later than May 15*. Registration may be delayed by later application. Registration materials cannot be prepared until an application is received. The application deadline for term "a" and full Summer Quarter is June 17.

All students in the Schools of Law, Dentistry, and Medicine must file an Application for Registration Permit, although no appointment date is necessary.

ACADEMIC PERIOD

JUNE 24—MONDAY

JUNE 25—TUESDAY

JUNE 28—FRIDAY

JULY 3—WEDNESDAY

JULY 4—THURSDAY

JULY 20—SATURDAY

JULY 24—WEDNESDAY

Instruction begins

Last day to add a course for the first term

Last day to add a course for the full quarter

Last day to submit applications for advanced credit examinations for first term

Independence Day holiday

Advanced credit examinations

Final examinations and first term end

JULY 25—THURSDAY	Second term begins
JULY 26—FRIDAY	Last day to add a course for the second term
AUG. 2—FRIDAY	Last day to submit applications for advanced credit examinations for second term
AUG. 17—SATURDAY	Advanced credit examinations
AUG. 23—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1963

REGISTRATION PERIOD

MAY 6-29	Advance Registration only for students in residence Spring Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 3-26	In-Person Registration for students in residence Spring Quarter, 1963, who did not complete Autumn Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
SEPT. 3-26	In-Person Registration for former students not in residence Spring Quarter, 1963. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is August 15.</i>
JULY 15	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 4-26	In-Person Registration for ALL new students.
SEPT. 26	Last day to register for Autumn Quarter, 1963. Note application deadlines above.
SEPT. 30-OCT. 4	Change of Registration by appointment only.

ACADEMIC PERIOD

SEPT. 30—MONDAY	Instruction begins
OCT. 4—FRIDAY	Last day to add a course
NOV. 1—FRIDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1964, due at Registrar's Office
NOV. 11—MONDAY	State Admission Day holiday
NOV. 22—FRIDAY	Last day to submit applications for advanced credit examinations
NOV. 27—DEC. 2	Thanksgiving recess (6:30 p.m. to 7:30 a.m.)
DEC. 7—SATURDAY	Advanced credit examinations
DEC. 11-17	Final examinations
DEC. 17—TUESDAY	Quarter ends

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this bulletin.

WINTER QUARTER, 1964**REGISTRATION PERIOD**

OCT. 29-NOV. 22	Advance Registration only for students in residence Autumn Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
DEC. 30-JAN. 2	In-Person Registration for students in residence Autumn Quarter, 1963, who did not complete Winter Quarter, 1964, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
DEC. 30-JAN. 2	In-Person Registration for former students not in residence Autumn Quarter, 1963. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 1.</i>
DEC. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
DEC. 20	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
DEC. 30-JAN. 2	In-Person Registration for ALL new students.
JAN. 2	Last day to register for Winter Quarter, 1964. Note application deadlines above.
JAN. 6-10.	Change of Registration by appointment only.

ACADEMIC PERIOD

JAN. 6—MONDAY	Instruction begins
JAN. 10—FRIDAY	Last day to add a course
FEB. 21—FRIDAY	Last day to submit applications for advanced credit examinations
FEB. 22—SATURDAY	Washington's Birthday and Founder's Day holiday
MAR. 7—SATURDAY	Advanced credit examinations
MAR. 13-19	Final examinations
MAR. 19—THURSDAY	Quarter ends

SPRING QUARTER, 1964**REGISTRATION PERIOD**

JAN. 27—FEB. 21	Advance Registration only for students in residence Winter Quarter, 1964. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
MAR. 24-26	In-Person Registration for students in residence Winter Quarter, 1964, who did not complete Spring Quarter, 1964, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
MAR. 24-26	In-Person Registration for former students not in residence Winter Quarter, 1964. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is March 1.</i>

MAR. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
MAR. 15	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
MAR. 24-26	In-Person Registration for ALL new students.
MAR. 26	Last day to register for Spring Quarter, 1964. Note application deadlines above.
MAR. 30-APRIL 3	Change of registration by appointment only.

ACADEMIC PERIOD

MAR. 30—MONDAY	Instruction begins
APRIL 3—FRIDAY	Last day to add a course
MAY 8—FRIDAY	Last day to submit applications for advanced credit examinations
MAY 23—SATURDAY	Advanced credit examinations
MAY 30—SATURDAY	Memorial Day holiday
JUNE 5-11	Final examinations
JUNE 7—SUNDAY	Baccalaureate Sunday
JUNE 11—THURSDAY	Quarter ends
JUNE 13—SATURDAY	Commencement

For further information concerning subsequent quarters, inquire at the Registrar's Office.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this bulletin.

OBSERVANCE OF UNIVERSITY RULES AND REGULATIONS

It is the University's expectation that a student will follow University rules and regulations as they are stated in the Bulletins. In instances where no appeal procedure is spelled out and the student is persuaded that a special set of circumstances makes appeal reasonable, he may appeal the application of specific rules or regulations to the Office of the Dean of the School or College in which he is enrolled in the case of an academic matter, or to the Office of the Dean of Students in the case of a nonacademic matter. These offices will either render a decision on the appeal or refer the student to the proper office for a decision.

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.

ADMINISTRATION

BOARD OF REGENTS

MRS. A. SCOTT BULLITT, <i>President</i>	Seattle
ALBERT B. MURPHY, M.D., <i>Vice-President</i>	Everett
JOSEPH DRUMHELLER	Spokane
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OFFICERS OF ADMINISTRATION

CHARLES E. ODEGAARD, Ph.D.	<i>President of the University</i>
FREDERICK P. THIEME, Ph.D.	<i>Provost of the University</i>
GLENN LEGGETT, Ph. D.	<i>Vice-Provost of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
HAROLD A. ADAMS, M.S.	<i>Director of Admissions</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>
RICHARD VAN CLEVE, Ph.D.	<i>Dean of the College of Fisheries</i>

FACULTY OF THE COLLEGE OF FISHERIES

The first date following a name indicates the beginning of service in the University. When two dates are given, the second, in parentheses, is the date of promotion to present academic rank.

- Bell, Frederick Heward, 1931, *Lecturer in Fisheries*
B.A., 1924, British Columbia
- Bell, Milo Carsner, 1953 (1957), *Associate Professor of Fisheries*
B.S., 1930, Washington
- DeLacy, Allan Clark, 1946 (1958), *Professor of Fisheries*
B.S., 1932, M.S., 1933, Ph.D., 1941, Washington
- Dollar, Alexander Melville, 1959 (1962), *Associate Professor of Fisheries*
B.S., 1948, M.S., 1949, California; Ph.D., 1958, Reading
- Donaldson, Lauren Russell, 1935 (1948), *Professor of Fisheries; Director of the Laboratory of Radiation Biology*
A.B., 1926, Intermountain Union College (Montana); M.S., 1931, Ph.D., 1939, Washington
- Fields, Paul Eldon, 1953 (1955), *Professor of Comparative Psychology*
A.B., 1926, A.M., 1927, Ohio Wesleyan; Ph.D., 1930, Ohio State
- Katz, Max, 1960 (1962), *Acting Associate Professor*
B.S., 1939, Ph.D., 1949, Washington
- Liston, John, 1957 (1960), *Associate Professor of Fisheries*
B.S., 1952, University of Edinburgh (Scotland); Ph.D., 1955, University of Aberdeen (Scotland)
- Lynch, James Eric, 1931 (1958), *Professor Emeritus of Fisheries*
B.A., 1917, M.A., 1921, Nebraska; Ph.D., 1929, California

Royce, William Francis, 1958, *Professor of Fisheries; Director of the Fisheries Research Institute*

B.S., 1937, Ph.D., 1943, Cornell University

Sparks, Albert Kirk, 1958, *Associate Professor of Fisheries*

B.S., 1947, M.S., 1949, Ph.D., 1957, Agricultural and Mechanical College of Texas

Thompson, William Francis, 1930 (1958). *Professor Emeritus of Fisheries*

B.A., 1911, Ph.D., 1930, Stanford

Van Cleve, Richard, 1948 (1958), *Professor of Fisheries; Dean of the College of Fisheries*

B.S., 1927, Ph.D., 1936, Washington

Welander, Arthur Donovan, 1937, (1958), *Professor of Fisheries; Professor in Laboratory of Radiation Biology*

B.S., 1934, M.S., 1940, Ph.D., 1946, Washington

Strickland, Helen D., *Librarian*

B.A., 1926, Hiram College

RESEARCH APPOINTMENTS

Ayyangar, Kilambi, *Research Assistant*

B.S., 1954, Andhra University, Waltair, India; M.S., 1961, University of British Columbia, Vancouver, B.C.

Chung, Jong Rak, *Research Assistant*

B.S., 1961, Washington

Dryfoos, Robert, *Research Assistant*

B.S., 1961, Washington

Ellis, James N., *Fisheries Biologist III*

B.S., 1942, Washington

Frick, Phyllis, *Laboratory Technician II*

B.S., 1957, Washington State

Greenough, Joseph, *Research Assistant*

A.B., 1959, Michigan

Guardia, Enrique, *Research Assistant*

B.S., 1961, Washington

Houghtby, Gary, *Assistant Bacteriologist*

B.S., 1956, M.S., 1961, Michigan State

Lichtenheld, Richard, *Fisheries Biologist I*

B.S., 1958, Colorado State

Lighthart, Bruce, *Research Assistant*

B.S., 1959, San Diego State

Raj, Harkisan, *Research Assistant Professor*

B.S., 1947, University of Bombay, Bombay, India; M.S., 1952, Ph.D., 1955, University of Poona, Poona, India

Simon, Raymond C., *Fisheries Biologist II*

B.S., 1957, M.S., 1960, Washington

Taub, Frieda B., *Research Assistant Professor*

B.A., 1955, M.S., 1957, Ph.D., 1959, Rutgers University

Ting, Robert Y., *Research Assistant*

B.S., 1955, Washington

Tripple, Mary Frances, *Laboratory Technician II*

B.S., 1961, Washington

Wedemeyer, Gary, *Research Assistant*

B.S., 1957, Washington

Wiebe, William, *Research Assistant*

B.A., 1957, Stanford

FISHERIES RESEARCH INSTITUTE

Anthony, Vaughn, *Research Assistant*

GENERAL INFORMATION

IN THE SPRING of 1861 three forward-looking Seattle citizens, Arthur A. Denny, Judge Edward Lander, and Charles C. Terry, deeded ten acres of land for the establishment of a new University in what was then Washington territory. Several months later, on November 4, 1861, the University of Washington opened the door of a new frame building where the twenty-two-year-old "principal," Asa S. Mercer, began the instruction of thirty-one students, many of them young men recruited from nearby logging camps.

By 1889, when Washington was admitted to the Union, the University had achieved a consistent program and an enrollment of more than one hundred students. But it was clear that the original building would soon be inadequate and that the University would need more room for development. In 1891 the new University site, the present 600 acre campus between Lake Washington and Lake Union, was selected. The first of the new buildings, Denny Hall, was completed in 1894 and occupied for the first time in September, 1895, when the University's enrollment was 425 students. (The original campus is now in the center of downtown Seattle. The Olympic Hotel stands on the ground occupied by the first University of Washington building).

Throughout its history the University has taken an active and earnest interest in the natural resources of the Northwest. This interest is evidenced by the establishment of a curriculum in mining engineering in 1893, the College of Forestry in 1907, and the College of Fisheries in 1919. In January of 1958, the Board of Regents of the University reaffirmed this interest and recognized the importance of fisheries to the economy of the area by incorporating the two fisheries groups on the campus, the School of Fisheries and the Fisheries Research Institute, into the re-established College of Fisheries. Food Science was established as a college curriculum in 1960.

PHILOSOPHY AND OBJECTIVES

The College of Fisheries was created to deal with the unique fisheries problems in the Northwest characterized by the rapid development and subsequent decline of great marine and anadromous fisheries. Its program and philosophy have been shaped by biological problems dealing with whole populations of fish, some of which have provided the first known examples of successful management of marine or anadromous species. Problems of equal magnitude arising from conflicting uses of waters essential for spawning of salmon have directed attention to fresh water. The importance of rapidly growing recreational fishing has further emphasized the importance of work in streams and lakes.

The undergraduate curricula followed by fisheries and food science students are designed to provide, in the earlier years, basic training in physical and biological science and, in the late stages of the program, broad coverage of professional topics in fisheries or food science. The aim is to produce at the bachelor's level graduates with a good general education, particularly in the basic sciences, and a level of professional competency which will enable them to deal confidently with the many and varied problems which await them in their future areas of employment.

The graduate program is designed to produce young scientists well grounded in basic and applied concepts in fisheries or food science and familiar with techniques and methods of modern research who can, hopefully, solve the basic biological problems which exist in the fields of fisheries and food science and, at the same time, promote more efficient, productive, and scientifically sound exploitation of the enormous national resources of the aquatic environment.

The fisheries and food science courses lay heavy emphasis on the particular situation of the Northwest, but this is done within a general context of wider interest arising from the international significance of these disciplines. Consequently, graduates from the College while eminently prepared for service within our own State and the Northwest area are also well able to fill positions in fisheries and food science in other parts of the United States of America and, indeed, of the world. The significant number of foreign students, sponsored by their home governments and international organizations, provides eloquent testimony of the unique situation of the College in the academic world and the degree of success which has been achieved in blending the needs of Northwest fisheries with those of the world at large in the formulation of the program.

COLLEGE FACILITIES

The College of Fisheries offers students an ideal balance of laboratory, classroom, and practical experience. The Fisheries Center houses the library, classrooms, laboratories, and general facilities as well as several research organizations. The building, constructed in 1949, is situated on the Lake Washington Ship Canal which connects Lake Washington, a large fresh-water lake, with the salt water of Puget Sound.

The branch library located in Fisheries Center contains research material covering subjects in fisheries, food science, and oceanography. It includes more than 14,000 bound volumes, 22,000 pamphlets, and currently receives more than 700 serial publications. All of the major abstract journals in the biological sciences are available in the library, as well as indexes to government research reports. Additional material needed for research work is obtained from other library collections on the campus or by interlibrary loan.

To assist in research and for teaching purposes, the College maintains a collection of about 250,000 preserved specimens, covering approximately 2000 species of fish from northern and southern oceans. As part of the practical experience and research program, the College has concrete fish ponds, connected to the Lake Washington Ship Canal by a fish ladder. Inside the Fisheries

Center, an experimental fish hatchery and salt water aquaria provide facilities for students to study the entire life cycle of the Pacific salmon as well as those of other fresh-water and salt-water fish. The Fish Behavior and Physiology Laboratory houses facilities for studying the behavior and swimming ability of fish.

In addition to the biological laboratories, there are complete laboratory facilities for both teaching and research in food science in the Fisheries Center. These include biochemical, microbiological and analytical laboratories, and a processing laboratory equipped with canning, freezing, smoking, and other food processing equipment.

A 67-foot, diesel-powered boat, with cabin laboratory, is operated by the College. The vessel, the "Commando," is used for instruction and research in Lake Washington, Puget Sound, and the North Pacific Ocean. It is capable of trawling to a depth of 1,000 fathoms, and is equipped for most other types of fishing used in the North Pacific.

Within two miles of the campus is located the headquarters of one of the Pacific Coast's largest fishing fleets. Puget Sound, in addition to its world-famous salmon and halibut fisheries, has extensive bottom fish, commercial oyster, clam, crab, and shrimp operations. Sports fishing, particularly for trout, is available in the Northwest's many lakes and streams. Full advantage is taken of the proximity of these natural resources in research and teaching.

THE FISHERIES RESEARCH INSTITUTE

The Fisheries Research Institute is a research branch of the College of Fisheries. The College's larger grants and contracts in the field of fishery biology are handled by the Institute under the direction of both teaching and research faculty. Employment on contracts and grants is given first to graduate or undergraduate students, and many graduate students are working toward their degrees on major fisheries problems which are being supported by contracts or grants.

The Institute was established in 1947 to continue research on salmon started in 1945 under the sponsorship of the Alaskan Salmon Industry, Inc. The research on salmon has continued and expanded under various industry, state, and federal contracts to most of the major salmon producing areas of Alaska and parts of the adjoining seas. Currently the principal salmon studies are: (1) ecology and population dynamics of red-salmon producing lakes, (2) migrations of salmon on the high seas, (3) effects of logging on salmon streams, (4) ecology of pink- and chum-salmon streams and nursery areas, and (5) guiding migrant salmon. Much of this work on salmon is important to the United States section of the International North Pacific Fisheries Commission, and members of the Institute staff participate in the meetings of this commission.

Research on problems other than salmon has been expanding rapidly. Current projects include benthic invertebrates of the North Pacific, several studies on oysters, ecology of paralytic shellfish toxicity, and studies of blood parasites of fish.

The Institute maintains headquarters on the University campus and semipermanent field stations at five locations in Alaska. A large amount of field and laboratory equipment is available together with a special collection of fisheries records from the Pacific Northwest and Alaska.

Provision is made to conduct research on fisheries problems in collaboration with other colleges and departments in the University, especially with engineering, economics, and law. Extensive use is made of the Pacific Northwest Computer Laboratory on the campus where IBM 650 and IBM 709 equipment is available.

RELATED ACTIVITIES

Offices are maintained in the Fisheries Center by the Washington State Department of Fisheries and the Washington State Department of Game. The Laboratory

of Radiation Biology, a national center for research in aquatic radiobiology supported by the Atomic Energy Commission, also has its quarters in the Fisheries Center.

In the city of Seattle are offices and laboratories of the U.S. Fish and Wildlife Service, and the headquarters of the International Pacific Halibut Commission is located on the campus.

The Friday Harbor Laboratories on San Juan Island, about eighty miles north of Seattle, are under the administration of the Graduate School and provide unique opportunities for teaching and research in the marine sciences. During the summer, courses in algology, marine zoology, fisheries, oceanography, and meteorology are offered for advanced undergraduate and graduate students.

ADMISSION TO THE UNIVERSITY AND TO THE COLLEGE

PRELIMINARY STATEMENTS

The Board of Admissions, which is appointed by the President, is responsible for the interpretation and administration of the regulations governing admission to the University.

The University recognizes high school diplomas, college credits presented for advanced standing, and college degrees earned in the following institutions: (1) high schools accredited by the Washington State Department of Public Instruction; (2) out-of-state high schools accredited by their state university and state department of public instruction, or by the regional accrediting association of the area; (3) colleges and universities accredited by their regional accrediting association.

Resident. Defined for purposes of admission and/or assessment of fees as an individual who has been domiciled in the state of Washington for one year immediately prior to his registration. The domicile of a minor is that of his parents or his legal guardian. The children of federal employees residing within the state of Washington and the children and spouses of staff members of the University are considered as residents for tuition purposes.

Nonresident. An applicant whose credentials are received from a school or college located outside the state of Washington. An applicant who believes himself eligible for resident status may apply for reclassification through the Office of Residence Classification which has final authority in determining such status.

Qualified Student. One whose scholastic standing and preparation meet the standards for admission to the University.

Regular Student. One who fulfills the following requirements: (1) has been granted regular admission to a college or school of the University; (2) whose current schedule for credit is satisfactory to the dean of his college or school; (3) has received medical clearance from the Student Health Service and has completed all of the required steps for registration, including the payment of tuition and fees, the filing of class cards, and the depositing of registration materials at Sections.

Grade-point averages. These are based on a four-point system in which A = 4, B = 3, C = 2, D = 1, E = 0. An adjustment to this system is made as necessary in the computation of grade-point averages earned at other institutions.

ADMISSION OF WASHINGTON RESIDENTS

ELIGIBILITY FOR ADMISSION WITH FRESHMAN STANDING

Undergraduate programs offered by the University lead to the baccalaureate degree; students, therefore, are admitted when, in the judgment of the University, they appear qualified to pursue a degree program with a reasonable probability of success. In making this judgment, the University's Board of Admissions con-

siders the applicant's total record, including such factors as scholastic achievement in a college preparatory program, recommendations of the high school principal or counselor, rank in class, and scores on any nationally administered tests associated with college entrance.

Scholastic achievement is measured largely in terms of the criteria listed below. All students entering the University are expected to meet these criteria. Non-residents and students who enter with advanced standing will find additional admission criteria in subsequent sections.

SCHOLASTIC CRITERIA

1. Graduation with diploma from an accredited high school.
2. Achievement of an over-all high school grade-point average of at least 2.50 in courses completed after September, 1960, and a grade-point average of at least 2.00 in courses completed prior to September, 1960.
3. Completion of a college preparatory program of at least 16 units to include the following:

a. English	at least 3 units
b. One foreign language	at least 2 units
c. College preparatory mathematics	at least 2 units
d. One laboratory science	at least 1 unit
e. Social science	at least 2 units
f. Electives from the above subjects	at least 2 units

Additional electives may be chosen from any subjects acceptable for high school graduation.

Intermediate algebra and trigonometry are prerequisites for the first courses in mathematics included in all College of Fisheries curricula. Students who plan to enter this College can, and preferably should, complete these courses in addition to the elementary algebra and plane geometry which normally are the two units of college preparatory mathematics. Without this additional preparation, students will probably find it necessary to spend an extra quarter at the University in completing work for the baccalaureate degree. It is recommended also that students study chemistry, physics, and if possible, biology while in high school.

Because an appropriate choice of high school electives serves to strengthen a student's preparation, the University will give this part of a student's record the same careful attention it gives to other aspects of his qualifications.

Junior High School Courses. The University recognizes college preparatory courses given in the junior high school and assigns them the same value as equivalent courses offered by the high school. Students who elect these subjects in the junior high school may subsequently achieve a superior degree of competence in related subject areas in high school.

Accelerated, Honors, and Advanced Placement Courses. The University encourages qualified students to extend themselves academically by taking advantage of advanced, accelerated, and honors courses offered by their schools. Successful participation in such challenging opportunities assures superior academic preparation and serves to identify those students more likely to profit from University-level honors courses.

The University of Washington grants placement and/or credit, at the discretion of the University department concerned, on the basis of scores earned in College Entrance Examination Board Advanced Placement Examinations, and on the basis of placement examinations administered to entering students (see "Required Tests and Examinations," page 23).

ELIGIBILITY FOR ADMISSION WITH ADVANCED STANDING

A qualified student in good standing at an accredited institution may apply for admission with advanced standing. Such an applicant is expected to have the same high school preparation as the student who enters as a freshman, and to

have a college grade-point average which meets the standards herein specified.

With fewer than 45 acceptable credits, an applicant must present a grade-point average of 2.50 in high school work completed after September, 1960; a 2.00 grade-point average in such work completed prior to this date; and a 2.00 cumulative average in all college work.

With 45 or more acceptable credits an applicant is expected to present a cumulative and last-term grade-point average of at least 2.00.

The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted. Regulations concerning the transfer of credit may be found on page 47.

ADMISSION OF SPECIAL STUDENTS AND AUDITORS

Non-high school graduates who are 21 or older and legal residents of Washington may apply to the Board of Admissions for admission with special standing. With their application they must submit all available records of secondary school and college study. Special students may register in and take for credit whatever courses the dean of the college permits, but may not participate in student activities or receive degrees. By fulfilling conditions specified by the Board of Admissions, special students may change their status to that of regular students and may receive degrees.

Persons 21 or older may register as auditors in nonlaboratory courses or the lecture sessions of laboratory courses by obtaining the consent of the dean of the college and the instructors of the courses. Auditors do not participate in class discussion or laboratory work. They may receive credit for audited courses only by enrolling in them as regular students in a subsequent quarter.

ADMISSION OF NONRESIDENTS

ADMISSION OF NONRESIDENTS TO UNDERGRADUATE STANDING

Applications from nonresidents will be considered, but first preference is given legal residents of the state of Washington, and sons and daughters of University of Washington alumni residing outside the state.

Nonresident applicants are selected on the basis of their preparation and scholastic standing. In general, a freshman applicant must be eligible to enter the university of his own state, and satisfy the foregoing scholastic criteria with a 3.00 (B) grade-point average or place in the upper 25 per cent of his graduating class.

An applicant for admission with advanced standing with fewer than 45 college credits must have a cumulative grade-point average of at least 3.00 in standard college courses as well as a high school grade-point average of at least 3.00 or have been in the upper fourth of his class. An applicant presenting more than 45 credits for advanced standing must present a 2.70 grade-point average in standard college courses.

Sons and daughters of University of Washington alumni are admitted according to resident standards but are required to pay the regular nonresident tuition fees. Applicants for admission to curricula in which the University serves on a regional basis will be accorded special consideration by the Board of Admissions.

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Applicants for admission with graduate or advanced undergraduate standing are expected to meet the same general requirements as nonresidents of Washington educated in American schools. However, they must file their credentials before March 1 to be considered for admission Autumn Quarter, or six months before the opening of another quarter in which they may wish to enroll. In addition, they must demonstrate a satisfactory command of the English language, and must have sufficient funds available in the United States to meet their expenses.

The official record of the Canadian student is the matriculation certificate or university admission certificate of his province. Canadian and foreign students who have been in university attendance must have official transcripts forwarded as required of all students. High school graduates and university transfer students must meet the scholarship requirements for nonresident students. See page 20.

UNDERGRADUATE ADMISSION, EXCEPTIONAL CASES

(See page 47.)

ADMISSION TO THE GRADUATE SCHOOL

Basic requirements for admission to the Graduate School are a bachelor's degree from an institution of recognized standing, a grade-point average of 3.00 in the junior and senior years of college work, approval of the Graduate School, and approval of the department in which the work is to be taken. For complete information, see the *Graduate School Bulletin*.

ADMISSION PROCEDURE

Requests for Application for Admission forms and correspondence regarding admission to any college or school of the University, undergraduate or graduate, should be addressed to the Office of Admissions, University of Washington, Seattle 5, Washington. Graduates of high schools and junior college students in the state of Washington may obtain this form from their principals.

Applications and required transcripts must be filed with the Office of Admissions prior to the following dates in order to be assured of consideration for admission to the quarter for which application is being made: July 15 for Autumn Quarter, December 1 for Winter Quarter, March 1 for Spring Quarter, May 15 for Summer Quarter.

All records become a part of the official file and can neither be returned nor duplicated for any purpose. Failure to submit complete credentials will be considered a serious breach of honor, and may result in permanent dismissal from the University.

A leaflet giving general information and instructions for registration is mailed with the Notice of Admission. In the event of a discrepancy, instructions in the leaflet supersede those found in earlier publications. *The University assumes no responsibility for applicants who come to the campus before they have been officially notified of their admission.*

The admissions credentials of applicants who do not register for the quarter to which they have been admitted are normally retained in the Office of Admissions for a period of one year from the date of application. At the end of this period, credentials on file are discarded unless the applicant has notified the Office of his continued interest in attending the University or of his enrollment in the Evening Classes program. Should a student wish to renew his application after the one-year lapse, he must submit new credentials in advance of the date given above for the quarter desired.

FOR FRESHMAN STANDING

An application form, obtained from the University's Office of Admissions or from a Washington high school, should be completed according to instructions appearing on the form and returned to the Office of Admissions.

Students may apply through their high schools on completion of the first semester of the senior year. Those who are qualified will be issued notices of early or conditional admission which become valid on graduation with a grade-point average of no less than 2.50 for the final semester. Others also will be notified of their admission status.

Scores on a nationally administered college aptitude test are not required. However, they may be helpful in evaluating a borderline student's probability of success.

FOR ADVANCED UNDERGRADUATE STANDING

An application form, obtained from the University's Office of Admissions or from a Washington junior college should be completed according to instructions appearing on the form and sent to the Office of Admissions. In addition, the applicant should request the principal of his high school and the registrar of each college he has attended to forward an official transcript of his record to the University's Office of Admissions. When these credentials have been evaluated, the applicant will be notified of his admission status.

FOR GRADUATE STANDING

An application form, obtained from the University's Office of Admissions, should be completed according to instructions appearing on the form and returned to the Office of Admissions. In addition an applicant should request the registrar of each college or university in which he has been enrolled as an undergraduate and/or graduate student to forward *two* official transcripts to the University's Office of Admissions. When these credentials have been evaluated, the applicant will be notified of his admission status. The student will find it convenient to have an additional copy of the record for reference.

VETERANS

ADMISSION OF VETERANS

Veterans and children of deceased veterans should meet the general admission criteria and follow the general procedures outlined for all applicants. Applications for and questions about government aid should be addressed to the Veterans Administration Regional Office.

WORLD WAR I OR II VETERANS

Under certain conditions a veteran of World War I or II who is not eligible for Veterans Administration benefits is fully or partly exempt from tuition charges. See page 51.

KOREAN VETERANS

A Korean veteran under Public Law 550 should obtain admittance to the University prior to making application for a Certificate for Education and Training, thus eliminating the chance of obtaining a certificate valid for an incorrect degree. If the veteran has any questions regarding application for a certificate, he should consult the Veterans Division, Safety Division Building. Regulations concerning the Certificate are listed on page 49. Educational allowance payments are made directly to the veteran by the Veterans Administration after the veteran and institution submit a monthly attendance certification.

DISABLED VETERANS

A veteran with a disability under Public Law 894 should contact a training officer in the nearest Veterans Administration Office approximately four weeks prior to registration.

CHILDREN OF DECEASED VETERANS

Public Law 634 grants federal benefits to children of deceased veterans of World War I, World War II, or the Korean Conflict who died as a result of injury or disease incurred or aggravated while in the service. Information regarding eligibility under this law should be requested from a Veterans Administration Regional Office.

The Certificate for Education and Training issued to those eligible persons by the Veterans Administration is to be presented, along with the Program of Studies, to the Veterans Division, Safety Division Building, as soon as registration is completed.

Credit requirements for monthly subsistence for Public Law 634 students are the same as those listed for Public Law 550 students; however, Public Law 634 students may not be authorized for less than half-time subsistence.

REQUIRED TESTS AND EXAMINATIONS

Washington Pre-College Testing Program

This grade prediction test is required of all entering freshmen, including those transferring to the University with fewer than 45 credits. In order to identify transfer students needing remedial instruction in English, the test is also required of those who have not completed a course equivalent to English 101 (English composition). High school seniors are advised to arrange through their high schools to take this test in the spring when it is offered throughout the state of Washington. Nonresidents of Washington may take the test at the time of their registration according to instructions mailed with the notice of admission. Sample copies are not available. Special, foreign, blind students, and auditors are exempted.

The several parts of this test have been selected because of their proven value for the prediction of grades most likely to be earned by a student. The results of the test are used by departmental advisers as an aid in assigning students to appropriate sections in English composition and other subjects. Therefore, it is advisable that the student bring a copy of the results with him when he comes for his first conference with his counselor or adviser.

Mathematics Placement Tests

One section of the Pre-College Test evaluates a student's mastery of intermediate algebra and plane geometry, while an additional placement test evaluates his knowledge of trigonometry. Satisfactory scores on these qualify a student to enroll in Mathematics 104 (Trigonometry) or Mathematics 105 (College Algebra).

Those who fail to qualify in both algebra and trigonometry may choose one of the following alternative plans:

1. Pass Mathematics 101 and then 104, or 105 or both. No credit is given for Mathematics 101 to students who have completed the third semester of high school algebra.
2. Pass Mathematics 103, in which the first four weeks are devoted to a review of intermediate algebra and the last six weeks to the study of plane trigonometry equivalent to Mathematics 104. The satisfactory completion of this course qualifies the student to enroll in Mathematics 105 (College Algebra).

Students who have studied trigonometry, fourth semester algebra, mathematical analysis, or similar subjects in high school, will be placed in the next appropriate course at the University according to their scores in additional placement tests given by the Department of Mathematics. It is advisable to review before taking these examinations. This generally applies to students entering such fields as engineering, architecture and urban planning, fisheries, forestry, pharmacy, mathematics, and the physical and marine sciences.

Medical Examination

A student entering the University for the first time, or returning to the University after an absence of more than one calendar year, or who has previously attended Summer Quarter classes but is entering regular University classes for the first time, is required to submit to the Student Health Service (Hall Health Center) a form containing his health history and a report of a physical examination by a physician. The form will be sent to new students by the Office of Admissions, and to returning former students by the Registrar. This examination,

which is required before a student may register, is taken at the student's expense. A chest X ray, also required of the above students, is given at the Student Health Service without charge.

With the exception of Canadian students, who will follow the above instructions, foreign students must take the required physical examination at the Student Health Service when they arrive on the campus.

REGISTRATION

PROCEDURE

ALL students, currently in school, who plan to register for a succeeding quarter (Summer Quarter excepted) must register by Advance Registration and pay fees by the stated deadline. Students are held responsible for knowing and observing registration procedures, dates, and deadlines which appear in the bulletins, in "Official Notices" in the *Daily*, and on campus bulletin boards.

New students are given appointments when they are notified of admission, and they receive complete directions for registering at the time of registration.

Students expecting to return to the University after an absence of a quarter or more (excluding Summer Quarter) must register by In-Person Registration. The required registration appointment may be obtained by writing to, calling at, or telephoning the Registrar's Office at the time specified in the Calendar, but in *no case* later than the stated deadline (see pages 4-9).

ADVISING

After notification of admission, and before registration, new students should visit or write to the College for help in planning their course programs. Academic and other counseling of fisheries students is given by faculty advisers in the College.

REGISTERED CREDITS ALLOWED EACH QUARTER

Except with the consent of his dean, no student may be registered for less than 12 credits (or the equivalent) or more than 16 credits (or the equivalent) or the number called for in the prescribed curricula, exclusive of physical education activity courses and lower-division military, naval, or air science courses. In no case may a student be registered for, or receive credit for more than 20 credits (or the equivalent) of work, exclusive of physical education activity courses, and lower-division military, naval, or air science courses. Work taken in noncredit courses or to remove entrance deficiencies, or concurrently in evening classes, by correspondence study, or in another collegiate institution, must be included in the computation of the total registered credits allowed.

CHANGES OF REGISTRATION

After students have registered, they cannot change their schedules except with permission of the Dean of the College. No student is permitted to make a registration change that involves entering a new course after the first calendar week of the quarter. After that time no student may register without the consent of the Dean and the instructor whose class the student wishes to enter.

WITHDRAWAL FROM COURSES OR FROM THE UNIVERSITY

See page 49.

SCHOLARSHIP

Grade points per credit are awarded on the following basis: a grade of A earns 4 points; B, 3 points; C, 2 points; D, 1 point. The grade of E or EW signifies failure and the grade point is 0. The quarterly and cumulative grade-point averages are computed by multiplying the grade point received in a course by the total number of credits the course carries, totaling these values, and dividing by the

total number of credits the student attempted. Courses for which any of the following symbols are recorded are not considered in determining the grade-point average: I, N, S, W, PW, X. Grade-point averages are calculated on the basis of all grades received in courses which carry academic credit, including courses repeated. Grades received in repeated courses do not cancel or replace any other grades. Only University of Washington residence credits will be used in these computations.

Any undergraduate student who has completed three or more quarters in the University and whose cumulative grade-point average is below 2.00 shall be placed on academic probation. Any undergraduate student who has completed not more than two quarters at the University shall be placed on probation when his cumulative grade-point average is below 1.80. The dean of the school or college in which the student is enrolled shall notify the student as soon as possible that he is on probation. Such action will be noted permanently on the student's official academic record.

ACADEMIC PROBATION

Academic probation is essentially a warning to the student that he must show improvement if he is to remain in the University. University regulations regarding scholastic eligibility for participation in intercollegiate athletics and other student activities shall be recommended to the Senate by the Faculty Committee on Intercollegiate Athletics and the Faculty Committee on Student Welfare respectively.

An undergraduate student on academic probation will be removed from probation at the end of any quarter in which his cumulative grade-point average reaches 2.00 or better.

Any undergraduate student on academic probation will be dropped: (1) if he fails to attain at least a 2.00 for the following quarter's work; or (2) if he fails to attain a 2.00 cumulative average at the end of the two subsequent quarters. Any student dropped under this rule will be notified in writing of this action by the dean of the school or college in which he is enrolled.

Only under exceptional circumstances will a student dropped under low scholarship rules be readmitted to the University. Such a student will be readmitted only at the discretion of the dean of the school or college to which he seeks admission. A student readmitted after being dropped under these rules will enter on academic probation. Such a student will be dropped: (1) if he fails to attain a 2.00 for the following quarter's work; or (2) if he fails to attain a 2.00 cumulative average at the end of two quarters. He will be removed from probation at the end of the quarter in which his cumulative grade-point average reaches 2.00 or better.

A senior who has completed the required number of credits for graduation but whose work in what would normally be his final quarter places him on probation will not receive a degree until he has been removed from probation. A senior who has completed the required number of credits for graduation but whose work in his last quarter results in his being dropped for low scholarship shall not receive a degree until he has been readmitted and removed from probation.

Senior standing is attained when 135 credits, plus the required quarters of physical education, have been earned. Of the work of the senior year (45 credits), at least 35 credits must be earned in three quarters of residence. The remaining 10 credits may be earned either in residence or in this University's evening classes or correspondence courses.

QUALIFICATIONS FOR GRADUATION

MINIMUM SUBJECT REQUIREMENTS

The University credit requirement for graduation is 180 academic credits (including Health Education 110 or 175) and the required quarters of physical education activity. The College of Fisheries requires that 9 credits or the equivalent in English 101, 102, and 103 (English Composition) be included in the total. At least

60 of the 180 credits must be in upper-division courses, those numbered 300 and above. A total of at least 36 credits in fisheries and food science is required. For graduation, students must have a cumulative average of 2.00 (C) in fisheries and food science courses and an over-all average of 2.00 (C) in all courses. Advanced ROTC courses do not count as upper-division credit, and no more than 18 credits in advanced ROTC courses may be counted toward graduation.

Students who transfer from other institutions are normally required to earn at least 10 credits in their major subject in this College.

MILITARY TRAINING

Military programs are available to University students on a voluntary basis.

The Departments of Air Science, Military Science, and Naval Science conduct the ROTC programs under agreements between the University and the United States Air Force, Army, and Navy. At the University, these programs are coordinated by the Dean of the College of Engineering. Complete descriptions of the military training programs may be found on pages 49 and 50.

PHYSICAL EDUCATION ACTIVITY COURSES

Students who enter the University as freshmen are required to complete one physical education activity course each quarter for the first three quarters of residence. In fulfilling the foregoing requirement, all students must pass a swimming test or satisfactorily complete one quarter of swimming. In fulfilling the three-quarter requirement, no activity course may be repeated for credit. Regulations concerning activity courses may be found on page 50.

HEALTH COURSES

All students who enter the University as freshmen are required to take Health Education 110 (women) or 175 (men) within the first three quarters of residence. The health education course requirement may be satisfied by passing a health-knowledge examination. Successfully passing this test exempts the student from the requirement but does not grant credit for Health Education 110 (women) or 175 (men). Veterans with one year or more of active service are exempt from this requirement.

ESTIMATE OF YEARLY EXPENSES

The figures given below are minimum estimates for an academic year, which includes Autumn, Winter, and Spring Quarters. Living costs and personal expenses vary widely with the needs of the individual student.

Tuition, Incidental, and Other Fees

Full-time resident student	\$300.00
Full-time nonresident student	600.00

<i>Athletic Admission Ticket</i> (optional)	6.50
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<i>Health and Accident Insurance</i> (optional)	17.25
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<i>Extra Service Charges and Rentals</i>	38.50
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Military uniform deposit, breakage ticket, and locker charges.

<i>Books and Supplies</i>	90.00
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Board and Room

Room and meals in Men's Residence Halls	720.00
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Room and meals in Women's Residence Halls	660.00-765.00
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Room and meals in fraternity or sorority house (Including dues and social assessments.)	670.00-760.00
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Initial cost of joining is not included; this information may be obtained from the Interfraternity Council or Panhellenic Council.

<i>Personal Expenses</i>	300.00
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FEES, EXTRA SERVICE CHARGES, AND RENTALS

All fees, extra service charges, and rentals are payable in United States dollars at the time of registration. The University reserves the right to change any of its fees and charges without notice.

The fee schedules for resident and nonresident students, appearing on pages 52 and 53, apply to the academic year (Autumn, Winter, and Spring Quarters). Summer fees are listed in the *Summer Quarter Bulletin*.

STUDENT ACTIVITIES AND SERVICES

ASSOCIATED STUDENTS

Membership in the Associated Students of the University of Washington, the central organization which conducts all student activities, is required of all regularly enrolled students. Through the ASUW Board of Control and its various committees and boards, students assume major responsibility in the government of student life. The ASUW helps to finance the programs of athletics, debates, concerts, lectures, and many other activities and facilities, including the University of Washington *Daily* and the Student Union Building.

FISHERIES CLUB

The students of the College of Fisheries formed the Fisheries Club in 1922. Since its beginning, the Club has been the center of extracurricular social and educational activities for the College students.

Meetings are held monthly, usually with prominent speakers from the various fields of the fishing industry. Frequently motion pictures are shown which deal with fisheries all over the world. In the past years the students have organized the Open House of the College of Fisheries. In addition the Club has its annual salmon bake and other social gatherings.

The Club has aided in procuring summer employment for many Fisheries students.

SCHOLARSHIPS AND LOANS

The University offers a number of awards for outstanding academic achievement. Some are given by the University, and many others are available through the generosity of friends and alumni. Information concerning the list of current awards and loans may be obtained from the Office of the Dean of Students.

Several scholarships and awards are available for students in the College of Fisheries. These are:

WALT SIMONSEN MEMORIAL SCHOLARSHIP, \$150. Awarded by the Washington State Sportsmen's Council to an outstanding senior student in fisheries, forestry, or game management.

THE NORTHERN COMMERCIAL COMPANY SCHOLARSHIP, \$500. Awarded to a senior or graduate student in fisheries technology.

ASSOCIATION OF PACIFIC FISHERIES SCHOLARSHIP, \$300. Awarded to an entering freshman in the College of Fisheries.

WILLIAM FRANCIS THOMPSON SCHOLARSHIP, \$250. Awarded to an undergraduate or graduate student in fisheries.

CROWN ZELLERBACH FOUNDATION SCHOLARSHIP, \$500. Awarded to an undergraduate or graduate student in fisheries biology.

PACIFIC FISHERIES BIOLOGIST SCHOLARSHIP, \$100 (every third year). Awarded to an undergraduate or graduate student in fisheries biology.

BUREAU OF COMMERCIAL FISHERIES FELLOWSHIP, \$3000-\$4000. Awarded to a graduate student in fisheries biology or in food science.

University Comptroller loans, National Defense Education Act loans, and emergency loans are administered by the Office of the Dean of Students.

The University of Washington awards 100 tuition scholarships each academic year to worthy students from other countries. There are no scholarships available for the Summer Quarter. These awards are made on the basis of the academic record of the student, recommendations from his professors, his need for such assistance, and the availability of such openings in his department at the University. These scholarships cover tuition only and are administered by the Foreign Exchange Scholarship Committee, Foreign Students Office, University of Washington, Seattle 5, Washington, U.S.A. Application for these scholarships must be made by March 1 for the following year.

OFFICE OF THE DEAN OF STUDENTS

The Office of the Dean of Students is concerned with the general welfare of students and welcomes correspondence and conferences with both parents and students. This Office works closely with the advisory system of the colleges and schools of the University; it directs students to faculty advisers, the Counseling Center, and other persons and agencies offering information and assistance with personal and social problems. The Dean of Students Office also has current information on Selective Service Regulations.

The Foreign Students Office operates through the Office of the Dean of Students. The Foreign Student Adviser and his staff offer guidance on all nonacademic problems to students from other countries. Questions about immigration regulations, housing, social relationships, personal problems, finances, minimum course requirements, and employment should be referred to this Adviser. Students who are interested in study abroad may obtain from him information about schools in other countries and about Fulbright and other scholarships.

COUNSELING CENTER

The Counseling Center in Lewis Hall Annex offers vocational and educational counseling to students who need help in their adjustments to college. The staff of the Center, which includes vocational counselors and psychologists, works closely with other student services and supplements the academic advisory program.

HOUSING

Information and applications for residence in University-owned housing for single persons may be obtained by writing to the Manager, Men's Residence Halls, 1201 N.E. Campus Parkway, Seattle 5, or to the Manager, Women's Residence Halls, University of Washington, Seattle 5. Until August 1, preference in assignment to vacancies is given to students under twenty-one years of age; thereafter, assignments are made in the order of application. Prospective students may apply for the residence halls prior to their acceptance by the University but not before April 15.

University regulations require that women students under twenty-one who do not live at home must live in approved group residences such as the Women's Residence Halls, sororities, and church-sponsored living groups. Other types of living arrangements must be reported to the Dean of Women and be approved by the student's parents or guardian.

Information about fraternities or sororities may be obtained by writing to the Interfraternity Council or the Panhellenic Council, Student Union Building, University of Washington, Seattle 5.

The Office of Student Residences maintains listings of off-campus rooms, rooms with board, housekeeping rooms, apartments, and houses which are available to University students. These listings, however, must be consulted in person.

Teaching and research assistants and other part-time sub-faculty personnel are given first priority for assignment to University-owned housing facilities for married students. Second preference for assignment to Union Bay Village or Sand Point Homes is given to graduate, medical, dental, and law students who have

children. Prospective students are eligible to apply when they have been accepted for admission. Write to the Office of Student Residences, 23 Administration Building, for further information and application forms.

A complete statement of University housing policy appears in the *Student Handbook of University Rules and Regulations* and the *Housing Bulletin*.

HEALTH SERVICES

The University maintains a health service and infirmary to help guard against infectious diseases and incipient ill health.

The infirmary receives bed patients at any hour and provides nursing care, medicines, and the attendance of a staff doctor up to one week each quarter free of charge. For a period longer than one week, a charge of \$2.00 a day is made. At their own expense, infirmary patients may consult any licensed physician in good standing.

Health and accident insurance for students is available at the time of registration.

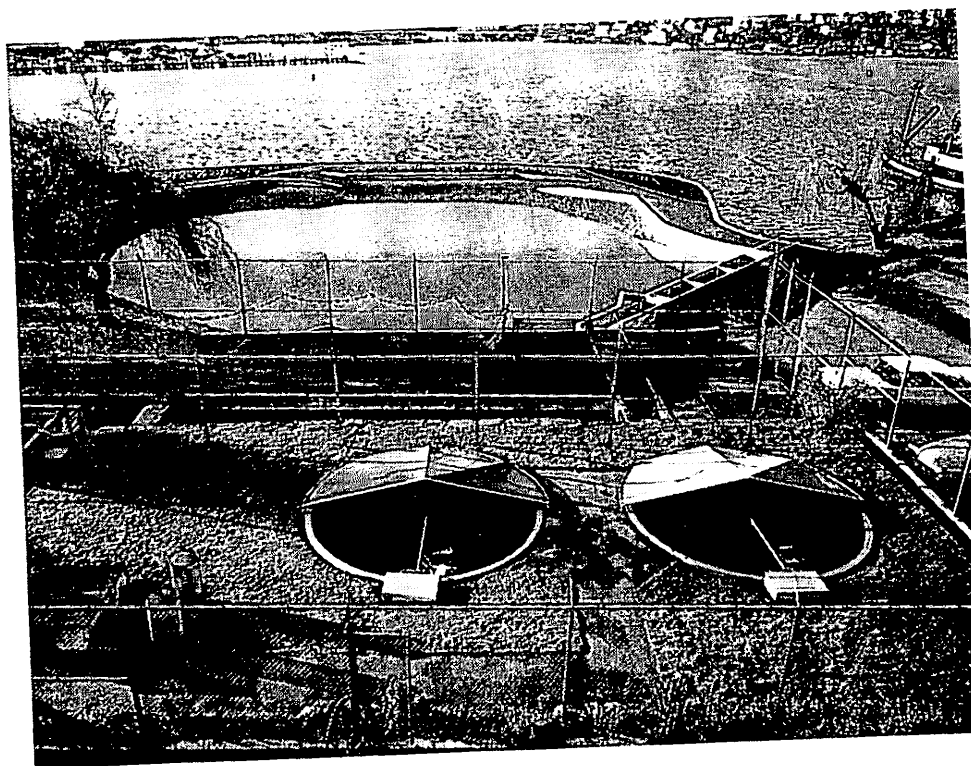
EMPLOYMENT

Part- and full-time work off campus may be obtained through the University Placement Office. Applications are accepted from students or graduates of the University and from the wives or husbands of University students. Because job listings change rapidly, application must be made in person after residence in Seattle has been established. Placement in jobs on the campus is handled by the Personnel Department and the ASUW Personnel Office.

The College of Fisheries assists students in the College to obtain summer employment while in the University and also to obtain permanent employment when they graduate. Some Research Assistantships furnishing part-time employment for students are available in the College. Both summer and part-time employment during the scholastic year are frequently available with the research organizations which are associated with the College of Fisheries on or near the campus and elsewhere in the Northwest. The Fisheries Research Institute normally hires students for summer work in the field and usually has several part-time positions available during the school year. Similar work is available in the Washington State Department of Game, Washington State Department of Fisheries, the U.S. Fish and Wildlife Service, the International Pacific Halibut Commission, Laboratory of Radiation Biology, Oregon Fish Commission, the International Pacific Salmon Fisheries Commission, and the Alaska Department of Fisheries. These jobs may be located within the state of Washington but frequently take the students to Alaska or elsewhere in the United States. These agencies normally interview students at the College of Fisheries during the Winter Quarter for the purpose of choosing both permanent employees and employees for temporary summer work. Fisheries students are encouraged to seek summer work in the field to gain valuable experience in both fisheries biology and fisheries or food technology.

Graduate students in the College of Fisheries are in a very favorable position to pursue an active research program leading to advanced degrees. Members of the instructional staff of the College are engaged in research programs that keep them abreast of the rapidly developing special fields of fisheries and food research. The fine physical facilities of the College provide many special laboratories where research may be conducted on thesis problems.

In addition to the opportunities for graduate work at the College of Fisheries, the federal government, International Fisheries Commissions, and State Fisheries Departments have research staffs working in laboratories on or near the campus. Many of the senior research members of the cooperating fisheries research laboratories and in industry are lecturers in the College. Graduate students, besides finding financial support in such laboratories, may, under special arrangements, carry out research which upon approval may be used to satisfy the thesis requirements for the advanced degree.



THE COLLEGE PROGRAMS

THE COLLEGE PROGRAMS

The College of Fisheries offers courses leading to the degrees of Bachelor of Science in Fisheries, Bachelor of Science with a major in Fisheries, Bachelor of Science with a major in Food Science, Master of Science, and Doctor of Philosophy.

The College programs are designed to provide both the scientific training and the professional competency necessary for graduates to satisfy the various needs of their chosen fields. A Bachelor of Science in Fisheries is granted to students successfully completing a prescribed curriculum. Three options are offered: marine fisheries biology, freshwater fisheries biology, and invertebrate fisheries. A Bachelor of Science with a major in Fisheries is granted to students successfully completing an elective curriculum including at least 36 fisheries credits. A Bachelor of Science with a major in Food Science is granted to students successfully completing a specified core curriculum and appropriate electives. Further specialization within these areas may be undertaken in graduate studies as preparation for careers in teaching and research.

BACHELOR'S DEGREES

Students working toward bachelor's degrees must qualify for admission to the University and the College. Course requirements for each degree are described below. General requirements for all degrees include physical education, scholarship and minimum credits, and senior-year residence.

Students should apply for bachelor's degrees during the first quarter of the senior year. If not more than ten years have elapsed since the date of a student's entry into the school or college in which he is to graduate, he may choose to graduate under the requirements set out in either the bulletin published by the appropriate school or college most recently prior to the date of his entry, or that published most recently prior to his anticipated date of graduation; provided, that when, in the opinion of the faculty of the school or college or a departmental executive officer or a dean acting for such faculty, substantial changes have been made in the curriculum since the student's entry, the student's choice shall be subject to the approval of the appropriate faculty, executive officer, or dean. Disapproval of the student's choice shall be faculty action and subject to the procedures of the Faculty Code. All responsibility for fulfilling graduation requirements shall rest with the student concerned. No student whose standing is in any way provisional can have an application for degree accepted.

FISHERIES

BACHELOR OF SCIENCE IN FISHERIES

A student may major in marine fisheries biology, freshwater fisheries biology, or invertebrate fisheries. He must take the courses required for all options, complete the required courses for his selected option, and earn a minimum of 30 credits from the list of recommended courses. At least 20 of the credits from the group of recommended courses must be in subjects other than fisheries.

Required courses for all Fisheries options:

Chemistry 100 (Chemical Science) or 101, 140, 150, 151, 160 (General), 170 (Qualitative Analysis), 221 (Quantitative Analysis); English 101, 102, 103 (Composition); Fisheries 101, 301, 303, 495 (6 credits); Mathematics 104 (Plane Trigonometry), 105 (College Algebra); 281 (Elements of Statistical Method) or 391 (Elementary Probability); Health Education 110 or 175; humanities or social sciences to equal 10 quarter credits; Zoology 111, 112 (General).

OPTION A. MARINE FISHERIES BIOLOGY

Required courses:

Fisheries 402, 405 or 406, 425, 426, 427; Mathematics 124 (Calculus with Analytic Geometry); Oceanography 203 (Introduction to Oceanography) or 390 (General Oceanography); Zoology 453-454 (Comparative Anatomy of Chordates) or 456 (Vertebrate Embryology).

OPTION B. FRESHWATER FISHERIES BIOLOGY

Required courses:

Biology 473 (Limnology); Fisheries 302, 402, 451, 452, 453, 460 or 461; Zoology 453-454 (Comparative Anatomy of Chordates) or 456 (Vertebrate Embryology).

OPTION C. INVERTEBRATE FISHERIES

Required courses:

Biology 472 (Principles of Ecology); Fisheries 302, 405, 406, 427, 454, 480; Mathematics 124 (Calculus with Analytic Geometry); Oceanography 203 (Introduction to Oceanography) or 390 (General Oceanography), 403 (Biological Oceanography); Zoology 330 (Natural History of Marine Invertebrates), 433, 434 (Invertebrate Zoology).

Recommended courses for all Fisheries options:

Biochemistry 361 (Biochemistry) and 363 (Biochemistry Laboratory), or 481 (Biochemistry) and 484 (Biochemistry Laboratory); Biology 451 (Genetics), 472 (Principles of Ecology), 473 (Limnology); Botany 112 (Elementary Botany); Chemistry 231, 232 (Organic Chemistry), 241, 242 (Organic Chemistry Laboratory); foreign language to equal 10 credits; Forestry 350 (Wildlife Management); Geology 101 (General) or 205 (Physical Geology); Mathematics 124, 125, 126 (Calculus with Analytic Geometry), 382, 383 (Statistical Inference in Applied Research); Oceanography 203 (Introduction to Oceanography) or 390 (General Oceanography), 403 (Biological Oceanography); Philosophy 120 (Introduction to Logic), 460 (Introduction to the Philosophy of Science); Physics 101, 102, 103 (General Physics), 107, 108, 109 (General Physics Laboratory); Zoology 330 (Natural History of Marine Invertebrates), 381 (Microtechnique), 400 (General Physiology), 433, 434 (Invertebrate Zoology), 458 (Vertebrate Physiology).

BACHELOR OF SCIENCE WITH A MAJOR IN FISHERIES

An elective curriculum is available for students desiring a Bachelor of Science with a major in Fisheries. The student must complete 36 credits in fisheries and sufficient electives to meet University graduation requirements. The choice of electives is subject to approval by the College.

Prospective students are invited to inquire about additional areas of emphasis in which undergraduate preparation may be made. Such areas include behavior, biometrics, economics, and water pollution. Study in some of these topics can be undertaken only at the graduate level.

In preparation for graduate work in the field of fish behavior, students should follow the program of courses below. A Bachelor of Science with a major in Fisheries will be granted to a student successfully completing this program together with electives sufficient to meet University graduation requirements. Since the purpose of this program is to prepare students for graduate study in fish behavior, a 3.00 grade-point average is required in the junior and senior years. A student who does not meet this grade-point requirement cannot be awarded a Bachelor of Science degree under this program.

Recommended courses:

Biology 451 (Genetics) and 451L (Genetics Laboratory), 472 (Principles of Ecology) and 472L (Ecology Laboratory); Chemistry 101 (General Chemistry), 102 (General and Organic Chemistry); English 101, 102, 103 (Composition); Fisheries 101, 301, 425, 451, 460, 495 (6 credits), and five elective credits in fisheries; foreign language to equal 15 credits (two years of one language should have been taken in high school; the first college language should be taken in the senior year); Health Education 110 or 175; Mathematics 105 (College Algebra); Philosophy 120 (Introduction to Logic), 460 (Introduction to the Philosophy of Science); Psychology 100 (General Psychology), 301 (Statistical Methods), 416 (Animal Behavior), 426 (Animal Laboratory); Zoology 111, 112 (General), 409 (Ethology), 409L (Ethology Laboratory), 456 (Vertebrate Embryology) or 458 (Vertebrate Physiology).

FOOD SCIENCE

BACHELOR OF SCIENCE WITH A MAJOR IN FOOD SCIENCE

The food science program provides a curriculum leading to a Bachelor of Science degree with a major in Food Science. It is recommended that the entering student will have completed mathematics to include advanced algebra and trigonometry, and laboratory science to include chemistry and physics.

The student should complete the required courses listed below together with sufficient electives to meet University graduation requirements. At least 10 credits in humanities or social sciences and 10 credits in biological sciences should be included.

Students intending to proceed to graduate study should take the more advanced series of courses (marked with an asterisk) in physics, biochemistry, and organic chemistry and should elect 15 credits of a foreign language.

Required Courses:

Biochemistry 361, 362 (Biochemistry) and 363 (Biochemistry Laboratory) or 481°, 482°, 483° (Biochemistry) and 484° (Biochemistry Laboratory); Chemistry 140, 150, 160 (General Chemistry), 151 (General Chemistry Laboratory), 170 (Qualitative Analysis), 221 (Quantitative Analysis), either 231, 232 (Organic Chemistry) and 241, 242 (Organic Chemistry Laboratory) or 335°, 336°, 337° (Organic Chemistry) and 345°, 346°, 347° (Organic Chemistry Laboratory); English 101, 102, 103 (Composition); Fisheries 480, 495; Food Science 481, 482, 483, 484, 485, 486, 487, 498; Health Education 110 or 175; Mathematics 105 (College Algebra), 124 (Calculus with Analytic Geometry), 281 (Elements of Statistical Method); Microbiology 400 (Fundamentals of Bacteriology); Physics 110, 111, 112 (Introductory Physics) or 101°, 102°, 103° (General Physics) and 107°, 108°, 109° (General Physics Laboratory).

Recommended Courses:

Accounting 210 (Fundamentals of Accounting); Botany 111, 112 (Elementary Botany), 461 (Yeasts and Molds); Chemistry 350 (Elementary Physical Chem-

istry), 426 (Instrumental Analysis); Fisheries 101, 301, 303, 406; Food Science 320 (Space Biology: Sealed Life-Support Systems); General Engineering 111 (Engineering Problems); Home Economics 300, 307 (Nutrition); Marketing 301 (Marketing, Transportation, and International Business: An Integrative Analysis); Mathematics 114 (Elementary Computer Programming), 125, 126 (Calculus with Analytic Geometry), 374 (Principles of Digital Computers and Coding), 382, 383 (Statistical Inference in Applied Research); Microbiology 430 (Microbial Metabolism); Philosophy 120 (Introduction to Logic), 460 (Introduction to the Philosophy of Science); Production 301 (Principles of Production); Preventive Medicine 440 (Water and Waste Sanitation), 441 (Milk and Food Sanitation); Zoology 111, 112 (General Zoology).

ADVANCED DEGREES

Students who intend to work toward a Master of Science or Doctor of Philosophy degree must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate School Bulletin*. Graduate students must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded. For graduate study, the approval of both the College of Fisheries and the Graduate School is necessary.

Graduate students majoring in each option of the College of Fisheries are required to take a minor or a minimum number of supporting courses in other selected departments of the University. The nature and number of such courses are determined by the student's supervisory committee. All graduate students must complete 6 credits (three quarters) in Fisheries 520.

MASTER OF SCIENCE. Candidates must have the degree of Bachelor of Science in Fisheries or its equivalent. At least one year of approved study, with the completion of a research project, leads to the master's degree.

A total of not less than 36 credits in course work and thesis must be presented.

The candidate must present a certificate of proficiency in one foreign language.

DOCTOR OF PHILOSOPHY. Candidates must complete at least three years of graduate study including a dissertation. Credits for a master's degree may be applied toward the doctor's degree.

The candidate must present a certificate of proficiency in two foreign languages (one in addition to the Master of Science requirement).

COURSE-NUMBERING SYSTEM

Courses numbered from 100 through 299 are lower-division courses, for freshmen and sophomores; those numbered from 300 through 499 are upper-division, for juniors and seniors.

Courses numbered 500 and above are intended for and restricted to graduate students. Some courses numbered in the 300's and 400's are open both to graduates and to upper-division undergraduates. Such courses, when acceptable to the major department and the Graduate School, may be part of the graduate program. The Graduate School accepts credit in approved 300-level courses for the minor or supporting fields only; approved 400-level courses are accepted as part of the major. For a listing of approved 300- and 400-numbered courses, consult the *Graduate School Bulletin*.

Undergraduate students of senior standing who wish to register for a 500-level course must obtain permission from both the instructor of the class and the Dean of the Graduate School.

The number in parentheses following the course title indicates the amount of credit each course carries. In most lecture courses a credit is given for each class hour a week during a quarter; laboratory courses generally carry less credit than

the work time required. An asterisk in place of a credit number means that the amount of credit is variable. Hyphens between course numbers mean that credit is not granted until the series of courses is completed.

Courses to which the letter J is appended are joint courses in two or more departments and as such grant credit in one of the departments.

Not all of these courses are offered every quarter. Final confirmation of courses to be offered, as well as a list of times and places of class meetings, is given in the *Yearly Time Schedule*.

COURSES FOR UNDERGRADUATES IN FISHERIES

- 101 Development of Fisheries Science (5)**
Identification, distribution, and life histories of selected fish and shellfish; commercial and recreational fishing; utilization of fisheries products; problems faced in fisheries conservation and management. Recommended for nonmajors.
- 301 Anatomy of Fishes (5)** **Welander**
Survey of morphology and bodily functions of fishes. Prerequisite, Zoology 112.
- 302 Microbiology of Fisheries (5)** **Liston**
Bacteria, yeasts, mold, and protozoans associated with fish; their characteristics and importance in the fisheries. Prerequisite, Zoology 111.
- 303 Introduction to Invertebrate Fisheries (5)** **Sparks**
Taxonomy, morphology, and phylogeny of the invertebrate groups of importance to fisheries. Prerequisite, permission.
- X310 Fisheries Resources of the Pacific Northwest (3)**
Fishes of the Pacific area; life histories; fisheries; local, national, and international approaches to conservation. Prerequisite, 10 credits in biology or 15 credits in science, or permission. (Evening Classes only.)
- 402 Economically Important Fishes (5)** **Welander**
Survey of the system of fish classification; distribution of fishes. Prerequisite, 301.
- 405 Economically Important Mollusca (5)** **Sparks**
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)** **Sparks**
Classifications, life histories, distribution, methods of capture, and economic importance of crabs, shrimps, lobsters, crayfish, and the smaller crustacea. Prerequisite, Zoology 112.
- 425 Migrations and Races of Fishes (5)** **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 freshwater and marine fisheries. Prerequisite, 402.
- 426 Early Life History of Marine Fishes (5)** **De Lacy**
Reproduction, larval, post-larval life of economically important marine fishes; dispersion and survival rates; implications in management of food fisheries; research methods in this field. Prerequisite, 402.
- 427 Ecology of Marine Fishes (5)** **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)** **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 10 credits in chemistry.
- 452 Nutrition of Fishes (5)** **Donaldson**
Feeding and efficiency of diets; food costs and supplies; basic nutritional requirements of fish; nutritional diseases of fish. Prerequisites, 402 and 10 credits in chemistry.
- 453 Freshwater Fisheries Management: Biological (5)** **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 10 credits in chemistry.
- 454 Communicable Diseases of Fishes (5)** **Sparks**
Organisms causing diseases in fishes; prevention and known treatments of fish diseases. Prerequisites, 402 and Microbiology 301 or Fisheries 302.
- 460 Water Management and Fish Resources (5)** **M. C. Bell**
Stream flows and mechanics of freshwater environment, and other problems such as natural propagation; water flow measurement in streams and pipes; use of weirs; hatchery water requirements; screening of water diversions for protection of downstream migrants; nomenclature, water rights, and protective laws. (Offered Spring Quarter only.) Prerequisites, 402, Mathematics 105, and physics, or permission.
- 461 Water Management and Fish Resources (5)** **M. C. Bell**
Design of fish protective facilities and actual use of hydraulic turbines and spillways at dams; calibration of nets, etc. (Offered Autumn Quarter only.) Prerequisite, 460 or permission.

- 465 Problems in Fisheries Biology (6)**
Taxonomy, ecology, and life history of the fishes of the San Juan Islands and Northeast Pacific. (Offered at Friday Harbor Summer Quarter only.) Prerequisite, permission.
- 480 Introduction to Commercial Fishing Industry (5)** **F. H. Bell**
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.
- 495 Introduction to Fisheries and Food Science Literature (2, maximum 6)**
Directed training in searching bibliographic sources. Prerequisite, 15 credits in fisheries.
- 499 Undergraduate Research (1-3, maximum 9)**
Individual research within the College of Fisheries or on-the-job training in governmental or industrial fisheries organizations. Prerequisite, permission.

COURSES FOR UNDERGRADUATES IN FOOD SCIENCE

- X320 Space Biology: Sealed Life-Support Systems (3)**
Problems and proposed solutions for supporting human life in sealed environments. Emphasis on long-term space travel. Prerequisite, 10 credits in chemistry or biology, or permission. (Evening Classes only.)
- 481 Introduction to Food Technology (5)** **Liston**
Chemical and biological properties of foods; principles of processing, storage, distribution, and spoilage. Prerequisite, permission.
- 482 Food Analysis I (3)** **Dollar**
Proximate analysis of foods by physical and chemical methods. Prerequisites, Biochemistry 483 or permission.
- 483 Food Analysis II (3)** **Dollar**
Analysis of foods for vitamins, fatty acids, other biological substances and additives by physical, chemical, and microbiological methods. Prerequisite, 482.
- 484 Principles of Food Processing I (5)** **Dollar, Liston**
Unprocessed foods, their composition, nutritional availability, associated microorganisms, storage, and distribution. Prerequisite, 481 or permission.
- 485 Principles of Food Processing II (5)** **Dollar, Liston**
Principles of food preservation by thermal processes, low temperature methods, chemical methods, irradiation, and other modern processes. Prerequisites, 482, 486 or permission.
- 486 Deteriorative Processes in Foods (5)**
Biochemical, microbiological, physical, and chemical changes occurring in foods. Prerequisites, 483, 485 or permission.
- 487 Food Analysis III (3)** **Dollar, Liston**
Quality assessment of foods including spoilage methods, rancidity methods, organoleptic and microbiological methods. Prerequisite, 483.
- 498 Undergraduate Thesis (2, maximum 6)**
Prerequisite, permission.

GRADUATE COURSES IN FISHERIES

- 501 On-the-Job Training (1-3, maximum 3 For M.S., 9 for Ph.D.)**
Guided on-the-job training in governmental or industrial fisheries organizations. Prerequisite, permission.
- 503 Systematic Ichthyology (5)** **Welander**
Principles and procedures of ichthyological taxonomy demonstrated by current problems and research. Prerequisites, 402 and permission.
- 505 Research Techniques in Shellfish Biology (5)** **Sparks**
A field and laboratory course dealing with research methods in the reproduction, growth, and mortality of oysters and clams.
- 510 Fish Behavior (3)** **Fields**
Behavior related to sensory-motor equipment. Design of experiments emphasized for studies ranging from naturalistic observation to controlled laboratory and field experiments. Prerequisite, permission.
- 511 Fish Behavior Laboratory (2-3, maximum 6)** **Fields**
Prerequisite, 510 or concurrent registration in 510.
- 520 Graduate Seminar (2, maximum 6)**
Training in methods of searching fisheries literature.
- 530 Biological Problems in Water Pollution (3)**
Biological and ecological changes in the aquatic environment resulting from domestic, industrial, radioactive, and agricultural wastes and methods for their evaluation. Prerequisite, permission.
- 556 Age and Growth of Fishes (5)** **Van Cleve**
Principles of growth; methods of determining age and rates of growth in freshwater and marine fishes. Prerequisite, 402, and Mathematics 383, or permission.
- 557 Population Enumeration (5)** **Van Cleve**
Methods of enumerating animal populations; availability; dominant age groups; gear selectivity. Prerequisite, 556 or permission.

- 558 Population Dynamics (5)** **Van Cleave**
Influence of natural and artificial factors on variation in abundance and yield from animal populations. Prerequisite, 557 or permission.
- 604 Research (*, maximum 3 for M.S., 10 for Ph.D.)**
- 700 Thesis (*)**

GRADUATE COURSES IN FOOD SCIENCE

- 504 Principles of Technological Research in Fisheries and Food (3)** **Liston**
A lecture and laboratory course designed to familiarize graduate students with the methods used in technological research. Prerequisite, permission.
- 604 Problems in Food Science (*, maximum 3 for M.S., 10 for Ph.D.)**
- 700 Thesis (*)**

OTHER COURSES FOR FISHERIES AND FOOD SCIENCE STUDENTS

BIOCHEMISTRY

- 361 Biochemistry (3)**
Lectures covering the basic principles of biochemistry, including the structure and metabolism of biologically important compounds. Prerequisite, Chemistry 102 or 232.
- 363 Biochemistry Laboratory (2)**
Laboratory exercises in general biochemistry for home economics students and others. Prerequisite, 361, which may be taken concurrently.
- 481, 482, 483 Biochemistry (3,3,3)**
Structure, metabolism, and function of substances pertinent to animal and plant life. A basic course for graduate or advanced undergraduate students. Biochemistry 483 is recommended as a concurrent course with 482. Prerequisites, Chemistry 337 for 481; 481 or permission for 482; 482 or permission for 483; introductory physical chemistry is recommended.
- 484 Biochemistry Laboratory (3)**
Laboratory exercises and conferences. Prerequisite, 481.

BIOLOGY

- 451 Genetics (3)** **Roman**
The principles underlying inheritance in animals and plants. Prerequisite, 10 credits in biological science.
- 472 Principles of Ecology (3)** **Edmondson**
Population biology, competition, predation, symbiosis, sociality, and relationship of community to environment. Prerequisites, Zoology 112 or Botany 112, or permission, and upper-division standing.
- 473 Limnology (5)** **Edmondson**
Biological, physical, and chemical features of lakes and other inland waters. Prerequisites, Zoology 112 or Botany 112, one year of college chemistry, and upper-division standing.

BOTANY

- 111 Elementary Botany (5)** **Meeuse, Walker**
Structure, physiology, and reproduction of plants, with emphasis on seed producing groups. Open to those who have had 105 only by permission of instructor.
- 112 Elementary Botany (5)** **Blaser**
Structure and relationships of the major plant groups. Prerequisites, 111, one year of high school botany, Biology 101J-102J, or Zoology 111 and 112.
- 461 Yeasts and Molds (5)** **Stuntz**
Classification, recognition, cultivation, and relationship to industries and man. Prerequisite, 15 credits in botany, microbiology, or zoology.

BUSINESS ADMINISTRATION

Accounting

- 210 Fundamentals of Accounting (3)**
Basic principles and procedures including recording of business transactions and preparation of financial statements. (Formerly 150.) Prerequisite, sophomore standing.

General Business

- 101 Business: An Introductory Analysis (5)**
The role of business in a modern economy: its growth, structure, organization, and relationship to environment. Business firms: their objectives, functions, and management. Problems of organization, decision making, controls, and related aspects. Opportunities in business.

Marketing**301 Marketing, Transportation, and International Business: An Integrative Analysis (5)**

Fundamentals of marketing concept and functions; consumer demand and behavior; spatial relationships, and physical distribution; domestic and foreign institutions, channels, and public policy.

Production**301 Principles of Production (3)**

The production function in business and industry; organization and administration; research and product development; plant location, layout, and equipment; planning and control of production; materials and quality control; methods analysis and time standards; industrial budget control; the background of scientific management.

CHEMISTRY**100 Chemical Science (5)**

Atoms, molecules, and chemical reactions. A survey of fundamental principles. Designed both as a terminal course for nonscience majors and as an introductory course for those who wish to continue with 101 or 140. (Note Mathematics prerequisite for 140). No credit to those who have had one unit or more of high school chemistry.

101 General Chemistry (5)

For nonscience and non-engineering majors who plan to terminate their study of chemistry with 101 or 102. Molecular theory, quantitative relationships in chemical processes, solutions, ionic equilibria, acids, bases, and salts. Chemistry of common metals and nonmetals. Prerequisite, one unit of high school chemistry or 100.

102 General and Organic Chemistry (5)

Organic compounds; hydrocarbons, alcohols, aldehydes, ketones, ethers, acids, aromatics, fats and oils, proteins and carbohydrates. (Formerly 120). Students who plan to take 231 should not take 102. Prerequisite, 101.

140 General Chemistry (3)

For science, engineering, and other majors who plan to take a year or more of chemistry courses. The structure of matter, atomic and molecular theory, the elements, valence and quantitative relationships. (Formerly 110.) Prerequisites, high school chemistry or 100, Mathematics 101 or passing score on algebra qualifying test.

150 General Chemistry (4)

For students planning more than two quarters of chemistry. Stoichiometry, gases, aqueous solutions, kinetics, acid and base equilibria, electrochemistry, oxidation and reduction. Prerequisite, 100 or 110, Mathematics 101 or 103, or passing score on algebra qualifying test.

151 General Chemistry Laboratory (2)

Experiments illustrating the quantitative relationships in chemistry. Prerequisites, 140 and concurrent registration in 150.

160 General Chemistry (3)

Periodic System, phase equilibria, metals and nonmetals, metallurgy, and nuclear reactions. Prerequisite, 150.

170 Qualitative Analysis (3)

Semi-microqualitative analysis for common cations and anions; separation and identification procedures. Prerequisites, 160, which may be taken concurrently.

221 Quantitative Analysis (5)

Volumetric and gravimetric. No credit if 325 has been taken. Prerequisite, 170.

231 Organic Chemistry (3)

For students planning only two quarters of organic chemistry. Structure, nomenclature, reactions and synthesis of the main types of organic compounds. Prerequisite, 150.

232 Organic Chemistry (3)

Continuation of 231. Prerequisite, 231.

241 Organic Chemistry Laboratory (2)

Usually to accompany 231. Preparation of representative compounds. Prerequisite, 231, which may be taken concurrently.

242 Organic Chemistry Laboratory (2)

Usually to accompany 232. Preparations and qualitative organic analysis. Prerequisites, 231, 232 (which may be taken concurrently), and 241.

335 Organic Chemistry (3)

For chemistry and chemical engineering majors and other qualified students planning three or more quarters of organic chemistry. Structure, nomenclature, reactions, and synthesis of organic compounds. Theory and mechanism of organic reactions. Prerequisite, 170, which may be taken concurrently.

336 Organic Chemistry (3)

Continuation of 335. Prerequisite, 335.

337 Organic Chemistry (3)

Continuation of 336. Prerequisite, 336.

345 Organic Chemistry Laboratory (1)

Usually to accompany 335. Organic syntheses. Prerequisite, 335, which may be taken concurrently.

- 346 Organic Chemistry Laboratory (1)**
Continuation of 345. Usually to accompany 336. Prerequisites, 335, 336, and 345 which may be taken concurrently.
- 347 Organic Chemistry Laboratory (2)**
Continuation of 346. Usually to accompany 337. Prerequisites, 337 (which may be taken concurrently) and 346.
- 350 Elementary Physical Chemistry (5)**
Survey of some major topics in physical chemistry. Prerequisites, two quarters general chemistry, Physics 103, Mathematics 124.
- 426 Instrumental Analysis (3)** **Crittenden**
Introduction to electrical and optical methods of analysis. Prerequisites, 221 and 458.
- 455 Physical Chemistry (4)**
Structural aspects of physical chemistry; atomic and molecular structure, gases, liquids, solids, solutions, surfaces and colloid chemistry. Prerequisites, 160, Mathematics 153, and college physics.
- 456 Physical Chemistry (3)**
Solutions (electrolytes and non-electrolytes); thermodynamics; homogeneous and heterogeneous equilibria. Prerequisites, 455 and Mathematics 251.
- 457 Physical Chemistry (3)**
Electrochemistry and ionic equilibria; chemical kinetics and photochemistry. Prerequisite, 456.
- 458 Physical Chemistry Laboratory (4)**
Prerequisite, 456 or taken concurrently.

ENGLISH

- 101, 102, 103 Composition (3,3,3)** **Irmscher**
Fundamentals of effective exposition; collecting, organizing, and evaluating materials for writing; reading contemporary writings for meaning and form.

FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE**Japanese**

- 210, 211, 212 First-Year Reading Japanese (5,5,5)** **McKinnon**
Reading and translation of modern Japanese. Prerequisites, 101-102 or permission for 210, or this series may be taken concurrently with 101-102, 103; 210 for 211; 211 for 212.
- 301, 302, 303 Second-Year Reading Japanese (5,5,5)** **McKinnon**
Reading and translation of primary and secondary source materials in Japanese. Prerequisites, 212 or equivalent for 301; 301 for 302; 302 for 303.

Russian

- 100-105 Russian, A-B (5-5)** **Novikow, Pahn**
Covers material of 110 in two quarters. Recommended for students who know from experience that they assimilate foreign languages slowly, or for those who find a 10-credit course would interfere seriously with their schedules.
- 110 Russian, Intensive, AB (10)** **Gershevsky, Pahn**
Elementary Russian. Introduction to pronunciation, spelling, graded reading, essentials of grammar, conversation, exercises and drills. Student acquires six hundred-word vocabulary.
- 130 Scientific Russian (5)** **Gershevsky**
Introduction to written Russian as a research tool for science students. Readings in chemistry and physics, etc. Closed to Russian majors.
- 230 Scientific Russian, Intensive (10)** **Gershevsky**
Introduction to written Russian as a research tool for science students only. Readings in chemistry and physics. Closed to Russian majors.

FORESTRY

- 350 Wildlife Management (3)** **Brockman**
Interrelations between forests and wildlife; life histories and habits of animals involved. Prerequisites, junior standing and permission.

GENERAL ENGINEERING

- 111 Engineering Problems (3)** **Brown**
Training in methods of analyzing and solving simple engineering problems, principally dynamics and energy problems; introduction to the slide rule; coaching in proper methods of work and study, including training in systematic arrangement and clear workmanship. Prerequisites, high school physics, advanced algebra, and trigonometry or concurrent with trigonometry.

GEOLOGY

- 101 Geology for Nonscience Majors (5)** **Barksdale, Coombs, Mallory**
- 205 Physical Geology (5)**
Prerequisite, high school chemistry or permission.

GERMANIC LANGUAGES AND LITERATURE**101-102, 103 First-Year German (5-5,5)**

Recommended for prospective majors and minors and those who wish to work toward a speaking knowledge of the language. The methods and objectives are primarily oral-aural.

HOME ECONOMICS**300 Nutrition (2)****Crum**

Importance of food to the maintenance of health; nutritive values and human needs; ways of meeting human requirements at different cost levels. For nonmajors.

307 Nutrition (3 or 5)**Johnson**

Chemistry of digestion and metabolism. Food values; human requirements and ways of meeting them at different cost levels. Qualified transfer students receive 3 credits. Prerequisites, general chemistry and human physiology.

MATHEMATICS**104 Plane Trigonometry (3)**

Trigonometric functions, identities, graphs, logarithms, and solution of triangles. Mathematics 120 may be taken concurrently as a supplement to this course. No credit for students who have studied trigonometry in high school. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101, and one year of plane geometry.

105 College Algebra (5)

Functions and graphs; linear and quadratic equations; progressions; complex numbers; theory of equations; determinants. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101, or 103.

114 Elementary Computer Programming (2)

Programming and coding of problems for automatic digital computers. Flow charts, loops, subroutines. Codes written will be executed by machine. Prerequisite, 101 or equivalent.

124, 125, 126 Calculus with Analytic Geometry (5,5,5)

Plane analytic geometry, differentiation of algebraic and transcendental functions, anti-derivatives, definite integrals, technique of integration, vector algebra, solid analytic geometry, multiple integrals, partial derivatives, simple differential equations. Applications. Prerequisites, four years of high school mathematics and qualifying test, or 104 (or 103 or exemption by qualifying test) and 105 (or 156) for 124; 124 or 134 for 125; 125 or 135 for 126.

253 Analytic Geometry and Calculus (3)

Solid analytic geometry, multiple integrals, partial derivatives. Prerequisite, 252.

281 Elements of Statistical Method (5)

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.

374 Principles of Digital Computers and Coding (5)

High-speed digital computation, number systems, machine components, programming, operation. Three hours lecture, four hours laboratory, per week with problems run on a high-speed machine. Prerequisites, 114 and 124 (or 134), and permission of instructor.

382, 383 Statistical Inference in Applied Research (5,5)**Chapman**

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, 124 (or 134) and 281, or permission, for 382; 382 for 383.

391 Elementary Probability (3)

Sample space, random variables, laws of probability. Combinatorial probabilities. Distributions: binomial, normal; expectation, variance. Prerequisite, 126 or 136.

MICROBIOLOGY**301 General Microbiology (5)****Rickenburg**

Microorganisms and their activities. A survey course for students of pharmacy, nursing, home economics, education, and others with minimal training in chemistry. Prerequisites, two quarters of general chemistry.

400 Fundamentals of Bacteriology (*, maximum 6)**Douglas, Ordal**

Basic bacteriology; comparative morphology, taxonomy, physiology of bacteria. For students majoring in microbiology and others interested chiefly in the biological and chemical aspects of microbes. Required for students majoring in microbiology. Recommended for graduate students majoring in chemistry or biology. Prerequisites, 10 credits in organic chemistry, 10 credits in botany or zoology, and permission.

430 Microbial Metabolism (3 or 5)**Douglas**

Microbiological and biochemical aspects of industrially important fermentative and oxidative processes. For students majoring in microbiology or food technology. Prerequisites, 301 or 400, and Chemistry 221 and 232.

OCEANOGRAPHY

- 203 Introduction to Oceanography (5)** **Fleming**
A comprehensive description of the oceans and their relation to man; physical, chemical, biological, and geological aspects of the sea; areal distribution and seasonal cycles of properties; currents; factors affecting populations. Demonstrations and some classes aboard ship and in laboratories.
- 390 General Oceanography (5)** **Fleming**
Comprehensive treatment of physical, chemical, biological, and geological aspects of the oceans. Introductory to all courses in 400 series.
- 403 Biological Oceanography (5)** **Banase, English**
Physical, chemical, and biological factors characterizing the marine environment; factors controlling plant and animal populations; methods of sampling, identification, and analysis. Prerequisite, 390.

PHYSICAL AND HEALTH EDUCATION**Health Education**

- 110 Health Education (Women) (2)** **Gaines, Horne**
Current health information, with emphasis on women's responsibilities in application of health knowledge to attitudes and practices in modern and future life. Required of all freshman women; exemption without credit by examination.
- 175 Personal Health (Men) (2)**
Health information that affords a basis for intelligent guidance in the formation of health habits and attitudes. Required of all freshman men; exemption without credit by examination.

PHYSICS

- 101, 102, 103 General Physics (4,4,4)** **Kenworthy**
Concurrent registration in 107, 108, 109 recommended and may be required by individual departments. 101: mechanics. Prerequisites, plane geometry, trigonometry, and one year of high school physics or its equivalent by permission. 102: sound and electricity. Prerequisite, 101, 103: heat, light, and modern physics. Prerequisite, 102 or concurrent registration in 102.
- 107, 108, 109 General Physics Laboratory (1,1,1)** **Sanderman**
107: mechanics laboratory. Prerequisite, 101 or concurrent registration in 101. 108: sound, electricity, and magnetism laboratory. Prerequisite, 102 or concurrent registration in 102. 109: heat and light laboratory. Prerequisite, 103 or concurrent registration in 103.

ROMANCE LANGUAGES AND LITERATURE**French**

- 101-102, 103 Elementary (5,5,5)**
Methods and objectives are primarily oral-aural. Oral practice in the Language Laboratory is required. Honors sections are designated in the *Yearly Time Schedule* by an asterisk. No credit is granted for 101- until -102 (or a more advanced course, as approved by the Department) has been completed satisfactorily. Prerequisite for -102: 101- or one high school semester, or equivalent; for 103: A, B, or C in -102; A or B in second high school semester; or any passing grade in the third high school semester.

Spanish

- 110-111, 112 First-Year Reading Spanish (5-5,5)**
A beginning course for nonmajors, in which the acquisition of a reading knowledge is stressed. Prerequisite for 112, -111 or grade of A or B in second high school semester, or any passing grade in third high school semester, or equivalent.
- 121- Basic Grammar Review (5-)**
Refresher course; should be taken instead of 103 by students who received a grade of D in -102, or C or D in the second high school semester. No student may receive credit for both 103 and 121-; nor will credit be granted for 121- until 201 or equivalent has been completed.

SCANDINAVIAN LANGUAGES AND LITERATURE**Norwegian**

- 101-102, 103 Elementary Norwegian (3-3,3)** **Arestad**
Fundamentals of oral and written Norwegian.
- 104-105, 106 Norwegian Reading (2-2,2)**
Should accompany 101-102, 103.

ZOOLOGY

- 111, 112 General Zoology (5,5)**
Physical basis of life, structure, function, development, inheritance, evolution, and ecology of animals. 111: invertebrate phyla through molluscs. 112: annelids through chordates; 111 prerequisite for 112.
- 330 Natural History of Marine Invertebrates (5)** **Kohn**
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.

- 381 Microtechnique (4)** **Hsu**
Critical evaluation of each step in microslide preparation. Prerequisites, 112 and permission.
- 400 General Physiology (5)** **Florey**
Cell environment, metabolism and growth, irritability, general phenomena of organ function. Prerequisites, Chemistry 232, Physics 103 and 109 (or high school physics) and 10 credits in biological sciences.
- 409 Ethology (3)** **Orians**
Perception, nervous integration, movement, motivation, instinct, learning, and social behavior in animals, with emphasis upon their evolution and selective significance. Prerequisite, permission.
- 409L Ethology Laboratory (2)** **Orians**
Experiments with orientation, motivation, learning, and social behavior in animals, including special student research problems. Prerequisite, permission. (May be taken concurrently with 409.)
- 433, 434 Invertebrate Zoology (5,5)** **Illg, Kohn**
Morphology and phylogeny of invertebrates exclusive of terrestrial arthropods. Not open to students who have had 432. Prerequisites, 111 and 112.
- 453-454 Comparative Anatomy of Chordates (5-5)** **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)**
A descriptive and comparative study of development of chordates. Prerequisite, 112.
- 458 Vertebrate Physiology (6)** **Martin**
Emphasis on mammalian organ systems. Prerequisites, two quarters of college chemistry and 20 credits in biological sciences.

APPENDIX

APPENDIX

UNDERGRADUATE ADMISSION, EXCEPTIONAL CASES

An applicant whose preparation and previous scholarship do not clearly qualify him for admission may submit additional evidence in support of his application. This may include scores on nationally recognized tests of scholastic aptitude or achievement; letters from school administrators, teachers, or counselors; and other information which may assist the Board of Admissions in evaluating his probability of success in the University.

Students admitted by special action of the Board of Admissions will be expected to achieve and maintain a satisfactory scholastic average in their University work and to fulfill any conditions specified by the Board at the time of their admission.

A student thus admitted on probation will be subject to scholarship rules given on page 25.

Furthermore, he or she may not (1) be pledged 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 regulations of the University Intercollegiate Athletics Committee.

ADVANCED STANDING AND TRANSFER OF CREDIT

The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted. The general regulations concerning the transfer of credits are as follows:

1. The advanced standing for which an applicant's training appears to fit him is granted tentatively on admission. Definite advanced standing is not determined before the end of the student's first quarter in the University. The maximum that may be accepted from other colleges and universities is 135 quarter credits or senior standing. Transfer credit will not be allowed in the senior year.

2. Transfer credits will be accepted for upper-division credit *only* when earned at an accredited four-year degree-granting institution.

3. Transfer credits from institutions accredited for less than four years will not be accepted in excess of the accreditation of the school concerned.

4. Transfer of junior college credit shall apply on the 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 to completion of the first two years in the University. In no case shall the transfer of junior college credit to the University exceed 90 quarter credits exclusive of physical education activity credits.

5. The maximum number of credits obtainable by acceptance of Armed Forces training schools credits will be 30. All such credits will be counted as extension credits and will be included in the 90-credit maximum allowed toward the bachelor's degree, but none will apply toward the work of the senior year.

6. A maximum of 45 credits earned in extension and correspondence courses at other institutions may be transferred, but none of the credits can apply in the senior year. Extension and correspondence credits from schools that are not members of the National University Extension Association are accepted only after examination.

7. Credits earned in evening and extension classes or correspondence courses at this University are accepted after the student has satisfactorily completed 35 credits of work in residence (that is, registered in regular University classes). A maximum of 90 extension and/or correspondence credits is acceptable; the 90 credits may include the 45 extension and/or correspondence credits allowable from other institutions or may consist entirely of courses taken in this University's Division of Evening Classes or Division of Correspondence Study. All credits earned in advanced-credit examinations and all acceptable Armed Forces training schools credits must be counted in the 90 extension credit maximum. Up to 10 evening class or correspondence course credits from this University can apply toward the work of the senior year.

8. For work done in unaccredited institutions, extended secondary programs in institutions whose standing is unknown, and for work with private teachers, University credit is granted only after examination. Applications for advanced-credit examinations must be filed during the first quarter in residence.

9. No credit will be granted 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. The prescribed written permission is effective only if obtained before registration. Nothing in this rule makes mandatory the granting of any credit by the University.

KOREAN VETERANS INFORMATION

Korean Certificate

Application for this certificate should be made at least four weeks prior to the beginning of University instruction. If the veteran is eligible, the Veterans Administration will issue him a Certificate for Education and Training which must be presented, along with his Program of Studies, to the Veterans Division, Safety Division Building, as soon as registration is completed. A Korean veteran should be prepared to meet all his own expenses as well as the cost of tuition, fees, and supplies for at least two months, because allowances are not made until after a full month's attendance has been established.

Quarter Credit Requirements (Public Law 550)

14 credits.....	Full subsistence
10 to 13 credits.....	Three-fourths subsistence
7 to 9 credits.....	One-half subsistence
6 credits or less.....	Established tuition and fees
or credits \div 14 \times \$110.00, whichever is the lesser.	

Graduate Credit Requirements (Public Law 550) 500-level Courses or Above

9 credits.....	Full subsistence
7 to 8 credits.....	Three-fourths subsistence
5 to 6 credits.....	One-half subsistence
4 credits or less.....	Established tuition and fees
or credits $\div 14 \times \$110.00$, whichever is the lesser.	

If a graduate is combining 400-level courses with 500-level courses, he should consult with the Veterans Division, Safety Division Building, to determine the scale of pay.

Termination of Training

A veteran *eligible* under Public Law 550 must complete his training by *eight years* after his release from active service, or by January 31, 1965, whichever is earlier.

WITHDRAWALS**WITHDRAWAL FROM A COURSE**

Official withdrawal from a course is made only under the following conditions: (1) during the first fifteen calendar days of a quarter, with the consent of the withdrawing student's adviser; (2) after the first fifteen calendar days of a quarter and before the end of the first six calendar weeks of a quarter, with the approval of the student's adviser, the instructor of the course from which withdrawal is sought, and of the dean of the college in which the withdrawing student is enrolled; and (3) after the first six calendar weeks of a quarter and before final examination week, only upon certification in writing to the Registrar by the dean of the college in which the withdrawing student is enrolled that, in the judgment of the dean, withdrawal is necessitated by the student's hardship. Withdrawals from courses accomplished by any other method are unofficial withdrawals which are entered on a student's record as EW, and are assigned the value of E in the computation of the student's grade-point average. No official withdrawal may be made during final examination week.

Official withdrawals are entered on a student's record as follows: (1) a withdrawal within the first fifteen calendar days of a quarter, as W; (2) a withdrawal after the first fifteen calendar days of a quarter and before final examination week, as PW, if the student's work has been satisfactory, and as E, if the student's work has been unsatisfactory. Grades of PW and W are assigned no value in the computation of grade-point averages.

WITHDRAWAL FROM THE UNIVERSITY

The student should obtain at the office of the Dean of the College the Request for Withdrawal From the University form.

MILITARY TRAINING

Military training at the University of Washington has now been placed on an elective basis. Students wishing to participate in military programs can find a complete list of courses offered by the Departments of Air Science, Military Science and Naval Science in the *Yearly Time Schedule*. In addition to the basic programs, the Department of Air Science and the Department of Military Science each offers for selected students an advanced program which leads to commissioning in the Air Force or the Army. The four-year program of the Department of Naval Science, also for selected students, leads to commissioning in the Navy or Marine Corps.

Students enrolling in Naval ROTC, and those who take the advanced program of Air Force or Army ROTC must agree in writing to complete the course of training and accept a commission in the service for which they are trained. *The honoring of this commitment is a condition of graduation from the University.*

The basic program of the Department of Air Science consists of three quarters of military classroom instruction on the Foundations of Air Power. These are offered in the spring quarter of the first year and the autumn and winter quarters of the second year. During each of the other three quarters, the student must substitute an approved University course in lieu of Air Science. Leadership Laboratory is required each of the six quarters of the basic program and is conducted one hour each week. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*.

The basic program (freshmen and sophomores) of the Department of Military Science requires drill one hour each week. Classroom military studies for freshmen are not required in the Autumn Quarter. One hour per week is required in the Winter Quarter, and two hours of classroom work are required in Spring Quarter. As a substitute for these classroom hours in Autumn Quarter of the freshman year, registration is required in a selected three-credit or five-credit course in another department. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*. Sophomores are required to attend two hours per week of classroom military studies throughout the academic year.

Information concerning the Naval Science ROTC program can be found in the bulletins of the College of Arts and Sciences, the College of Business Administration, and the College of Engineering.

PHYSICAL EDUCATION ACTIVITIES

Men students may use credits earned in freshman or varsity sports to satisfy the activity course requirement.

Women students, in fulfilling the three-quarter requirement, may take a maximum of two credits in any of the following: (1) swim area; (2) dance area; (3) tennis and badminton; (4) any other specific individual, dual, or team activity.

The following students are exempt from the requirement of activity courses:

1. Students who have attained the age of twenty-five. A student who attains the age of twenty-five during a quarter in which he is registered for a required physical education activity course shall be held for the completion of that course. This rule shall not be retroactive in its application to students who entered prior to Spring Quarter, 1951, and were exempted from required physical education courses under previous rules.

2. Students who enter as sophomores, junior, or seniors.

3. Special students.

4. Students registered for 6 credits or less.

5. Students who, because of physical condition, are exempted by the Graduation Committee upon the recommendation of the Dean of the College. Such action will be taken only when the Dean has received a joint recommendation for exemption from the University Health Officer and the Executive Officer of the Department of Physical Education for Men or for Women, whichever is appropriate. All other students who are reported by the University Health Officer as physically unfit to join regular classes will be assigned by the Chairman of the Department of Physical Education for Men or for Women to special programs adapted to their needs.

6. Students who are veterans of military service. Complete exemption is granted for one year or more of active duty. This exemption does not grant credit. Veterans with less than one year of service receive no exemption.

7. Transfer students who present acceptable credit for physical education activity courses taken in other colleges. The amount of exemption depends on the number of quarters for which credit is transferred.

FEES, EXTRA SERVICE CHARGES, AND RENTALS

All fees, extra service charges, and rentals are payable in United States dollars at the time of registration, except that new students must submit a \$50.00 advance payment of fees at the time they are admitted to the University. This advance payment is applied against the total tuition and fees collected from the student. In the event of failure to register, the \$50.00 advance payment is not refundable to the student. The University reserves the right to change any of its fees and charges without notice.

The fee schedules for resident and nonresident students, following, apply to the academic year (Autumn, Winter, and Spring Quarters). Summer fees are listed in the *Summer Quarter Bulletin*.

EXEMPTIONS

Veterans of World Wars I or II

Exemption from tuition charges is granted resident students who either (1) served in the United States Armed Forces during World War I and received honorable discharges; or (2) served in the United States Armed Forces during World War II at any time after December 6, 1941, and before January 1, 1947, and received honorable discharges, but are no longer entitled to federal educational benefits; or (3) are United States citizens who served in the armed forces of governments associated with the United States during World Wars I or II and received honorable discharges. Nonresident students who meet one of these requirements pay one-half of the nonresident tuition. This exemption is not granted to Summer Quarter students.

Proof of eligibility should be met as follows:

- (1) World War I veterans should present copy of discharge papers to Comptroller's Office, 203 Administration Building.
- (2) World War II veterans with Korean service or who have suffered disability should present a letter from the Veterans Administration Regional Office to the Veterans Division, Safety Division Building, stating they are no longer eligible for any federal educational benefits. (Excepted are those veterans who have had both World II benefits and Korean benefits and have expired those benefits at the University of Washington.)
- (3) World War II veterans who have not suffered any disability or served in the Korean Conflict should present an 8½-inch x 11-inch photostat of discharge papers to the Veterans Division, Safety Division Building.

Exemption must be cleared prior to student's appointment day for registration in order to prevent personal payment.

EXTRA SERVICE CHARGES

A registration service charge of \$15.00 is assessed those students: (1) eligible for Advance (mail) Registration who fail to participate; or (2) who, after the established application deadline, are granted Appointments or Permits to register by In-Person Registration by action of the Registration Appeal Board. A late registration charge of \$15.00 is assessed any student granted permission to register after the last registration day before the opening of Autumn, Winter, or Spring Quarters by action of the Registration Appeal Board. A charge of \$5.00 is made Autumn, Winter, and Spring Quarters 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.

<i>Special Examination</i>	\$1.00
<i>Removal of an Incomplete</i>	2.00
<i>Washington Pre-College Testing Program (Grade Prediction Test)</i>	5.00
<i>Athletic Admission Ticket (optional for ASUW members)</i>	3.50-6.50
Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.	
<i>Military Uniform Rental</i>	25.00
Paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.	
<i>Breakage Ticket</i>	3.00
Required in some laboratory courses; ticket is returnable for full or partial refund.	

	Quarters		Quarters	
Full-time students (undergraduate and graduate) except in Medical and Dental Schools)	\$105.00	\$86.50	\$8.50	\$200.00
Auditors		39.00	†	39.00
Part-time (max. 6 credits exclusive of ROTC)§	105.00	69.00	†	174.00
Ex-service personnel of World Wars I and II† (Chapter 46, Laws of 1945)				
Full-time	52.50	86.50	8.50	147.50
Part-time (max. 6 credits)§	52.50	69.00	†	121.50
Students registered for thesis only (for credit or final)||		56.50	†	56.50
Students registered for degree final only (nonthesis)||		56.50	†	56.50

* Other fees consist of Student Activities, \$2.50; ASUW Bond Redemption, \$3.50; HUB Bond Redemption, \$1.00; Building Fund, \$1.50.

† 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 51 to determine eligibility.

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

|| Must be approved by the Graduate School.

<i>Locker Rental</i> , per quarter	2.00
Required of men students taking physical education activities.	
<i>Quarterly Grade Report</i>	.50
One grade report is issued at the close of each quarter without charge; the charge, payable in advance, is made for each additional copy.	
<i>Transcripts</i>	1.00
One transcript is furnished without charge; the charge, payable in advance, is made for each additional copy.	
<i>Graduation Exercises Diploma</i>	10.00

MUSIC PRACTICE ROOM, per quarter: piano practice, \$3.00, one hour a day; \$5.00, two hours a day; \$6.00, three hours a day. Organ practice, \$6.00, one hour a day; \$10.00, two hours a day; \$12.00, three hours a day. Practice rooms are available only to students taking music courses.

BULLETIN • UNIVERSITY OF WASHINGTON



COLLEGE OF FORESTRY

1961-1963

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes three general bulletins; bulletins of the colleges and schools; Summer Quarter Bulletin; the bulletin of the Center for Graduate Study at Hanford; and bulletins of the Division of Correspondence Study, and the Division of Evening Classes.

INTRODUCTION TO THE UNIVERSITY, one of the general bulletins, is especially prepared for new and prospective students. It lists all the University curricula, with their admission requirements, and presents information on other phases of student life, including services for students, student activities, and expenses. UNIVERSITY RULES AND REGULATIONS, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as registered students. HANDBOOK OF SCHOLARSHIPS, the third general bulletin, lists the various scholarships available.

Curricula, courses, and scholarship requirements in each field of study are described in the college and school bulletins. Each of these bulletins also discusses services, organizations, and expenses as they relate to students in the particular college or school.

Requests for copies of any of the bulletins should be addressed to the Addressograph Service.

General Bulletins

HANDBOOK OF SCHOLARSHIPS (RESTRICTED DISTRIBUTION)

INTRODUCTION TO THE UNIVERSITY

UNIVERSITY RULES AND REGULATIONS (FOR REGISTERED STUDENTS ONLY)

Bulletins of the Colleges and Schools

COLLEGE OF ARCHITECTURE AND URBAN PLANNING

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF BUSINESS ADMINISTRATION

SCHOOL OF DENTISTRY

COLLEGE OF EDUCATION

COLLEGE OF ENGINEERING

COLLEGE OF FISHERIES

COLLEGE OF FORESTRY

GRADUATE SCHOOL

SCHOOL OF LAW

SCHOOL OF MEDICINE

SCHOOL OF NURSING

COLLEGE OF PHARMACY

SCHOOL OF SOCIAL WORK

Other Bulletins

SUMMER QUARTER

CENTER FOR GRADUATE STUDY AT HANFORD

CORRESPONDENCE STUDY

EVENING CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON

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CALENDAR

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in the following Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

WINTER QUARTER, 1961

REGISTRATION PERIOD

OCT. 24-Nov. 18	Advance Registration only for students in residence Autumn Quarter, 1960. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
DEC. 27-29	In-Person Registration for students in residence Autumn Quarter, 1960, who did not complete Winter Quarter, 1961, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
DEC. 27-29	In-Person Registration for former students not in residence Autumn Quarter, 1960. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 9.</i>
DEC. 2	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
DEC. 20	Deadline for return to Student Health Center of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
DEC. 27-29	In-Person Registration for ALL new students.
DEC. 29	Last day to register for Winter Quarter, 1961. Note application deadlines above.
JAN. 3-9	Change of registration by appointment only.

ACADEMIC PERIOD

JAN. 3—TUESDAY	Instruction begins for all students
JAN. 9—MONDAY	Last day to add a course
FEB. 17—FRIDAY	Last day to submit applications for advanced credit examinations
FEB. 22—WEDNESDAY	Washington's Birthday and Founder's Day holiday
MAR. 4—SATURDAY	Advanced credit examinations
MAR. 13-16	Final examinations (4 o'clock classes, Friday, March 10, 4-6 p.m.)
MAR. 16—THURSDAY	Quarter ends

SPRING QUARTER, 1961**REGISTRATION PERIOD**

JAN. 23-FEB. 17	Advance Registration only for students in residence Winter Quarter, 1961. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
MAR. 21-23	In-Person Registration for students in residence Winter Quarter, 1961, who did not complete Spring Quarter, 1961, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
MAR. 21-23	In-Person Registration for former students not in residence Winter Quarter, 1961. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is March 10.</i>
MAR. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
MAR. 15	Deadline for return to Student Health Center of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
MAR. 21-23	In-Person Registration for ALL New students.
MAR. 23	Last day to register for Spring Quarter, 1961. Note application deadlines above.
MAR. 27-31	Change of registration by appointment only.

ACADEMIC PERIOD

MAR. 27—MONDAY	Instruction begins for all students
MAR. 31—FRIDAY	Last day to add a course
MAY 12—FRIDAY	Last day to submit applications for advanced credit examinations
MAY 27—SATURDAY	Advanced credit examinations
MAY 30—TUESDAY	Memorial Day holiday
JUNE 4—SUNDAY	Baccalaureate Sunday
JUNE 5-8	Final examinations (4 o'clock classes, Friday, June 2, 4-6 p.m.)
JUNE 8—THURSDAY	Quarter ends
JUNE 10—SATURDAY	Commencement

SUMMER QUARTER, 1961**REGISTRATION PERIOD**

General In-Person Registration for ALL students (*by appointment only*):

June 1, 2, 5

June 12-16

Registration may be delayed if new student Applications for Admission or former

student Applications for Appointment or Permit to register are received after May 15.

Students in the Schools of Law, Dentistry, Medicine, Social Work, and the Hospital Division of the School of Nursing must file an Application for Registration Permit, although no appointment date is necessary.

Registration Appointments or Permits will be issued as follows:

Students in residence Spring Quarter, 1961:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates.....	Monday, April 17, 8 a.m. to 5 p.m.
Juniors	Tuesday, April 18, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 19, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 20, 8 a.m. to 5 p.m.

Former Students not in residence Spring Quarter 1961, may obtain an Application for Appointment or Permit by writing to, or calling in person, at the Registrar's Office, Room 109, Administration Building, or telephoning LAkeview 4-6000, Extension 2551, beginning April 17 and preferably *no later than May 15*. Application for Registration Appointment must be received before registration materials can be processed. *New (entering) Students* will receive Registration Appointments with their Official Notice of Admission.

ACADEMIC PERIOD

JUNE 19—MONDAY	Instruction begins for all students
JUNE 20—TUESDAY	Last day to add a course for the first term
JUNE 23—FRIDAY	Last day to add a course for the full quarter
JUNE 30—FRIDAY	Last day to submit applications for advanced credit examinations for first term
JULY 4—TUESDAY	Independence Day holiday
JULY 15—SATURDAY	Advanced credit examinations
JULY 19—WEDNESDAY	Final examinations and first term end
JULY 20—THURSDAY	Second term begins
JULY 21—FRIDAY	Last day to add a course for the second term
JULY 28—FRIDAY	Last day to submit applications for advanced credit examinations for second term
AUG. 12—SATURDAY	Advanced credit examinations
AUG. 18—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1961

REGISTRATION PERIOD

MAY 1-26	Advance Registration only for students in residence Spring Quarter, 1961. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 5-22	In-Person Registration for students in residence Spring Quarter, 1961, who did not complete Autumn Quarter, 1961, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.

SEPT. 5-22	In-Person Registration for former students not in residence Spring Quarter, 1961. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is September 15.</i>
AUG. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Center of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 7-22	In-Person Registration for ALL new students.
SEPT. 22	Last day to register for Autumn Quarter, 1961. Note application deadlines above.
SEPT. 25-29	Change of registration by appointment only.

ACADEMIC PERIOD

SEPT. 25—MONDAY	Instruction begins for all students
SEPT. 29—FRIDAY	Last day to add a course
NOV. 1—WEDNESDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1962, due at Registrar's Office.
NOV. 11—SATURDAY	State Admission Day holiday
NOV. 17—FRIDAY	Last day to submit applications for advanced credit examinations
NOV. 22-27	Thanksgiving recess (6 p.m. to 8 a.m.)
DEC. 2—SATURDAY	Advanced credit examinations
DEC. 7-12	Final examinations (4 o'clock classes, Wednesday, Dec. 6, 4-6 p.m.)
DEC. 12—TUESDAY	Quarter ends

WINTER QUARTER, 1962**REGISTRATION PERIOD**

OCT. 23-Nov. 17	Advance Registration only for students in residence Autumn Quarter, 1961. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
DEC. 26-28	In-Person Registration for students in residence Autumn Quarter, 1961, who did not complete Winter Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
DEC. 26-28	In-Person Registration for former students not in residence Autumn Quarter, 1961. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 8.</i>

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

- DEC. 1 Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
- DEC. 20 Deadline for return to Student Health Center of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
- DEC. 26-28 In-Person Registration for ALL new students.
- DEC. 28 Last day to register for Winter Quarter, 1962. Note application deadlines above.
- JAN. 2-8 Change of registration by appointment only.

ACADEMIC PERIOD

- JAN. 2—TUESDAY Instruction begins for all students
- JAN. 8—MONDAY Last day to add a course
- FEB. 16—FRIDAY Last day to submit applications for advanced credit examinations
- FEB. 22—THURSDAY Washington's Birthday and Founder's Day holiday
- MAR. 3—SATURDAY Advanced credit examinations
- MAR. 12-15 Final examinations (4 o'clock classes, Friday, Mar. 9, 4-6 p.m.)
- MAR. 15—THURSDAY Quarter ends

SPRING QUARTER, 1962**REGISTRATION PERIOD**

- JAN. 22-FEB. 16 Advance Registration only for students in residence Winter Quarter, 1962. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
- MAR. 20-22 In-Person Registration for students in residence Winter Quarter, 1962, who did not complete Spring Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
- MAR. 20-22 In-Person Registration for former students not in residence Winter Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Appointments or Permits is March 9.*
- MAR. 1 Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
- MAR. 15 Deadline for return to Student Health Center of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
- MAR. 20-22 In-Person Registration for ALL new students.
- MAR. 22 Last day to register for Spring Quarter, 1962. Note application deadlines above.
- MAR. 26-30 Change of registration by appointment only.

ACADEMIC PERIOD

MAR. 26—MONDAY	Instruction begins for all students
MAR. 30—FRIDAY	Last day to add a course
MAY 11—FRIDAY	Last day to submit applications for advanced credit examinations
MAY 26—SATURDAY	Advanced credit examinations
MAY 30—WEDNESDAY	Memorial Day holiday
JUNE 3—SUNDAY	Baccalaureate Sunday
JUNE 4-7	Final examinations (4 o'clock classes, Friday, June 1, 4-6 p.m.)
JUNE 7—THURSDAY	Quarter ends
JUNE 9—SATURDAY	Commencement

SUMMER QUARTER, 1962**REGISTRATION PERIOD**

General In-Person Registration for ALL students (*by appointment only*):

May 31-June 2, 4

June 11-15

Registration may be delayed if new student Applications for Admission or former student Applications for Appointment or Permit to register are received after May 15.

Students in the Schools of Law, Dentistry, Medicine, Social Work, and the Hospital Division of the School of Nursing must file an Application for Registration Permit, although no appointment date is necessary.

Registration Appointments or Permits will be issued as follows:

Students in residence Spring Quarter, 1961:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates.....	Monday, April 16, 8 a.m. to 5 p.m.
Juniors	Tuesday, April 17, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 18, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 19, 8 a.m. to 5 p.m.

Former Students not in residence Spring Quarter, 1962, may obtain an Application for Appointment or Permit by writing to, or calling in person at the Registrar's Office, Room 109, Administration Building, or telephoning LAkeview 4-6000, Extension 2551, beginning April 17 and preferably *no later than May 15*. Application for Registration Appointment must be received before registration materials can be processed. *New (entering) Students* will be mailed Registration Appointments with their Official Notice of Admission.

ACADEMIC PERIOD

JUNE 18—MONDAY	Instruction begins for all students
JUNE 19—TUESDAY	Last day to add a course for the first term
JUNE 22—FRIDAY	Last day to add a course for the full quarter

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

JUNE 29—FRIDAY	Last day to submit applications for advanced credit examinations for first term
JULY 4—WEDNESDAY	Independence Day holiday
JULY 14—SATURDAY	Advanced credit examinations
JULY 18—WEDNESDAY	Final examinations and first term end
JULY 19—THURSDAY	Second term begins
JULY 20—FRIDAY	Last day to add a course for the second term
JULY 27—FRIDAY	Last day to submit applications for advanced credit examinations for second term
AUG. 11—SATURDAY	Advanced credit examinations
AUG. 17—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1962

REGISTRATION PERIOD

APR. 30—MAY 25	Advance Registration only for students in residence Spring Quarter, 1962. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 10-28	In-Person Registration for students in residence Spring Quarter, 1962, who did not complete Autumn Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
SEPT. 10-28	In-Person Registration for former students not in residence Spring Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is September 1.</i>
JULY 15	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointments will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Center of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 12-28	In-Person Registration for ALL new students.
SEPT. 28	Last day to register for Autumn Quarter, 1962. Note application deadlines above.
OCT. 1-5	Change of registration by appointment only.

ACADEMIC PERIOD

OCT. 1—MONDAY	Instruction begins for all students
OCT. 5—FRIDAY	Last day to add a course
NOV. 1—THURSDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1963, due at Registrar's Office
NOV. 12—MONDAY	State Admission Day holiday
NOV. 21—WEDNESDAY	Last day to submit applications for advanced credit examinations
NOV. 21-26	Thanksgiving recess (6 p.m. to 8 a.m.)

DEC. 8—SATURDAY	Advanced credit examinations
DEC. 13-18	Final examinations (4 o'clock classes, Wednesday, Dec. 12, 4-6 p.m.)
DEC. 18—TUESDAY	Quarter ends

WINTER QUARTER, 1963**REGISTRATION PERIOD**

OCT. 29-Nov. 27	Advance Registration only for students in residence Autumn Quarter, 1962. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
JAN. 2-4	In-Person Registration for students in residence Autumn Quarter, 1962, who did not complete Winter Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
JAN. 2-4	In-Person Registration for former students not in residence Autumn Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 1.</i>
DEC. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
DEC. 20	Deadline for return to Student Health Center of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
JAN. 2-4	In-Person Registration for ALL new students.
JAN. 4	Last day to register for Winter Quarter, 1963. Note application deadlines above.
JAN. 7-11	Change of registration by appointment only.

ACADEMIC PERIOD

JAN. 7—MONDAY	Instruction begins for all students
JAN. 11—FRIDAY	Last day to add a course
FEB. 21—THURSDAY	Last day to submit applications for advanced credit examinations
FEB. 22—FRIDAY	Washington's Birthday and Founder's Day holiday
MAR. 9—SATURDAY	Advanced credit examinations
MAR. 18-21	Final examinations (4 o'clock classes, Friday, March 15, 4-6 p.m.)
MAR. 21—THURSDAY	Quarter ends

For further information concerning subsequent quarters inquire at the Registrar's Office.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

ADMINISTRATION

BOARD OF REGENTS

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COLLEGE OF FORESTRY FACULTY

(AS OF OCTOBER, 1960)

The first date following a name indicates the beginning of service in the University. When two dates are given, the second, in parentheses, is the date of promotion to present academic rank.

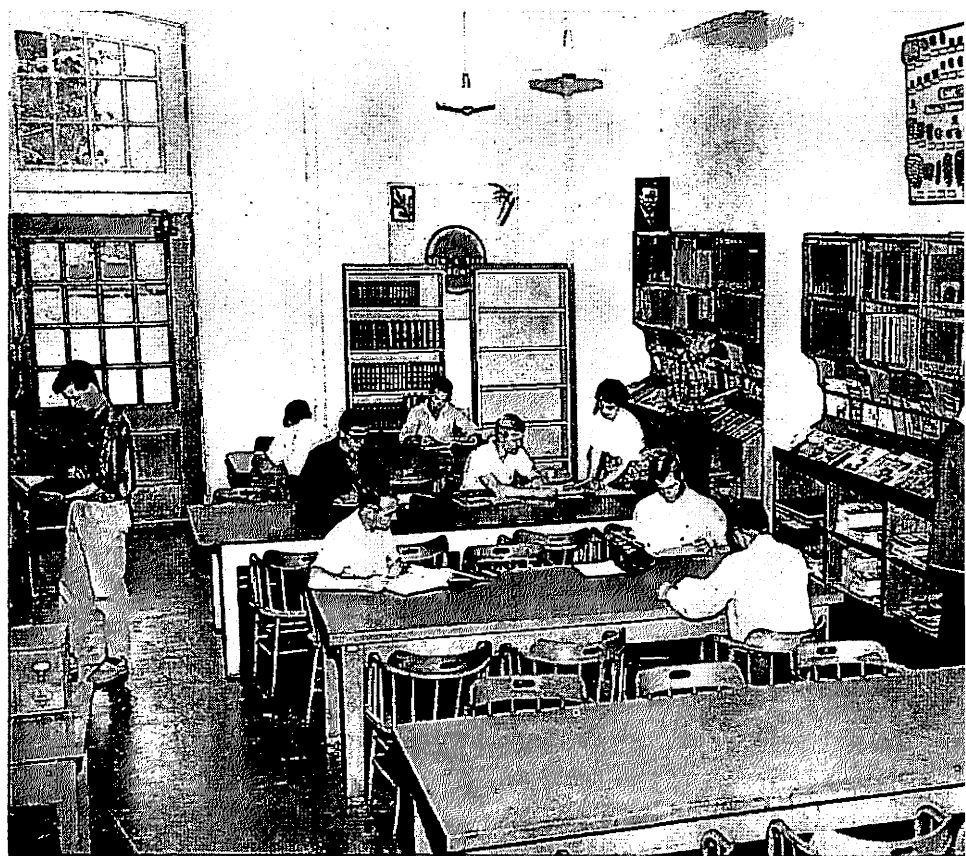
- BROCKMAN, C. FRANK, 1946 (1957), *Professor of Forestry*
B.S., 1924, Colorado State; M.S., 1931, Washington
- BRYANT, BENJAMIN SMYTH, 1949 (1959), *Associate Professor of Forest Products*
B.S.F., 1947, M.S.F., 1948, Washington; D.F., 1951, Yale
- CAMPBELL, ROBERT KENNETH, 1958 (1960), *Assistant Professor of Forest Genetics*
B.A., 1951, Montana State University; M.S., 1954, Ph.D., 1958, University of Washington
- ERICKSON, HARVEY D., 1947 (1959), *Professor of Forest Products*
B.S., 1933, B.S., 1934, M.S., 1936, Ph.D., 1937, Minnesota
- GESSEL, STANLEY PAUL, 1948 (1956), *Associate Professor of Forest Soils*
B.S., 1939, Utah State Agricultural College; Ph.D., 1950, California
- LENEY, LAWRENCE, 1960, *Assistant Professor of Forest Products*
B.S., 1942, M.S., 1948, Ph.D., 1960, New York State University
- MARCKWORTH, GORDON DOTTER, 1939, *Professor of Forest Management; Dean of the College of Forestry*
B.S.F., 1916, Ohio State; M.F., 1917, Yale
- PEARCE, JOHN KENNETH, 1934 (1943), *Professor of Logging Engineering*
B.S.F., 1921, Washington
- ROBERTSON, JAMES CAMPBELL HAY, 1945 (1956), *Professor of Forest Management*
B.S.F., 1927, Washington; M.S.F., 1933, California; D.F., 1947, Duke
- SCHAEFFER, WALTER HOWARD, 1952 (1960), *Professor of Forestry*
B.S.F., 1936, Washington; M.S.F., 1937, Yale; Ph.D., 1952, Washington
- SCOTT, DAVID ROBERT MAIN, 1955 (1960), *Associate Professor of Silviculture*
B.A., 1942, Virginia; M.F., 1947, Ph.D., 1950, Yale

- STENZEL, GEORGE, 1949 (1957), *Associate Professor of Logging Engineering*
B.S., 1938, New Hampshire; M.F., 1939, Yale
- THOMAS, DAVID PHILLIP, 1950 (1959), *Associate Professor of Forest Products*
B.S.F., 1941, M.F., 1948, Washington
- TURNBULL, KENNETH JAMES, 1958, *Instructor of Forestry*
B.Sc., 1951, University of Edinburgh; M.F., 1958, Washington
- HUPMAN, CARL BRANTNER, JR., 1956, *Resident Manager of the Charles Lathrop
Pack Demonstration Forest*
B.S.F., 1939, Washington; M.F., 1946, Yale
- MULLIGAN, BRIAN O., 1946, *Director of the Arboretum*
N.D.H., 1933, England
- SMITH, BERNICE F., 1955, *Librarian*
B.A., 1936, B.A. in L.S., 1937, Washington
- GRONDAL, BROR LEONARD, 1913 (1959), *Professor Emeritus of Forest Products*
B.A., 1910, Bethany College (Kansas); M.S.F., 1913, Washington; D.Sc. (Hon.),
1943, Bethany College; Ph.D. (Hon.), 1951, Crown Zellerbach Paper School

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.



GENERAL INFORMATION

GENERAL INFORMATION

THE UNIVERSITY OF WASHINGTON College of Forestry was established in 1907, at a time when professional forestry education in the United States was in its infancy. The College began its program with a staff of two instructors and a class of ten students. Today, accredited by the 14,000-member Society of American Foresters, the College numbers 14 faculty, 280 students, and 1,850 alumni.

Since 1925, the College program has been centered in the main forestry building, Alfred H. Anderson Hall, where facilities include lecture rooms, laboratories, an assembly hall, student activity rooms, a Forest Club room, and the College Library. The building was a gift of Mrs. Agnes H. Anderson, whose husband was a pioneer lumberman and civic leader in Washington.

PHILOSOPHY AND OBJECTIVES

For over half a century, the College of Forestry has pursued the philosophy of its founders: that the important timber resource of the Northwest requires men especially trained to harvest the forest crop efficiently and wisely, and men skilled in techniques of converting the raw material to maximal economic use. These goals are set forth in the following Statement of Policy and Objectives, adopted February 9, 1960:

PREAMBLE:

The unusually large vested interests of the people of the State of Washington in the multiple-use of forest lands, and the increasing dependence of the state economy on advanced forestry practices and effective forest utilization, demand a dynamic program of forestry education and research. The University of Washington is uniquely located to lead this program because the concentration of diverse wood-using industries, and the forests, their products, and allied resources, provide the University with opportunities and responsibilities in all aspects of professional forestry instruction and in research.

OBJECTIVES

The objective of undergraduate professional education in the College of Forestry of the University of Washington is to provide the best professional instruction in the many aspects of

forest management, logging engineering, forest products, and such other related areas of forestry as may be dictated by future developments.

The objectives of the graduate program of forestry are to make available the best academic guidance, research facilities, and advanced professional education to foresters desiring intensification or specialization beyond the initial professional degree.

The objectives of the research program in forestry are to provide a medium of education primarily in graduate programs, to provide stimulus for professional growth by faculty, and to promote and execute fundamental forestry research.

Further general objectives include providing professional forestry leadership; the conduct of seminars, colloquia, short courses, and other similar media for various professional and non-professional groups; and the dissemination of forestry information by methods appropriate to the University and College.

Because Seattle is in the center of the Northwest timber industry, forestry students here encounter at first hand the forest-management and forest-industry problems with which they will be concerned as foresters. Government forests and private timber holdings serve as laboratories and are regularly integrated into the four-year curriculum in which students study forest management and logging engineering in the field. Practicing foresters contribute to the laboratory instruction. Sawmills, plywood plants, pulp and paper mills, wood-industry research laboratories, and other wood-processing plants, all in close proximity to the College, provide field laboratories for student projects in the forest products curriculum. This favorable educational environment makes it possible to incorporate practical experience into the academic program.

COLLEGE FACILITIES

THE LIBRARY

The College of Forestry Library, a branch of the University's Henry Suzzallo Library, contains 10,000 bound volumes and 20,000 pamphlets, reports, and monographs. It also possesses an excellent collection of approximately 500 forestry periodicals and many indexes to current forestry literature. Under the nation-wide Farmington Plan, sponsored by the Special Library Association, it has assumed responsibility for collecting all foreign material published in the fields of forestry and pulp and paper technology. This facility provides unusual opportunity for academic research.

FOREST SOILS LABORATORIES

Two Forest Soils Laboratories, in Anderson Hall, serve a dual purpose as research and teaching aids in the College. In addition to enabling graduate students to study all types of forest soil problems and thoroughly explore properties of forest soils, undergraduate students can become familiar with important forest soil characteristics and with methods for analyzing forest soils.

Supplementing the Forest Soils Laboratories is a field laboratory at Pack Demonstration Forest, where less elaborate studies of forest soils and other problems are conducted. These three laboratories have been important factors in expanding research on the growth of forest trees. Greenhouse space is also available through cooperation with the Botany Department.

HERBARIUM

The Herbarium supplements forestry students' field work in dendrology. The collection contains representative plant material from all parts of the United States, and includes dried mounted specimens of leaves, twigs, and flowers of the hard-wood trees, and shrubs and twigs of the coniferous species. Fruit specimens and a complete cone collection of American conifers are maintained apart from the mounted collection. The Herbarium also provides authentic specimens for use in identifying woody plant material in many branches of forestry work. Another herbarium, complete in range plants, is maintained by the Botany Department and is available to forestry students.

WOOD COLLECTION

The Wood Collection contains nearly 3,500 specimens from all parts of the world, providing authentic material for research and for identification of wood

samples. The collection is valuable in the study of properties, characteristics, and uses of various woods, and provides material for studies of wood structure, both gross and microscopic.

FOREST PRODUCTS LABORATORY

Housed in its own building on the campus, the Forest Products Laboratory is equipped to conduct advanced studies of wood and wood products. Sections of the Laboratory are devoted to timber physics, woodworking, wood gluing, wood preservation, kiln drying, photomicrography, advanced wood technology, fiber board, and particle board. Testing machines, presses, machine tools, chemical apparatus, kilns, and mensuration devices permit almost unlimited experiments with wood.

A dry kiln for research and instruction in wood seasoning is situated adjacent to the Forest Products Laboratory. It is equipped with modern instrumentation for remotely controlling the variables involved in the drying of lumber over a wide range of conditions. The 18-foot by 26-foot drying chamber is sufficiently large to reproduce conditions found in industrial-seasoning practice, yet not so large as to be unwieldy for conducting basic wood-drying research. Undergraduate students in forest products operate the kiln as part of their senior-year program.

ARBORETUM

The University Arboretum is a 267-acre park planted with trees and shrubs from all over the world. The diversified topography of the Arboretum, which produces varied soil and moisture conditions, and the mild climate of the Puget Sound region permit the growth of a greater number of species and varieties than is possible in almost any other area. The Arboretum is a ten-minute walk from the campus.

LEE MEMORIAL FOREST

The Lee Forest is a tract of young timber in Snohomish County, near Maltby, about twenty-two miles from the University. The 158-acre property was deeded to the College of Forestry in the early 1930's by Mr. and Mrs. George O. Lee in memory of Mr. Lee's parents, Mr. and Mrs. O. H. Lee, Snohomish County pioneers. An experimental and demonstration farm forestry area, the Lee Forest is used for teaching and research in forest management, silviculture, ecology, and forest soils. A number of permanent study plots have been established, a study map made, and intensive growth measurements taken. During the winter of 1952 a first thinning was made in Douglas fir stands thirty-five and fifty-five years old.

The accessibility, stocking age, and site of the Lee Forest make it exceptionally valuable for studies and demonstrations of farm forestry practices applicable in western Washington.

PACK DEMONSTRATION FOREST

The Charles Lathrop Pack Demonstration Forest, an enlargement and development of an original gift from the Charles Lathrop Pack Forestry Trust, is a tract of more than 2,300 acres. It extends along both sides of the Mt. Rainier National Park highway at La Grande, Washington, sixty-five miles from the University. The Pack Forest is an excellent field and research laboratory as well as a public demonstration project.

Since 1928, when several permanent sample plots were established, research projects in various phases of silviculture, mensuration, and forest soils have been set up. Cooperative studies are being conducted with the Pacific Northwest Forest and Range Experiment Station.

Complete facilities for classwork and living accommodations are available to students and instructors working at the Pack Forest.

FRESHMAN SUMMER CAMP

Forestry students who have completed the regular freshman-year program are required to register for the regular Summer Quarter session at Pack Forest.

Regular Summer Quarter fees are charged for the nine-week program as well as a \$10.00 Pack Forest Fee and a subsistence fee of approximately \$130.00.

The Pack Forest Summer Program is under the supervision of regular faculty assigned to summer teaching. The summer curriculum is comprised of plane and topographic surveying, forest mensuration, and ecology.

WINNIFRED DENNY MOORE MEMORIAL FOREST

The Winnifred Denny Moore Memorial Forest is a recent gift to the College of Forestry from Dr. Raymond C. Moore, professor of geology at the University of Kansas. The 450-acre tract is situated in the eastern Cascade Mountains, about 20 miles northwest of Cle Elum, in the Boulder Creek area of the Wenatchee National Forest.

The tract is forested with ponderosa and lodge pole pine, spruce, and fir. It is especially useful for ecological studies in eastern Cascade timber types and for experimental plantings and land management studies in the high altitudes of Eastern Washington.

INSTITUTE OF FOREST PRODUCTS

The Institute of Forest Products, which is housed in Anderson Hall, has three general objectives: (1) to provide students with increased opportunities for advanced study and research particularly in fields relating to products of the forest; (2) to provide for additional new and important research results especially in fields relating to forest products, and (3) to provide for increased University research cooperation with industry and government in fields relating to forest products. Predoctoral and postdoctoral research assistantships are available.

LECTURESHIP

The Colonel William B. Greeley Lectureship in Industrial Forestry was established by the Industrial Forestry Association in 1956 to commemorate one of the nation's foremost pioneer foresters. With the funds provided by the grant, prominent industrial foresters are invited to the College during the Winter Quarter to conduct a special course in industrial forestry which includes public lectures and a series of seminars. The Lectureship serves as a memorial to a man who made great contributions to American forestry through his support of industrial forestry, tree farming, the Keep Green movement, and numerous other significant advances in forestry.

ADMISSION TO THE UNIVERSITY

PRELIMINARY STATEMENTS

The Board of Admissions, which is appointed by the President, is responsible for the interpretation and administration of the regulations governing admission to the University.

The University recognizes high school diplomas, college credits presented for advanced standing, and college degrees earned in the following institutions: (1) high schools accredited by the Washington State Department of Public Instruction; (2) out-of-state high schools accredited by their state university and state department of public instruction, or by the regional accrediting association of the area; (3) colleges and universities accredited by their regional accrediting association.

Resident. Defined for purposes of admission and/or assessment of fees as an individual who has been domiciled in the state of Washington for one year immediately prior to his registration. The domicile of a minor is that of his parents or his legal guardian.

Nonresident. An applicant whose credentials are received from a school or college located outside the state of Washington. An applicant who believes himself eligible for resident status may apply for reclassification through the Office of Residence Classification which has final authority in determining such status.

Qualified Student. One whose scholastic standing and preparation meet the standards for admission to the University.

Regular Student. One who fulfills the following requirements: (1) has been granted regular admission to a college or school of the University; (2) whose current schedule for credit is satisfactory to the dean of his college or school; (3) has completed all of the required steps for registration, including the payment of tuition and fees, the filing of class cards, and the depositing of registration materials at Sections.

Grade-point averages. These are based on a four-point system in which A = 4, B = 3, C = 2, D = 1, E = 0. An adjustment to this system is made as necessary in the computation of grade-point averages earned at other institutions.

ELIGIBILITY FOR ADMISSION WITH FRESHMAN STANDING

(Applicable to Residents of the State of Washington)

Undergraduate programs offered by the University lead to the baccalaureate degree; students, therefore, are admitted when, in the judgment of the University, they appear qualified to pursue a degree program with a reasonable probability of success. In making this judgment, the University's Board of Admissions considers the applicant's total record, including such factors as scholastic achievement in a college preparatory program, recommendations of the high school principal or counselor, rank in class, and scores on any nationally administered tests associated with college entrance.

Scholastic achievement is measured largely in terms of the criteria listed below. All students entering the University are expected to meet these criteria. Non-residents and students who enter with advanced standing will find additional admission criteria in subsequent sections.

SCHOLASTIC CRITERIA

1. Graduation with diploma from an accredited high school.
2. Achievement of an over-all high school grade-point average of at least 2.50 in courses completed after September, 1960, and a grade-point average of at least 2.00 in courses completed prior to September, 1960.
3. Completion of a college preparatory program of at least 16 units to include the following:

a. English	at least 3 units
b. One foreign language	at least 2 units
c. College preparatory mathematics	at least 2 units
d. One laboratory science	at least 1 unit
e. Social science	at least 2 units
f. Electives	at least 2 units

from the above subjects

Additional electives may be chosen from any subjects acceptable for high school graduation.

Intermediate algebra (Algebra III) is prerequisite to the trigonometry course which begins the mathematics sequence taken in the freshman year by forestry students. Students who plan to enter this college should complete Algebra III and, if possible, trigonometry in addition to the elementary algebra and plane geometry which normally are the two units of college preparatory mathematics. It is recommended also that students complete at least one unit of biological science and one unit of physical science while in high school. Students who enter the College with thorough preparation in mathematics and the natural sciences will have the best chance of completing their Forestry program and receiving their Bachelor of Science degree in the shortest possible time.

Because an appropriate choice of high school electives serves to strengthen a student's preparation, the University will give this part of his record the same careful attention it gives to other aspects of his qualifications.

ELIGIBILITY FOR ADMISSION WITH ADVANCED STANDING

(Applicable to Residents of the State of Washington)

A qualified student in good standing at an accredited institution may apply for admission with advanced standing. Such an applicant is expected to have the same high school preparation as the student who enters as a freshman, and to have a college grade-point average which meets the standards herein specified.

With fewer than 45 acceptable credits, an applicant must present a grade-point average of 2.50 in high school work completed after September, 1960; a 2.00 grade-point average in such work completed prior to this date; and a 2.00 cumulative average in all college work.

With 45 or more acceptable credits an applicant is expected to present a cumulative and last-term grade-point average of at least 2.00. See also section on transfer of advanced credit, page 23.

ADMISSION OF NONRESIDENTS TO UNDERGRADUATE STANDING

Applications from nonresidents will be considered, but first preference is given legal residents of the state of Washington, and sons and daughters of University of Washington alumni residing outside the state.

Nonresident applicants are selected on the basis of their preparation and scholastic standing. In general, a freshman applicant must be eligible to enter the university of his own state, and satisfy the foregoing scholastic criteria with a 3.00 (B) grade-point average or place in the upper 25 per cent of his graduating class.

An applicant for admission with advanced standing with fewer than 45 college credits must have a cumulative grade-point average of at least 3.00 in standard college courses as well as a high school grade-point average of at least 3.00 or have been in the upper fourth of his class. An applicant presenting more than 45 credits for advanced standing must present a 2.70 grade-point average in standard college courses.

Sons and daughters of University of Washington alumni are admitted according to resident standards but are required to pay the regular nonresident tuition fees. Applicants for admission to curricula in which the University serves on a regional basis will be accorded special consideration by the Board of Admissions.

ADMISSION OF SPECIAL STUDENTS AND AUDITORS

Non-high school graduates who are 21 or older and legal residents of Washington may apply to the Board of Admissions for admission with special standing. With their application they must submit all available records of secondary school and college study. Special students may register in and take for credit whatever courses the dean of the college permits, but may not participate in student activities or receive degrees. By fulfilling conditions specified by the Board of Admissions, special students may change their status to that of regular students and may receive degrees.

Persons 21 or older may register as auditors in nonlaboratory courses or the lecture sessions of laboratory courses by obtaining the consent of the dean of the college and the instructors of the courses. Auditors do not participate in class discussion or laboratory work. They may receive credit for audited courses only by enrolling in them as regular students in a subsequent quarter.

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Applicants for admission with graduate or advanced undergraduate standing are expected to meet the same general requirements as nonresidents of Washington educated in American schools and demonstrate a satisfactory command of the English language.

The official record of the Canadian student is the matriculation certificate or university admission certificate of his province. Canadian and foreign students who have been in University attendance must have official transcripts forwarded as required of all students. High school graduates and university transfer students must meet the scholarship requirements for nonresident students. See above.

ADMISSION OF VETERANS

Veterans and children of deceased veterans should meet the general admission criteria and follow the general procedures outlined for all applicants. Applications for and questions about government aid should be addressed to the Veterans Division Regional Office. See page 25.

ADMISSION OF UNDERGRADUATE STUDENTS WHO DO NOT MEET THE ADMISSIONS STANDARDS

An applicant whose preparation and previous scholarship does not clearly qualify him for admission may submit additional evidence in support of his application. This may include scores on nationally recognized tests of scholastic aptitude or achievement; letters from school administrators, teachers or counselors; and other information which may assist the Board of Admissions in evaluating his probability of success in the University.

Students admitted by special action of the Board of Admissions will be expected to achieve and maintain a satisfactory scholastic average in their University work and to fulfill any conditions specified by the Board at the time of their admission.

A student thus admitted on probation may continue attendance at the discretion of the dean of his college, but may not (1) be pledged 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 regulations of the University Intercollegiate Athletics Committee. Such a student shall be removed from probation when he has earned a minimum of 12 credits, exclusive of those in physical education activity and lower-division military training, with a 2.00 grade-point average. Provided, that if such a student carries less than 12 credits in one quarter he may not be removed from probation unless he has earned a minimum 2.00 grade-point average for the current quarter, as well as a minimum cumulative average of 2.00 for his total quarters in attendance. A student removed from probation under these provisions shall henceforth be subject to the regular scholarship rules.

ADMISSION TO THE GRADUATE SCHOOL

Basic requirements for admission to the Graduate School are a bachelor's degree from an institution of recognized standing, a grade-point average of 3.00 in the senior year of college work, approval of the Graduate School, and approval of the department in which the work is to be taken. For complete information, see the *Graduate School Bulletin*.

TRANSFER OF ADVANCED CREDIT FROM OTHER INSTITUTIONS

The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted.

1. The advanced standing for which an applicant's training appears to fit him is granted tentatively on admission. Definite advanced standing is not determined before the end of the student's first quarter in the University. The maximum that may be accepted from other colleges and universities is 135 quarter credits or senior standing. Transfer credit will not be allowed in the senior year.

2. Transfer credits will be accepted for upper-division credit *only* when earned at an accredited four-year degree-granting institution.

3. Transfer credits from institutions accredited for less than four years will not be accepted in excess of the accreditation of the school concerned.

4. Transfer of junior college credit shall apply on the 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 to completion of the first two years in the University. In no case shall the transfer of junior college credit to the University exceed 90 quarter credits exclusive of physical education activity credits.

5. The maximum number of credits obtainable by acceptance of Armed Forces training schools credits will be 30. All such credits will be counted as extension credits and will be included in the 90-credit maximum allowed toward the bachelor's degree, but none will apply toward the work of the senior year.

6. A maximum of 45 credits earned in extension and correspondence courses at other institutions may be transferred, but none of the credits can apply in the senior year. Extension and correspondence credits from schools that are not members of the National University Extension Association are accepted only after examination.

7. Credits earned in evening and extension classes or correspondence courses at this University are accepted after the student has satisfactorily completed 35 credits of work in residence (that is, registered in regular University classes). A maximum of 90 extension and/or correspondence credits is acceptable; the 90 credits may include the 45 extension and/or correspondence credits allowable from other institutions or may consist entirely of courses taken in this University's Division of Evening Classes or Division of Correspondence Study. All credits earned in advanced-credit examinations and all acceptable Armed Forces training schools credits must be counted in the 90 extension credit maximum. Up to ten evening class or correspondence course credits from this University can apply toward the work of the senior year.

8. For work done in unaccredited institutions, extended secondary programs in institutions whose standing is unknown, and for work with private teachers, University credit is granted only after examination. Applications for advanced-credit examinations must be filed during the first quarter in residence.

9. No credit will be granted 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. The prescribed written permission is effective only if obtained before registration. Nothing in this rule makes mandatory the granting of any credit by the University.

ADMISSIONS PROCEDURE

Requests for Application for Admission forms and correspondence regarding admission to any college or school of the University should be addressed to the Office of Admissions, University of Washington, Seattle 5, Washington. Graduates of high schools in the state of Washington may obtain this form from their principals.

Applications and required transcripts must be filed with the Office of Admissions prior to the following dates in order to be assured of consideration for admission to the quarter for which application is being made: August 1 for Autumn Quarter, 1961, July 15 for subsequent Autumn Quarters, December 1 for Winter Quarter, March 1 for Spring Quarter, May 15 for Summer Quarter.

All records become a part of the official file and can neither be returned nor duplicated for any purpose. Failure to submit complete credentials will be considered a serious breach of honor, and may result in permanent dismissal from the University.

A leaflet giving general information and instructions for registration is mailed with the Notice of Admission. In the event of a discrepancy, instructions in the leaflet supersede those found in earlier publications. *The University assumes no responsibility for applicants who come to the campus before they have been officially notified of their admission.*

The admissions credentials of applicants who do not register for the quarter to which they have been admitted are normally retained in the Office of Admissions for a period of one year from the date of application. At the end of this period, credentials on file are discarded unless the applicant has notified the Office of his

continued interest in attending the University or of his enrollment in the Evening Classes program. Should a student wish to renew his application after the one-year lapse, he must submit new credentials in advance of the date given above for the quarter desired.

FOR FRESHMAN STANDING

An application form, obtained from the University's Office of Admissions or from a Washington high school, should be completed according to instructions appearing on the form and returned to the Office of Admissions. Pages two and three of the same form should be given to the applicant's high school principal with the request that the scholastic record be entered and forwarded to the University's Office of Admissions as soon as possible.

Students may apply through their high schools on completion of the first semester of the senior year. Those who are qualified will be issued notices of early or conditional admission which become valid on graduation with a grade-point average of no less than 2.50 for the final semester. Others also will be notified of their admission status.

Scores on a nationally administered college aptitude test are not required. However, they may be helpful in evaluating a borderline student's probability of success.

FOR ADVANCED UNDERGRADUATE STANDING

An application form, obtained from the University's Office of Admissions or from a Washington junior college should be completed according to instructions appearing on the form and sent to the Office of Admissions. In addition, the applicant should request the principal of his high school and the registrar of each college he has attended to forward an official transcript of his record to the University's Office of Admissions. When these credentials have been evaluated, the applicant will be notified of his admission status.

FOR GRADUATE STANDING

An application form, obtained from the University's Office of Admissions, should be completed according to instructions appearing on the form and returned to the Office of Admissions. In addition an applicant should request the registrar of each college or university in which he has been enrolled as an undergraduate or graduate student to forward *two* official transcripts to the University's Office of Admissions. When these credentials have been evaluated, the applicant will be notified of his admission status. The student will find it convenient to have an additional copy of the record for reference.

WORLD WAR I OR II VETERANS

Under certain conditions a veteran of World War I or II who is not eligible for Veterans Administration benefits is fully or partly exempt from tuition charges. See page 32.

KOREAN VETERANS

A Korean veteran under Public Law 550 should obtain admittance to the University prior to making application for a Certificate for Education and Training, thus eliminating the chance of obtaining a certificate valid for an incorrect degree. If the veteran has any questions regarding application for a certificate, he should consult the Veterans Division, Safety Division Building. Educational allowance payments are made directly to the veteran by the Veterans Administration after the veteran and institution submit a monthly attendance certification.

Korean Certificate

Application for this certificate should be made at least four weeks prior to the beginning of University instruction. If the veteran is eligible, the Veterans Administration will issue him a Certificate for Education and Training which must be presented, along with his Program of Studies, to the Veterans Division, Safety

Division Building as soon as registration is completed. A Korean veteran should be prepared to meet all his own expenses as well as the cost of tuition, fees, and supplies for at least two months, because allowances are not made until after a full month's attendance has been established.

Quarter Credit Requirements (Public Law 550)

14 credits	Full subsistence
10 to 13 credits.....	Three-fourths subsistence
7 to 9 credits.....	One-half subsistence
6 credits or less.....	Established tuition and fees
or credits \div 14 \times \$110.00, whichever is the lesser.	

Graduate Credit Requirements (Public Law 550) 500-level Courses or Above

9 credits	Full subsistence
7 to 8 credits.....	Three-fourths subsistence
5 to 6 credits.....	One-half subsistence
4 credits or less.....	Established tuition and fees
or credits \div 14 \times \$110.00, whichever is the lesser.	

If a graduate is combining 400-level courses with 500-level courses, he should consult with the Veterans Division, Safety Division Building, to determine the scale of pay.

Termination of Training

A veteran *eligible* under Public Law 550 must complete his training by *eight years* after his release from active service, or by January 31, 1965, whichever is earlier.

DISABLED VETERANS

A veteran with a disability under Public Law 894 should contact a training officer in the nearest Veterans Administration Office approximately four weeks prior to registration.

CHILDREN OF DECEASED VETERANS

Public Law 634 grants federal benefits to children of deceased veterans of World War I, World War II, or the Korean Conflict who died as a result of injury or disease incurred or aggravated while in the service. Information regarding eligibility under this law should be requested from a Veterans Administration Regional Office.

The Certificate for a Program of Education issued to those eligible persons by the Veterans Administration is to be presented to the Veterans Division, Safety Division Building, on the date of registration.

REQUIRED TESTS AND EXAMINATIONS

Washington Pre-College Differential Guidance Test

This grade prediction test is required of all entering freshmen, including those transferring to the University with fewer than 45 credits. It is also required of transfer students who have not completed courses which are equivalent to English 101 (English composition) or Humanistics-Social Studies 265 (Techniques of Communication). High school seniors are advised to arrange through their high schools to take this test in the spring when it is offered throughout the state of Washington. Nonresidents of Washington may take the test at the time of their registration according to instructions mailed with the notice of admission. Sample copies are not available. Special, foreign, blind students, and auditors are exempted.

The several parts of this test have been selected because of their proven value for the prediction of grades most likely to be earned by a student. The result of the test are used by departmental advisers as an aid in assigning students to appropriate sections in English composition and other subjects, therefore it is advisable that the student bring a copy of the results with him when he comes for his first conference with his counselor or adviser.

Mathematics Placement Tests

One section of the Pre-College Differential Guidance Test evaluates a student's mastery of intermediate algebra and plane geometry. A satisfactory score on this section qualifies a student to enroll in Mathematics 104 (trigonometry) or Mathematics 105 (college algebra). Those who fail to qualify and wish to proceed to the study of more advanced mathematics courses may choose one of the following alternative plans:

1. Pass Mathematics 101 and then take 104, or 105 or both. Mathematics 101 is given only through the Division of Evening Classes or the Division of Correspondence Study. No credit is given for Mathematics 101 to students who have completed the third semester of high school algebra.
2. Pass Mathematics 103, in which the first four weeks are devoted to a review of intermediate algebra and the last six weeks to the study of plane trigonometry equivalent to Mathematics 104. The satisfactory completion of this course qualifies the student to enroll in Mathematics 105 (college algebra).

Students who have studied trigonometry, fourth semester algebra, mathematical analysis, or similar subjects in high school, will be placed in the next appropriate course at the University according to their scores in additional placement tests given by the Department of Mathematics. It is advisable to review before taking these examinations. This generally applies to students entering such fields as engineering, architecture and urban planning, fisheries, forestry, pharmacy, mathematics, and the physical and marine sciences.

MEDICAL EXAMINATION

A student entering the University for the first time, or returning to the University after an absence of more than one calendar year, or who has previously attended Summer Quarter classes but is entering regular University classes for the first time, is required to submit to the Student Health Service (Hall Health Center) a form containing his health history and a report of a physical examination by a physician. The form will be sent to new students by the Office of Admissions, and to returning former students by the Registrar. This examination, which is required before a student may register, is taken at the student's expense. A chest X ray, also required of the above students, is given at the Student Health Service without charge.

With the exception of Canadian students, who will follow the above instructions, foreign students must take the required physical examination at the Student Health Service when they arrive on the campus.

MISCELLANEOUS INFORMATION

Junior High School Courses. The University recognizes college preparatory courses given in the junior high school and assigns them the same value as equivalent courses offered by the high school. Students who elect these subjects in the junior high may subsequently achieve a superior degree of competence in related subject areas in high school.

Accelerated, Honors, and Advanced Placement Courses. The University encourages qualified students to extend themselves academically by taking advantage of advanced, accelerated and honors courses offered by their schools. The degree of achievement attained by students in selected areas may be measured by their performance in College Entrance Examination Board Advanced Placement Examinations and by other means which are described briefly in the following paragraphs.

The University of Washington endorses the Advanced Placement Program of the College Entrance Examination Board and grants placement and/or credit at the discretion of the University department concerned on the basis of scores earned in College Entrance Examination Board Advanced Placement Examinations. Successful participation in such challenging opportunities assures superior academic

preparation and serves to identify those students more likely to profit from University-level honors courses.

REGISTRATION

PROCEDURE

ALL students, currently in school, who plan to register for a succeeding quarter (Summer Quarter excepted) must register by Advance Registration and pay fees by the stated deadline. Students are held responsible for knowing and observing registration procedures, dates, and deadlines which appear in the bulletins, in "Official Notices" in the *Daily*, and on campus bulletin boards.

New students are given appointments when they are notified of admission, and they receive complete directions for registering at the time of registration.

Students expecting to return to the University after an absence of a quarter or more (excluding Summer Quarter) must register by In-Person Registration. The required registration appointment may be obtained by writing to, calling at, or telephoning the Registrar's Office at the time specified in the Calendar, but in no case later than the stated deadline (see pages 4-11).

ADVISING

After notification of admission, and before registration, new students should visit or write to the College for assistance in planning their course programs. Academic and other counseling of forestry students is assigned to faculty advisers in the College. The adviser for freshmen and new students is Professor Walter H. Schaeffer, 210 Anderson Hall.

REGISTERED CREDITS ALLOWED EACH QUARTER

Except with the consent of his dean, no student may be registered for less than 12 credits (or the equivalent) or more than 16 credits (or the equivalent) or the number called for in the prescribed curricula, exclusive of physical education activity courses and lower-division military, naval, or air science courses. In no case may a student be registered for, or receive credit for more than 20 credits (or the equivalent) of work, exclusive of physical education activity courses, and lower-division military, naval, or air science courses. Work taken in noncredit courses or to remove entrance deficiencies, or concurrently in evening classes, by correspondence study, or in another collegiate institution, must be included in the computation of the total registered credits allowed.

CHANGES OF REGISTRATION

After students have registered, they cannot change their schedules except with permission of the Dean of the College. No student is permitted to make a registration change that involves entering a new course after the first calendar week of the quarter. After that time no student may register without the consent of the Dean and the instructor whose class the student wishes to enter.

WITHDRAWAL FROM A COURSE

Official withdrawal from a course is made only under the following conditions: (1) during the first fifteen calendar days of a quarter, with the consent of the withdrawing student's adviser; (2) after the first fifteen calendar days of a quarter and before the end of the first six calendar weeks of a quarter, with the approval both of the instructor of the course from which withdrawal is sought and of the dean of the college in which the withdrawing student is enrolled; and (3) after the first six calendar weeks of a quarter and before final examination week, only upon certification in writing to the Registrar by the dean of the college in which the withdrawing student is enrolled that, in the judgment of the dean, withdrawal is necessitated by the student's hardship. Withdrawals from courses accomplished by any other method are unofficial withdrawals which are entered on a student's record as EW, and are assigned the value of E in the computation of the

student's grade-point average. No official withdrawal may be made during final examination week.

Official withdrawals are entered on a student's record as follows: (1) a withdrawal within the first fifteen calendar days of a quarter, as W; (2) a withdrawal after the first fifteen calendar days of a quarter, as PW, if the student's work has been satisfactory, and as E, if the student's work has been unsatisfactory. Grades of PW and W are assigned no value in the computation of grade-point averages.

WITHDRAWAL FROM THE UNIVERSITY

The student should obtain at the office of the Dean of the College the Request for Withdrawal From the University form. The same system of grading applies as that described under Withdrawal from a Course.

QUALIFICATIONS FOR GRADUATION

MINIMUM SUBJECT REQUIREMENTS

The University credit requirement for graduation is 180 academic credits (including Health Education 110 or 175) and the required quarters of military training and physical education activity. The College of Forestry requires that 9 credits or the equivalent in English 101, 102, and 103 (English Composition) be included in the total. At least 60 of the 180 credits must be in upper-division courses, those numbered 300 and above. Advanced ROTC courses do not count as upper-division credit, and no more than 18 credits in advanced ROTC courses may be counted toward graduation.

Students who transfer from other institutions are normally required to earn at least 10 credits in their major subject in this College.

SCHOLARSHIP

Grade points per credit are awarded on the following basis: a grade of A earns 4 points; B, 3 points; C, 2 points; D, 1 point. The grade of E or EW signifies failure and the grade point is 0. The quarterly and cumulative grade-point averages are computed by multiplying the grade point received in a course by the total number of credits the course carries, totaling these values, and dividing by the total number of credits the student attempted. Courses for which any of the following symbols are recorded are not considered in determining the grade-point average: I, N, S, W, PW, X. Grade-point averages are calculated on the basis of all grades received in courses which carry academic credit, including courses repeated. Grades received in repeated courses do not cancel or replace any other grades. Only University of Washington residence credits will be used in these computations.

Any undergraduate student who has completed three or more quarters in the University and whose cumulative grade-point average is below 2.00 shall be placed on academic probation. Any undergraduate student who has completed not more than two quarters at the University shall be placed on probation when his cumulative grade-point average is below 1.80. The dean of the school or college in which the student is enrolled shall notify the student as soon as possible that he is on probation. Such action will be noted permanently on the student's official academic record.

Academic probation is essentially a warning to the student that he must show improvement if he is to remain in the University. University regulations regarding scholastic eligibility for participation in intercollegiate athletics and other student activities shall be recommended to the Senate by the Faculty Committee on Intercollegiate Athletics and the Faculty Committee on Student Welfare respectively.

An undergraduate student on academic probation will be removed from probation at the end of any quarter in which his cumulative grade-point average reaches 2.00 or better.

Any undergraduate student on academic probation will be dropped: (1) if he fails to attain at least a 2.00 for the following quarter's work; or (2) if he fails to

attain a 2.00 cumulative average at the end of the two subsequent quarters. Any student dropped under this rule will be notified in writing of this action by the dean of the school or college in which he is enrolled.

Only under exceptional circumstances will a student dropped under low scholarship rules be readmitted to the University. Such a student will be readmitted only at the discretion of the dean of the school or college to which he seeks admission. A student readmitted after being dropped under these rules will enter on academic probation. Such a student will be dropped: (1) if he fails to attain a 2.00 for the following quarter's work; or (2) if he fails to attain a 2.00 cumulative average at the end of two quarters. He will be removed from probation at the end of the quarter in which his cumulative grade-point average reaches 2.00 or better.

A senior who has completed the required number of credits for graduation but whose work in what would normally be his final quarter places him on probation will not receive a degree until he has been removed from probation. A senior who has completed the required number of credits for graduation but whose work in his last quarter results in his being dropped for low scholarship shall not receive a degree until he has been readmitted and removed from probation.

SENIOR-YEAR RESIDENCE

Senior standing is attained when 135 credits, plus the required quarters of ROTC and physical education, have been earned. Of the work of the senior year (45 credits), at least 35 credits must be earned in three quarters of residence. The remaining 10 credits may be earned either in residence or in this University's evening classes or correspondence courses.

MILITARY TRAINING

The Departments of Air Science, Military Science, and Naval Science conduct the ROTC programs under agreements between the University and the United States Air Force, Army, and Navy. At the University, these programs are coordinated by the Dean of the College of Engineering.

The University requires male students who enter the University as freshmen or sophomores to complete six quarters of military training. (For exemptions, see below). The two-year basic programs offered by the Departments of Air Science and Military Science and the four-year program offered by the Department of Naval Science, satisfy this requirement. For a complete list of courses offered by these Departments, see the *Yearly Time Schedule*. In addition to the basic programs, the Department of Air Science and the Department of Military Science each offers for selected students an advanced program which leads to commissioning in the Air Force or the Army. The four-year program of the Department of Naval Science, also for selected students, leads to commissioning in the Navy or Marine Corps.

Students enrolling in Naval ROTC, and those who take the advanced program of Air Force or Army ROTC must agree in writing to complete the course of training and accept a commission in the service for which they are trained. *The honoring of this commitment is a condition of graduation from the University.*

The basic program of the Department of Air Science consists of three quarters of military classroom instruction on the Foundations of Air Power. These are offered in the spring quarter of the first year and the autumn and winter quarters of the second year. During each of the other three quarters, the student must substitute an approved University course in lieu of Air Science. Leadership Laboratory is required each of the six quarters of the basic program and is conducted one hour each week.

The basic program (freshmen and sophomores) of the Department of Military Science requires drill one hour each week. Classroom military studies for freshmen require two hours per week in the first quarter, one hour per week in the second quarter, and none in the third quarter. As a substitute for classroom military studies in the third freshman quarter, registration is required in a selected three-credit or five-credit course in another department. The list of courses

from which this substitute course may be selected is printed in the *Yearly Time Schedule*. Classroom military studies for sophomores require two hours per week throughout the academic year.

Information concerning the Naval Science ROTC program can be found in the bulletins of the College of Arts and Sciences, the College of Business Administration, and the College of Engineering.

Exemptions from the military requirement are granted to:

1. Students who are twenty-three or over at the time of original entry into the University.
2. Students who enter as juniors or seniors.
3. Special students.
4. Students registered for 6 credits or less.
5. Students who are not citizens of the United States.
6. Students who, because of physical condition, are exempted by the University Health Officer.
7. Students who have equivalent military service. Complete or partial exemptions, depending on length of service, are granted for previous active service in the Armed Forces or Coast Guard.
8. Students who are active members or reserve officers of the Armed Forces or Coast Guard, or commissioned officers of the National Guard.
9. Students who are active enlisted members of the National Guard or of the Organized Reserve of the Armed Forces or Coast Guard.
10. Transfer students who present acceptable credit for military training taken in other colleges. The amount of exemption depends on the amount of previous training. Transfer students are required to take military training only for the number of quarters they need to achieve junior standing by a normal schedule.
11. Students who seek exemptions on grounds other than 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 after consultation with the appropriate ROTC commander.

Those who are exempted under paragraph 5 or 11 must arrange at the time of initial entrance to substitute equivalent extra credits in other University courses to equal the number of credits they would have been required to earn in military training courses.

PHYSICAL AND HEALTH EDUCATION

Activity Courses. Students who enter the University as freshmen are required to complete one physical education activity course each quarter for the first three quarters of residence. In fulfilling the foregoing requirement, *all* students must pass a swimming test or satisfactorily complete one quarter of swimming. In fulfilling the three-quarter requirement, no activity course may be repeated for credit.

Men students may use credits earned in freshman or varsity sports to satisfy the activity course requirement.

Women students, in fulfilling the three-quarter requirement, may take a maximum of two credits in any of the following: (1) swim area; (2) dance area; (3) tennis and badminton; (4) any other specific individual, dual, or team activity.

The following students are exempt from the requirement of activity courses:

1. Students who have attained the age of twenty-five. A student who attains the age of twenty-five during a quarter in which he is registered for a required physical education activity course shall be held for the completion of that course. This rule shall not be retroactive in its application to students who entered prior to Spring Quarter, 1951, and were exempted from required physical education courses under previous rules.
2. Students who enter as sophomores, juniors, or seniors.

3. Special students.

4. Students registered for 6 credits or less.

5. Students who because of physical condition are exempted by the Graduation Committee upon the recommendation of the Dean of the College. Such action will be taken only when the Dean has received a joint recommendation for exemption from the University Health Officer and the Executive Officer of the Department of Physical Education for Men or for Women, whichever is appropriate. All other students who are reported by the University Health Officer as physically unfit to join regular classes will be assigned by the Executive Officer of the Department of Physical Education for Men or for Women to special programs adapted to their needs.

6. Students who are veterans of military service. Complete exemption is granted for one year or more of active duty. This exemption does not grant credit. Veterans with less than one year of service receive no exemption.

7. Transfer students who present acceptable credit for physical education activity courses taken in other colleges. The amount of exemption depends on the number of quarters for which credit is transferred.

Health Courses. All men students who enter the University as freshmen are required to take Health Education 175, a course in personal health, within the first three quarters of residence. The health education course requirement may be satisfied by passing a health-knowledge examination. Successfully passing this test exempts the student from the requirement but does not grant credit for Health Education 175. Veterans with one year or more of active service are exempt from this requirement. This exemption does not grant credit.

Women students who enter the University as freshmen are required to take Health Education 110 within the first three quarters of residence. Women entering the University for the first time may satisfy this requirement by passing a health-knowledge examination given during the Autumn Quarter registration period. Successfully passing this test exempts the student from the requirement but does not grant credit for Health Education 110.

TUITION AND FEES

All tuition and fees are payable at the time of registration. The University reserves the right to change any of its fees without notice.

Principal fees for each quarter (Autumn, Winter, and Spring) are listed below. Summer fees are listed in the *Summer Quarter Bulletin*.

Tuition

Resident students, per quarter	\$35.00
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A resident student is one who has been domiciled in Washington for at least a year immediately prior to registration. The domicile of a minor is that of his parents.

Nonresident students, per quarter	105.00
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Prospective students are classified as nonresidents when their credentials come from schools outside Washington. If they believe they are residents, they may petition the Residence Classification Office, 205A Administration Building, for a change of classification.

Auditors, per quarter	12.00
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Veterans of World Wars I or II

Exemption from tuition charges is granted resident students who either (1) served in the United States Armed Forces during World War I and received honorable discharges; or (2) served in the United States Armed Forces during World War II at any time after December 6, 1941, and before January 1, 1947, and received honorable discharges, but are no longer entitled to federal educational benefits; or (3) are United States citizens who served in the armed forces of governments associated with the United States during World Wars I or II and received honorable discharges. Nonresident students who meet one of these requirements pay one-half of the nonresident tuition. This exemption is not granted to Summer Quarter students.

Proof of eligibility should be met as follows:

- (1) World War I veterans should present copy of discharge papers to Comptroller's Office, 203 Administration Building.
- (2) World War II veterans with Korean service or who have suffered disability should present a letter from the Veterans Administration Regional Office to the Veterans Division, Safety Division Building, stating they are no longer eligible for any federal educational benefits. (Excepted are those veterans who have had both World War II benefits and Korean benefits and have expired those benefits at the University of Washington.)
- (3) World War II veterans who have not suffered any disability or served in the Korean Conflict should present an 8½-inch x 11-inch photostat of discharge papers to the Veterans Division, Safety Division Building.

Exemption must be cleared prior to student's appointment day for registration in order to prevent personal payment.

Incidental Fee, per quarter

Full-time resident students	27.50
Part-time resident students (registered for 6 credits or less, exclusive of ROTC)	10.00
Full-time nonresident students	52.50
Part-time nonresident students (registered for 6 credits or less, exclusive of ROTC)	35.00
Auditors do not pay an incidental fee; there are no other exemptions.	

ASUW Fees

Membership, per quarter	8.50
Optional for auditors and part-time students.	
Athletic admission ticket (optional for ASUW members)	3.50-6.50
Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters only, \$3.50; Spring Quarter only, \$3.50.	

Military Uniform Deposit 25.00

Paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.

Pack Forest Fee 10.00

Paid in Summer Quarter when course is taken at Pack Forest.

Pack Forest Subsistence Fee 130.00

Approximate charge for meals during the quarter spent at Pack Forest.

Breakage Ticket Deposit 3.00

Required in some laboratory courses; ticket is returnable for full or partial refund.

Locker Fee, per quarter 1.50

Required of men students taking physical education activities.

Grade Report Fee .50

One grade report is issued at the end of each quarter without charge; the fee, payable in advance, is charged for each additional copy.

Transcript Fee 1.00

One transcript is furnished without charge; the fee, payable in advance, is charge 1 for each additional copy.

Graduation Fee 10.00

SPECIAL FEES

A registration service fee of \$15.00 is charged those students: (1) eligible for Advance (mail) Registration who fail to participate; or (2) who, after the established application deadline, are granted Appointments or Permits to register by in-person Registration by action of the Registration Appeal Board. A late registration fee of \$15.00 is charged any student granted permission to register after the last registration day before the opening of Autumn, Winter, and Spring Quarters by action of the Registration Appeal Board. A fee of \$5.00 is charged Autumn, Winter, and Spring Quarters 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. The fee for a special examination is \$1.00, and for removal of an Incomplete, \$2.00. A fee of \$5.00 is charged each student entering with less than 45 credits, who has not previously taken the Washington Pre-college Differential Guidance (Grade Prediction) Test.

PHYSICAL EDUCATION ACTIVITY FEES, per quarter are: bowling, \$5.00; canoeing, \$3.00, golf instruction, \$1.50.

REFUND OF FEES

All major fees will be refunded in full if complete withdrawal is made during the first three calendar days of the quarter; one-half the amount will be refunded if withdrawal is made during the first thirty calendar days. Fee refunds are not made to students withdrawing under discipline.

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

At least two weeks must elapse between payment and refund of fees, if payment was made by check.

ESTIMATE OF YEARLY EXPENSES

The figures given below are minimum estimates for an academic year, which includes Autumn, Winter, and Spring Quarters. Living costs and personal expenses vary widely with the needs of the individual student.

Tuition, Incidental, and ASUW Membership Fees

Full-time resident student	\$213.00
Full-time nonresident student	498.00

<i>Athletic Admission Ticket</i> (optional)	6.50
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<i>Health and Accident Insurance</i> (optional)	16.50
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<i>Special Fees and Deposits</i>	38.50
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Military uniform deposit, breakage ticket, and locker fees.

<i>Books and Supplies</i>	90.00
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Board and Room

Room and meals in Men's Residence Halls	675.00
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Room and meals in Women's Residence Halls	615.00-720.00
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Room and meals in fraternity or sorority house (Including dues and social fees.)	670.00-760.00
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Initial cost of joining is not included; this information may be obtained from the Interfraternity or Panhellenic Council.

<i>Personal Expenses</i>	300.00
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STUDENT ACTIVITIES AND SERVICES

ASSOCIATED STUDENTS

Membership in the Associated Students of the University of Washington, the central organization which conducts all student activities, is required of all regularly enrolled students. Through the ASUW Board of Control and its various committees and boards, students assume major responsibility in the government of student life. The ASUW helps to finance the programs of athletics, debates, concerts, lectures, and many other activities and facilities, including the University of Washington *Daily* and the Student Union Building.

FOREST CLUB

The Forest Club, founded in 1908, is an organization of students in the College of Forestry. Through the club, students and faculty members cooperate to keep in touch with current developments in forestry and lumbering and the leaders in these fields, and to interest the public in the College and in the forestry problems of the state. Club meetings feature prominent speakers and educational films. The club sponsors an all-day field event, called Garb Day, an annual formal dance, and an annual banquet, which is attended by representatives from nearly every field of forestry.

The Forest Club is affiliated with the Association of Western Forestry Clubs, a student-sponsored organization fostering inter-forest school cooperation among the eight accredited institutions in the western United States. A major project of this organization is the sponsorship of an annual Conservation Week to promote conservation through education.

Each year, Forest Club members work with the King County Forest Committee in conducting tree-farm tours for school children in the county. Serving as guides, students transmit their classroom and field-acquired knowledge to the younger generation so that America's junior citizens may appreciate the philosophy of conservation and wise use of the forest resource.

XI SIGMA PI

Organized at the University of Washington in 1908, Xi Sigma Pi is the oldest and largest national forestry honorary fraternity in the United States. It has chapters in nearly all the leading forestry schools in the country. At the University of Washington, Alpha Chapter encourages a high standard of scholarship in forestry education, the advancement of the profession, and fraternal relations among workers in forest activities.

Xi Sigma Pi requires a grade-point average of at least 3.00 for six quarters in residence at the College of Forestry.

The growth of Xi Sigma Pi is reflected in a membership list of more than 1,500, a list that includes names familiar to foresters throughout the country.

AWARDS AND LOANS

The University offers a number of awards for outstanding academic achievement. Some are given by the University, and many others are available through the generosity of friends and alumni. A handbook listing the current awards is available from the Office of the Dean of Students.

A number of scholarships and awards are specifically for students in the College of Forestry. These are:

1. **AGNES HEALY ANDERSON RESEARCH FELLOWSHIP.** Awarded a graduate student. Amount variable, depending on availability of funds and need.

2. **BILES-COLEMAN LUMBER COMPANY SCHOLARSHIP.** Awarded a graduate of Omak High School ranking in the upper half of his class and with an interest in forestry. Amount, \$500 a year for a four-year period.

3. **EDWARD K. BISHOP SCHOLARSHIP.** Amount \$500.

4. **J. H. BLOEDEL FORESTRY RESEARCH AND SCHOLARSHIP AWARD.** Amount (approximately \$1,000 annually) and number of grants variable; available to both graduate and undergraduate students.

5. **CROWN ZELLERBACH FOUNDATION SCHOLARSHIP.** Awarded a junior or senior in the College of Forestry; \$500.

6. **U. M. DICKEY SCHOLARSHIP.** Established by the Scott Paper Company, \$500 to \$1,000 annually for a two-year period to the outstanding student completing the sophomore year.

7. **CUSTOMERS OF THE ELLIOTT BAY LUMBER COMPANY SCHOLARSHIP.** One to a forest products major, one to a logging engineering major, and one to a forest

management major at the completion of the junior year for the senior year; three at \$500 each.

8. **HOMELITE CORPORATION AWARD.** Awarded outstanding students of forestry; amount, \$250 to \$500.

9. **PAUL H. JOHNS, JR., MEMORIAL AWARDS.** Awarded the outstanding junior and senior student; \$200 each.

10. **R. D. MERRILL FORESTRY RESEARCH AND SCHOLARSHIP AWARD.** Amount (approximately \$1,000 annually) and number of grants variable; available to both graduate and undergraduate students.

11. **MILL EQUIPMENT, INC. SCHOLARSHIP.** A scholarship for a student who has completed the Summer Quarter at Pack Forest; \$250.

12. **NORTHERN COMMERCIAL COMPANY SCHOLARSHIP.** Awarded a junior, senior, or graduate student; \$500.

13. **LAWRENCE OTTINGER FOREST PRODUCTS FELLOWSHIP.** Award of \$1,000 annually to a graduate student in forest products with interests in plywood, wood particle board, adhesives, or allied fields.

14. **RAYONIER FOUNDATION SCHOLARSHIP.** Annual grant to a graduate student in forestry; \$1,000.

15. **SEABOARD LUMBER COMPANY SCHOLARSHIP.** An annual award available to both undergraduate and graduate students; \$300.

16. **ST. REGIS PAPER COMPANY SCHOLARSHIP.** An amount of \$800 annually for a two-year period awarded an outstanding forestry student completing the sophomore year at the University of Washington, Oregon State College, University of Idaho, or University of Montana.

17. **UNIVERSITY OF WASHINGTON FORESTERS' ALUMNI ASSOCIATION SCHOLARSHIPS.** Awarded two outstanding high school seniors who are residents of the state of Washington and interested in majoring in forestry at the University of Washington. Two to be awarded at \$250 each.

18. **WASHINGTON BANKERS ASSOCIATION SCHOLARSHIP IN FORESTRY.** Awarded to outstanding high school seniors dedicated to the study of forestry at University of Washington; \$250.

19. **WEYERHAEUSER FELLOWSHIP IN FOREST MANAGEMENT.** Presented graduate students; two at \$2,000 each.

20. **HUGO WINKENWERDER GRADUATE FELLOWSHIP.** An annual award of \$1,000 given a graduate student in forestry.

21. **HUGO WINKENWERDER MEMORIAL SCHOLARSHIPS.** Awarded outstanding high school seniors dedicated to the pursuit of forestry at the University of Washington; six at \$200 each.

Further information on these awards may be obtained from the College of Forestry.

Two annual essay contests are open to forestry students. The Western Forestry and Conservation Association sponsors a contest each spring for juniors in the forestry schools of the West, with a first prize of \$100 and a second prize of \$75, plus a trip to the autumn conference of the association. The Pack Essay Contest, which is open to all students in the College, offers prizes of \$25, \$15, and \$10.

Loans for emergency purposes may be made to students in the College of Forestry through the Agnes H. Anderson Student Loan Fund. Information about the fund is available at the College of Forestry. Other emergency loans are made through the Office of the Dean of Students.

The University of Washington awards 100 tuition scholarships each academic year to worthy students from other countries. There are no scholarships available for the Summer Quarter. These awards are made on the basis of the academic record of the student, recommendations from his professors, his need for such assistance, and the availability of such openings in his department at the Univer-

sity. These scholarships cover tuition only and are administered by the Foreign Exchange Scholarship Committee, Foreign Students Office, University of Washington, Seattle 5, Washington, U.S.A. Application for these scholarships must be made by March 1 for the following year.

OFFICE OF THE DEAN OF STUDENTS

The Office of the Dean of Students is concerned with the general welfare of students and welcomes correspondence and conferences with both parents and students. This Office works closely with the advisory system of the colleges and schools of the University; it directs students to faculty advisers, the Counseling Center, and other persons and agencies offering information and assistance with personal and social problems. The Dean of Students Office also has current information on Selective Service regulations.

The Foreign Students Office operates through the Office of the Dean of Students. The Foreign Adviser and his staff offer guidance on all nonacademic problems to students from other countries. Questions about immigration regulations, housing, social relationships, personal problems, finances, minimum course requirements, and employment should be referred to this Adviser. Students who are interested in study abroad may obtain from him information about schools in other countries and about Fulbright and other scholarships.

COUNSELING CENTER

The Counseling Center in Lewis Hall Annex offers vocational and educational counseling to students who need help in their adjustments to college. The staff of the Center, which includes vocational counselors and psychologists, works closely with other student services and supplements the academic advisory program.

HOUSING

Information and applications for residence in University-owned housing for single persons may be obtained by writing to the Manager, Men's Residence Halls, 1201 Campus Parkway, Seattle 5, or to the Manager, Women's Residence Halls, University of Washington, Seattle 5. Preference in assignment to vacancies is given to students under twenty-one years of age until August 1; thereafter assignments are made in the order of application. Prospective students may apply for the residence halls prior to their acceptance by the University but not before April 15.

University regulations require that women students under twenty-one who do not live at home must live in approved group residences such as the Women's Residence Halls, sororities and church-sponsored living groups. Other types of living arrangements must be reported to the Dean of Women and be approved by the student's parents or guardian.

Information about fraternities or sororities may be obtained by writing to the Interfraternity Council or the Panhellenic Council, Student Union Building, University of Washington, Seattle 5.

The Office of Student Residences maintains listings of off-campus rooms, rooms with board, housekeeping rooms, apartments, and houses which are available to University students. These listings must, however, be consulted in person.

Teaching and research assistants and other part-time sub-faculty personnel are given first priority for assignment to University-owned housing facilities for married students. Second preference for assignment to Union Bay Village or Sand Point Homes is given to graduate, medical, dental, and law students who have children. Prospective students are eligible to apply when they have been accepted for admission. Write to the Office of Student Residences, 23 Administration Building, for further information and application forms.

A complete statement of University housing policy appears in the *Student Handbook of University Rules and Regulations* and the *Housing Bulletin*.

HEALTH SERVICES

The University maintains a health center and infirmary to help guard against infectious diseases and incipient ill health.

The infirmary receives bed patients at any hour and provides nursing care, medicines, and the attendance of a staff doctor up to one week each quarter free of charge. For a period longer than one week a charge of \$2.00 a day is made. At their own expense, infirmary patients may consult any licensed physician in good standing.

EMPLOYMENT

Part- and full-time work off campus may be obtained through the University Placement Office, Lewis Hall Annex. Applications are accepted from students or graduates of the University and from the wives or husbands of University students. Application must be made in person after residence in Seattle has been established. Placement in jobs on the campus is handled by the Personnel Department and the ASUW Personnel Office.

The College of Forestry faculty helps forestry students to obtain summer employment while in the University and permanent employment upon graduation. Summer work is usually available through the United State Forest Service, Bureau of Land Management, and National Park Service, the State Department of Natural Resources, and a number of companies in the forest and lumber industries. Many of these agencies and companies send representatives to the College during Winter Quarter to interview prospective employees. All students are encouraged to seek summer employment, because such work offers an excellent opportunity for practical experience as well as financial help.

FORESTRY ALUMNI ASSOCIATION

Graduates of the College of Forestry are members of the Washington Foresters' Alumni Association. The yearly dues are \$2.00. Members receive the *Washington Forester*, which is published annually, and the Alumni Directory. An annual alumni reunion is held each spring either at Pack Forest or at the College of Forestry in conjunction with the annual Forest Club Banquet.



THE PROGRAMS IN FORESTRY

THE PROGRAMS IN FORESTRY

THE COLLEGE OF FORESTRY offers courses leading to the degrees of Bachelor of Science in Forestry, Master of Forestry, Master of Science in Forestry, and Doctor of Philosophy. Curricula leading to these degrees are accredited by the Society of American Foresters.

BACHELOR OF SCIENCE IN FORESTRY

For undergraduate students working toward the bachelor's degree, specialization is offered in forest management, logging engineering, and forest products. Students must meet certain general requirements of the University and the College as well as the particular curriculum requirements which are described in the announcements below. General requirements for the bachelor's degree include military training, physical education, scholarship and minimum credits, course requirements, and senior-year residence.

Students should apply for bachelor's degrees during the first quarter of the senior year. If not more than ten years have elapsed since the date of a student's entry into the school or college in which he is to graduate, he may choose to graduate under the requirements set out in either the bulletin published by the appropriate school or college most recently prior to the date of his entry, or that published most recently prior to his anticipated date of graduation; provided, that when, in the opinion of the faculty of the school or college or a departmental executive officer or a dean acting for such faculty, substantial changes have been made in the curriculum since the student's entry, the student's choice shall be subject to the approval of the appropriate faculty, executive officer, or dean. Disapproval of the student's choice shall be faculty action and subject to the procedures of the Faculty Code. All responsibility for fulfilling graduation requirements shall rest with the student concerned. No student whose standing is in any way provisional can have an application for degree accepted.

ADVANCED DEGREES

Students who intend to work toward an advanced degree must apply for admission to the Graduate School and meet the requirements set forth by the Graduate School and the College of Forestry. *Graduate students must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.* The Master of Forestry, Master of Science in Forestry, and Doctor of Philosophy degrees are conferred by the Graduate School through the College of Forestry.

Master of Forestry. To qualify for the Master of Forestry degree, the candidate must have a bachelor's degree in forestry. Supporting course work is taken mainly in the field of forestry. Only 400- and 500-numbered courses or those listed in the *Graduate School Bulletin* are acceptable. A foreign language is not required.

Master of Science in Forestry. To qualify for the Master of Science in Forestry degree, the candidate must have a bachelor's degree in forestry or equivalent. A minor in science, constituting one third of the required course work is required in support of the forestry major. Only 400- and 500-numbered courses or those listed in the *Graduate School Bulletin* are acceptable. Candidates admitted with a forestry-equivalent bachelor's degree ordinarily require a minimum of two years to complete the degree. A foreign language is not required.

Doctor of Philosophy. General requirements are listed in the *Graduate School Bulletin*. Additionally, doctoral candidates in forestry are required to pass the language examinations for this degree within the first academic year beyond the master's degree or two academic years beyond the baccalaureate degree; whichever has preceded the doctoral candidacy.

COURSE-NUMBERING SYSTEM

Courses numbered from 100 through 299 are lower-division courses, for freshmen and sophomores; those numbered from 300 through 499 are upper-division, for juniors and seniors.

Courses numbered 500 and above are intended for and restricted to graduate students. Some courses numbered in the 300's and 400's are open both to graduates and to upper-division undergraduates. Such courses, when acceptable to the College of Forestry and the Graduate School, may be part of the graduate program. The Graduate School accepts credit in approved 300-level courses for the minor or supporting fields only; approved 400-level courses are accepted as part of the major. For a listing of approved 300- and 400-numbered courses, consult the *Graduate School Bulletin*.

Undergraduate students of senior standing who wish to register for a 500-level course must obtain permission from both the instructor of the class and the Dean of the Graduate School.

The number in parentheses following the course title indicates the amount of credit each course carries. In most lecture courses a credit is given for each class hour a week during a quarter; laboratory courses generally carry less credit than the work time required. An asterisk in place of a credit number means that the amount of credit is variable. Hyphens between course numbers mean that credit is *not* granted until the series of courses is completed.

Courses to which the letter J is appended are joint courses in two or more departments and as such grant credit in one of the departments.

Not all of these courses are offered every quarter. Final confirmation of courses to be offered, as well as a list of times and places of class meetings, is given in the *Yearly Time Schedule*.

CURRICULA

The lower-division curriculum is the same for all forestry students. Requirements for the first two years in the College are as follows:

First Year			
FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS
For. 101 Development.....	3	For. 130 Elem. Fire Control	3
Botany 114 Forestry		Botany 115 Forestry	
Botany	3	Botany	3
English 101 Composition ..	3	Chemistry 100 or 110	
Gen. Engr. 101 Engr.		General	4-3
Drawing	3	Gen. Engr. 121 Plane	
Math. 104 Plane		Surveying	3
Trig.	3	Math. 155 Algebra &	
Phys. Educ. activity	1	Calculus	3
ROTC	2-3	Phys. Educ. activity	1
		ROTC	2-3
	<hr/> 18-19		<hr/> 18-20

The summer quarter program at Pack Forest is required of all Forestry students after the completion of the freshman year.

Summer Quarter**(Pack Forest)**

	CREDITS
For. 120 Intro. to Forest Ecology	5
For. 140 Forest Surveying	5
For. 161 Mensuration Field Problems	5
	<hr/> 15

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 202 Dendrology	3	For. 206 Wood Technology ..	4	For. 203 Dendrology	3
For. 260 Mensuration	5	Botany 216 Physiology of Seed Plants	4	For. 210 Elem. Forest Soils	3
English 102 Composition ..	3	Economics 211 General ..	3	For. 240 General Logging ..	2
Physics 101 and 107		Physics 102 and 108		For. 273 Major Forest Industries	4
General	5	General	5	Physics 103 and 109	
ROTC	2-3	ROTC	2-3	General	5
				ROTC	2-3
	<hr/> 18-19		<hr/> 18-19		<hr/> 19-20

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. 310 Gen. Forest Soils ..	4	For. 321 Silvics	3	For. 322 Silvicultural Methods	3
For. 403 Timber Physics ..	3	For. 372 Seasoning & Preservation	2	For. 335 Insect Control ..	3
English 253 Factual Writing	3	For. 465 Forest Photo Interpretation	3	For. 430 Adv. Fire Control	3
Approved electives	5	Zoology 204 Forestry Zoology	5	Botany 361 Forest Pathology	5
	<hr/> 15	Approved electives	2	Approved electives	1
			<hr/> 15		<hr/> 15

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 423 Application of Silvicultural Methods ..	3	For. 408 Economics & Finance	5	For. 466 Field Studies	5
For. 460 Forest Management	5	For. 409 Forest Policy & Administration	3	For. 467 Field Studies	5
Approved electives	6	Approved electives	7	For. 468 Field Studies	4
	<hr/> 14		<hr/> 15	For. 469 Field Studies	2
					<hr/> 16

CURRICULUM IN LOGGING ENGINEERING**Third Year**

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 310 Gen. Forest Soils	4	For. 321 Silvics	3	For. 322 Silvicultural Methods	3
For. 404 Timber Physics	5	For. 372 Seasoning & Preservation	2	For. 335 Insect Control ..	3
Civil Engr. 212 Route Surveying	3	For. 440 Construction ..	4	For. 430 Adv. Fire Control	3
Civil Engr. 315 Photogrammetry or		Civil Engr. 213 Earth-work Measurements ..	3	Botany 361 Forest Pathology	5
For. 465 Forest Photo Interpretation	3	Approved electives	3	Approved electives	1
	15		15		15

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 401 Safety Practices ..	2	For. 408 Economics & Finance	5	For. 446 Field Studies ..	3
For. 441 Forest Engr.	5	For. 442 Logging Engr. ..	5	For. 447 Field Studies ..	5
For. 460 Forest Management	5	Approved electives	4	For. 448 Field Studies ..	5
Approved electives	3			For. 449 Field Studies ..	3
	15		14		16

CURRICULUM IN FOREST PRODUCTS**Third Year**

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 320 Silviculture	3	For. 307 Wood Structure ..	3	For. 370 Wood Preservation	3
For. 404 Timber Physics ..	5	For. 461 Forest Management	3	For. 371 Wood Preservation Lab.	2
For. 407 Forest Economics ..	2	Bus. Law 307 Business Law	3	For. 471 Timber Design ..	3
Approved electives	5	Approved electives	6	Botany 361 Forest Pathology	5
	15		15	Approved electives	2
					15

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 470 Forest Products Industries	5	For. 472 Plywood, Lamination, & Glues ...	5	For. 476 Wood Pulp	6
For. 481 Milling	5	For. 483 Kiln Drying	3	For. 482 Manufacturing Problems	5
Approved electives	5	Approved electives	7	For. 484 Field Studies ..	2
	15		15	For. 485 Seminar	2
					15

COURSES FOR UNDERGRADUATES

- 101 Development of Forestry (3)** **Schaeffer**
History of forestry and its present status in the United States. Orientation course required of all freshman forestry students; not open to others.
- 120 Introduction to Forest Ecology (5)** **Scott**
An elementary study of the ecology of forest communities. Particular emphasis on field investigations of succession and development as related to different environments. (Given only at Pack Forest.)
- 130 Elementary Forest Fire Control (3)** **Schaeffer**
Factors influencing spread of forest fires. Methods of forest fire prevention, presuppression, detection, and suppression. Prerequisite, 101 or 301.
- 140 Forest Surveying (5)** **Thomas**
Plane surveying with special emphasis on forest topographic mapping, including establishment of ground control through the use of the compass, Abney level, transit, level, steel tape, trailer chain and tape and pacing. Prerequisite, General Engineering 121. (Given only at Pack Forest.)
- 160 Elementary Forest Mensuration (5)** **Turnbull**
The analysis and interpretation of forestry data through the use of statistical methods; fundamentals of forest measurements. Prerequisite, Mathematics 155.
- 161 Field Problems in Forest Mensuration (5)** **Turnbull**
Field problems, including tree and timber stand measurement, site, tree form, and volume tables, timber cruising methods, log scaling, forest mapping, and growth investigations. Prerequisites, 160, General Engineering 101, 121, and Mathematics 156. (Given only at Pack Forest.)

- 202, 203 Dendrology (3,3)** **Brockman**
Identification, classification, and distribution of the trees of North America. Prerequisite: Botany 114.
- 206 Wood Technology (4)** **Erickson, Thomas, Leney**
The identification, uses, and basic physical and chemical properties of domestic and some foreign woods; natural moisture in wood; the effect of moisture changes on shrinking and swelling; calculations of moisture content, specific gravity and dimensional change. Prerequisites, 202, Botany 115, 10 credits in chemistry, and Physics 101 and 107.
- 210 Elementary Forest Soils (3)** **Campbell**
Rocks and minerals as parent materials for soils; relation of soils to geology and physiography; physical properties of soils. One Saturday field trip required.
- 240 General Logging (2)** **Stenzel**
Regional logging methods in the United States with emphasis on those used in the Pacific Northwest. Prerequisites, 202, 203.
- 260 Forest Mensuration (5)** **Turnbull**
Theory of log rules, volume tables, and yield tables. Measurement, computations, and analysis of tree and timber stand volume, structure, increment, and yield. Prerequisite, 161.
- 273 Major Forest Industries (4)** **Thomas**
Fundamentals of processing and distributing the primary forest products; role of major forest industries in the economic structure of the Pacific Northwest.
- 301 Survey of Forestry (3)** **Brockman**
History of the development of forestry, its aims and objectives; interrelationship between forestry and other phases of land use. For nonmajors.
- 307 Wood Structure (3)** **Leney**
Microscopic study of the structural features of wood. Identification of wood and wood fibers by microscopic methods. Prerequisite or concurrently, 206, Botany 216.
- 310 General Forest Soils (4)** **Gessel**
Study of chemical, biological, and morphological characteristics, and a laboratory study of physical properties, of forest soils. Consideration of soil properties important to tree growth. Introduction to soil development and classification. Prerequisites, 210, Botany 216.
- 320 Elements of Silviculture (3)** **Scott, Campbell**
The fundamentals of silvics and silviculture. Emphasis is placed on methods of controlling wood quality and quantity through silvicultural practice. For forest products students only. Prerequisites, 120, 210, 260, Botany 216.
- 321 Silvics (3)** **Scott, Campbell**
A study of forest ecology and the silvicultural characteristics of forest trees. Includes environmental factors, forest influences, the establishment, development and general characteristics of trees and stands. Prerequisites, 120, 310, Botany 216.
- 322 Silvicultural Methods (3)** **Scott**
The theory and technique of applying silvical knowledge in controlling establishment, composition, and growth of forest stands. Includes reproduction methods, intermediate cuttings, and techniques for controlling cutting. Prerequisites, 260, 321.
- 335 Forest Insect Control (3)** **Brockman**
Forestry practice in the control of insect attacks. Prerequisite, 320 or 322.
- 350 Wildlife Management (3)** **Brockman**
Interrelations between forests and wildlife; life histories and habits of animals involved. Prerequisites, junior standing and permission.
- 353 Range Management (3)** **Campbell**
Interrelations of plants, animals, and man on range lands. History of range-land use, principles and economics of proper use. One Saturday field trip required. (Offered alternate years; offered 1960-61.)
- 356 Forest Recreation (3)** **Brockman**
Recreational needs, values, resources, and objectives; planning and development of outdoor recreational resources. Prerequisites, 101 or 301, junior standing, and permission.
- 370 Wood Preservation (3)** **Erickson**
Wood-destroying agencies; semi-color classification and manner of attack. Theory of preservation; the important preservatives; pressure and nonpressure treating processes. Fire-retardant treatments, coatings and impregnation. Prerequisite, 307.
- 371 Wood Preservation Laboratory (2)** **Erickson**
Evaluation of preservatives; analysis of preservatives; specifications for treated wood products; testing and inspection. Field trips to nearby commercial treating plants. Must be preceded or accompanied by 370.
- 372 Seasoning and Preservation (2)** **Leney**
The elementary principles and practices of drying and treating wood with major emphasis on methods of air seasoning and nonpressure treating of wood suitable for home use and small-scale operations. Prerequisite, 206.
- 380 Lumber Grading (2)** **Thomas**
The principles of lumber grading and grade use with emphasis on softwood lumber grades. Hardwood and shingle grades included. Regular field trips. Prerequisites, 206, 273, 403 or 404.
- 401 Safety Practices in Forest Industries (2)** **Pearce**
Accident costs and frequency rates; accident investigations; safety inspection; safety organization and program. Prerequisite, senior standing or permission.

- 403 Timber Physics (3)** **Bryant**
The mechanical properties of wood; factors which affect its strength characteristics; introduction to graphic analysis of design problems; simple beam design. For forest management students only. Prerequisites, 160, 206, Mathematics 156, and Physics 101 and 107.
- 404 Timber Physics (5)** **Bryant**
The mechanical properties of wood; factors which affect its strength characteristics; graphic analysis of design problems; beam design; timber testing. Prerequisites, 160, 206, Mathematics 156, and Physics 101 and 107.
- 406 Microtechnique (3)** **Leney**
The technique of preparing, sectioning, staining, and mounting woody tissues and fibers for microscopic study. Prerequisite, 307, or permission.
- 407 Forest Economics (2)** **Turnbull**
A survey of the field of forest economics. Application of economic principles to forestry; economics of forest production and stumpage appraisal techniques. For forest products majors. Prerequisites, 260 and Economics 211.
- 408 Forest Economics and Finance (5)** **Turnbull**
Position of forests in the economic structure; cost of growing timber; valuation of land for forest production; stumpage appraisal techniques; problems of forest taxation; labor-management relations in the forest industry. Prerequisites, 260, 460, and Economics 211.
- 409 Forest Policy and Administration (3)** **Marckworth**
Development of the attitude of the federal government and the states toward forests, and the general methods of administering public interest in forests; the development of private forestry in the United States. Prerequisite, senior standing.
- 410 Advanced Forest Soils (3)** **Gessel**
A laboratory study of physical, chemical, and biological properties of forest soils. Prerequisites, 310 and permission.
- 423 Application of Silvicultural Methods (3)** **Scott**
A study of the application of silvicultural methods to the important forest species, types, and regions of North America. Prerequisites, 202, 203, 322.
- 424 Advanced Silviculture (3)** **Scott**
A detailed discussion of special problems or subjects in silviculture of interest to advanced students. Prerequisite, permission.
- 430 Advanced Forest Fire Control (3)** **Schaeffer**
Presuppression; 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)** **Stenzel**
Design and construction of forest roads; earth-moving methods and costs, explosives, surfacing, drainage. Laboratory: design of timber bridges. Prerequisites, 140, 403 or 404, and General Engineering 101.
- 441 Forest Engineering (5)** **Pearce, Stenzel**
Logging planning: road projection, selection of landings and settings, logging cost control. Land surveying, subdivision, platting, and boundaries. Prerequisites, 322, 440.
- 442 Logging Engineering (5)** **Pearce**
Logging machinery and equipment; application problems, with emphasis on motor truck performance. Field trips to logging equipment factories. Prerequisites, 240, 441.
- 446, 447, 448, 449 Logging Engineering Field Studies (3,5,5,3)** **Pearce, Stenzel**
446: logging plans. 447: topographic and timber surveys. 448: road location. 449: cost estimates and reports. Development of a complete logging plan for a timber tract. Courses given consecutively in Spring Quarter. Prerequisites, 442, Civil Engineering 213 and 315, or Forestry 465.
- 455 Forest Influences (4)** **Gessel, Scott**
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. Fundamentals of watershed management are stressed. Prerequisite, permission.
- 460 Forest Management (5)** **Robertson**
Economic and technical principles involved in the management of federal, state, and private forest lands. Emphasis is placed on principles of forest management applied to integrated use of all forest resources. Techniques used in timber inventories and management plans for continuous production of forest crops. Prerequisite, senior standing.
- 461 Forest Management (3)** **Robertson**
Survey of the field of forest management. A comprehensive course in the general principles of forest management. For forest products majors. Prerequisite, 407.
- 465 Forest Photo Interpretation (3)** **Robertson**
The use of aerial photographs in mapping vegetation types and estimating timber volumes. Construction of aerial photomosaics. Use of aerial photographs in fire control and range and timber management. Allocation of cut; logging road location; construction of planimetric and topographic maps from vertical photographs. Prerequisites, 260 and permission.
- 466, 467, 468, 469 Senior Management Field Studies (5,5,4,2)** **Robertson**
466: surveys, use of aerial photographs in mapping forest types and estimating timber volumes. Application of statistical methods to cruising. 467: forest and land inventory in pine and fir regions. 468: growth and yield studies, permanent sample plots. 469: reports and summary of work accomplished by field studies. Course leads to development of a working plan for a large operation. All four courses are taken during the same quarter, and the entire quarter is spent off campus in a logging camp. Prerequisite, 460.

- 470 Forest Products Industries (5)** **Erickson**
Wood products other than lumber, plywood, and pulp. Derived and miscellaneous forest products. Economic and industrial aspects of forest products. Laboratory experiments and field trips. Prerequisite, 307.
- 471 Timber Design (3)** **Bryant**
Design of solid and laminated beams; design of trusses using timber connectors, bolts and other fastenings; column design; laminated arches. Prerequisite, 403 or 404.
- 472 Plywood, Lamination, and Glues (5)** **Bryant**
Techniques of manufacturing plywood and laminated wood; theory of adhesion, modern wood adhesives, gluing problems. Laboratory emphasizes student familiarization with glues and gluing techniques, individual research problems, visits to plywood and laminating operations. Prerequisites, 307 and 404.
- 476 Wood Pulp (6)** **Leney**
The preparation of wood for pulp manufacture; production of mechanical and chemical pulp; practical problems in the operation of pulp and paper mills. Prerequisites, 206 and 307.
- 478 Advanced Wood Technology (5)** **Erickson, Bryant**
The physical and chemical nature of wood; its colloidal properties as related to its physical and mechanical behavior in its solid and transmuted forms. Prerequisites, 370, 470, 472, 483.
- 481 Milling (5)** **Thomas**
The sawmilling process with emphasis on modern milling practice, sawmill layout, plant engineering, and mill management. Prerequisites, 206, 273, and 403 or 404.
- 482 Manufacturing Problems (5)** **Thomas**
Distribution and marketing of lumber, plywood, pulp, and other forest products; inter-regional and intra-industry competition; industry problems. Prerequisites, 470, 472, 481.
- 483 Theory and Practice of Kiln Drying (3)** **Thomas**
Wood-liquid relationships and hygrometry; application of gas laws. Problems in the design of dry kilns. Prerequisites, 206 and 470.
- 484 Forest Products Field Studies (2)** **Thomas**
Two-week field study of the forest products industry of the Northwest. Prerequisite, senior standing in forest products.
- 485 Forest Products Seminar (2)** **Staff**
Reports by students and outside speakers on topics of current interest in forest products; discussion of special problems and field trips. Prerequisites, senior standing in forest products.
- 490, 491, 492 Undergraduate Studies (1-5, 1-5, 1-5)** **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.
- 495 Research Methods Seminar (3)** **Bryant**
Methods of approaching research problems; conventional statistical techniques which can be adapted to problems in forestry and forest products. Course is designed to improve the student's efficiency as a research worker. Prerequisite, senior or graduate standing.

COURSES FOR GRADUATES ONLY

- 500 Graduate Seminar (1, maximum 10)** **Staff**
Required of graduate students.
- 511 Seminar in Forest Soils (2)** **Gessel**
Prerequisites, 410 and permission.
- 512 Soil Morphology and Classification (3)** **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. Prerequisite, permission.
- 513 Methods of Forest Soil Survey (5)** **Gessel**
A course of field studies to acquaint the student with forest soils of the Northwest and with soil classification and survey philosophies and procedures. Prerequisites, 512 and permission. (Offered alternate years; offered 1961-62.)
- 521 Advanced Silvics (3-5)** **Scott**
A consideration of current literature and topics in forest tree ecology and physiology. Prerequisite, permission.
- 522 Advanced Silviculture (3)** **Scott**
A detailed study of the literature dealing with the more recent applications of silviculture in world forestry. Prerequisite, permission.
- 523 Forest Tree Seed (2)** **Campbell, Scott**
The study of forest tree seed, including structure, development, production, collection, provenance, storage, germination, dormancy, and stimulation. Prerequisite, permission.
- 525 Research Methods in Forest Ecology (2)** **Campbell, Gessel, Scott, Turnbull**
Research philosophies and procedures as applied to forest biological problems. Required of all graduate students in forest management. Prerequisite, permission.
- 527 Forest Genetics (3)** **Campbell**
Tree-improvement breeding theory as related to elementary population genetics, variation in plant populations, and natural and artificial selection. Prerequisite, Biology 451 or permission.

- 541 Advanced Forest Engineering (5)** **Pearce**
Logging organization and management; logging cost analysis and budgeting. Prerequisite, permission.
- 542 Advanced Logging Engineering (3)** **Pearce**
Detailed consideration of problems of logging planning and truck road engineering, including the preparation and field layout of logging plans; location, design, and construction of logging truck roads. Prerequisite, permission.
- 571 Advanced Wood Preservation (3)** **Erickson**
Permeability of wood; theory of penetration; treating plants, their equipment and design. Prerequisites, 370 and 371.
- 572 Wood Chemistry and Analysis (3-5)** **Erickson**
Techniques for analyzing the chemical constituents of wood; the relationships between chemical properties and the structural properties and uses of various species of wood. Prerequisites, 307, 470, Chemistry 232, and permission.
- 573 Wood-Moisture Relations (2-3)** **Erickson**
Theories involved in relationships between wood and varying degrees of moisture content, conditions at fiber saturation point and between fiber saturation and zero moisture content. Prerequisites, 307, 404, and permission.
- 574 Wood-Resin Relations (3)** **Bryant**
The technology of synthetic resins as wood adhesives, wood impregnants, binders, overlays, and surface coatings. Prerequisites, 472 and permission.
- 575 Forest Products Economics (3)** **Thomas**
Economic considerations in planning for profitable and complete utilization of the forest resource under a variety of circumstances. Prerequisites, 482 and permission.
- 590 Graduate Studies (1-5)** **Staff**
Study in fields for which there is not sufficient demand to warrant the organization of regular courses.
- 600 Research (*)** **Staff**
- 700 Thesis (*)** **Staff**

Tutorial study designed to meet individual requirements is available to graduate students in the Graduate Studies courses listed below. Such study may include literature review, field, and laboratory work. The courses are offered in all quarters and credits can vary from 1 to 5. Prerequisites include graduate standing and permission of the instructor. Credits are individually arranged for each course.

- 510 Graduate Studies in Forest Soils (1-5)** **Gessel**
- 515 Graduate Studies in Forest Influences (1-5)** **Gessel, Scott**
- 520 Graduate Studies in Silvics and Silviculture (1-5)** **Scott**
- 526 Graduate Studies in Forest Genetics (1-5)** **Campbell**
- 530 Graduate Studies in Forest Fire Control (1-5)** **Schaeffer**
- 540 Graduate Studies in Logging Engineering (1-5)** **Pearce, Stenzel**
- 550 Graduate Studies in Forest Recreation (1-5)** **Brockman**
- 555 Graduate Studies in Wildlife Management (1-5)** **Brockman**
- 560 Graduate Studies in Forest History and Policy (1-5)** **Marckworth**
- 563 Graduate Studies in Forest Mensuration (1-5)** **Turnbull**
- 565 Graduate Studies in Forest Management (1-5)** **Robertson**
- 566 Graduate Studies in Forest Photogrammetry (1-5)** **Robertson**
- 568 Graduate Studies in Forest Finance and Economics (1-5)** **Turnbull**
- 570 Graduate Studies in Forest Products (1-5)** **Bryant, Erickson, Leney, Thomas**

PREScribed COURSES IN OTHER FIELDS

BOTANY

- 114, 115, 216 Forestry Botany (3,3,4)** **Staff**
114: structure of seed plants. 115: morphology of fungi and reproduction of seed plants. 216: physiology of seed plants. Prerequisites, 114 and Chemistry 150.
- 361 Forest Pathology (5)** **Staff**
Common wood-destroying fungi and diseases of forest trees. Prerequisite, 115 or equivalent.

BUSINESS LAW

- 307 Business Law (3)** **Staff**
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.

CHEMISTRY

- 100 Chemical Science (5)** **Staff**
Atoms, molecules, and chemical reactions. A survey of principles fundamental to the science of chemistry. Designed both as a terminal course for non-science majors and as an introductory course for those who wish to continue with Chemistry 101 or 140. No credit given to those who have had high school chemistry.
- 101 General Chemistry (5)** **Staff**
For non-science and non-engineering majors who plan to terminate their study of chemistry with 101 or 102. Molecular theory, quantitative relationships in chemical processes, solutions, ionic equilibria, acids, bases, and salts. Prerequisite, high school chemistry or 100.
- 102 General and Organic Chemistry (5)** **Staff**
A terminal course to follow 101. Chemistry of common metals and non-metals. Organic compounds; hydrocarbons, alcohols, aldehydes, ketones, ethers, acids, aromatics, fats and oils, proteins and carbohydrates. Prerequisite, 101.
- 150 General Chemistry (3)** **Staff**
Chemical calculations, solutions, and equilibrium theory. Concurrent registration in 151 is required. Prerequisite, 140.

CIVIL ENGINEERING

- 212 Route Location (3)** **Staff**
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. Prerequisite, General Engineering 121.
- 213 Earthwork Measurements (3)** **Staff**
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, General Engineering 121.
- 315 Photogrammetry (3)** **Staff**
Application of aerial photography to the fields of engineering, geology, and forestry. Includes characteristics and geometry of aerial photographs, photo interpretation, flight planning and topographic map compilation from ground control and aerial photos. Includes a mapping project of a local area involving the establishment of ground control, flight line location by graphic triangulation, location of topography by use of the stereoscope parallax measuring devices, and vertical sketchmaster. Prerequisite, General Engineering 121 and junior standing; permission for nonengineering students.

ECONOMICS

- 211 General Economics (3)** **Staff**
Condensation of 200. Primarily for engineering and forestry students; other students by permission.

ENGLISH

- 101, 102 Composition (3,3)** **Staff**
Fundamentals of effective exposition; collecting, organizing, and evaluating materials for writing; reading contemporary writings for meaning and form.
- 253 Factual Writing (3) (Required for Forestry Management majors.)** **Staff**
Term papers and reports. Prerequisites for foresters, English 101 and 102.

GENERAL ENGINEERING

- 101 Engineering Graphics (3)** **Staff**
Short course for forestry and art students.
- 121 Plane Surveying and Measurements (3)** **Staff**
Surveying methods; use of the engineer's level, transit, and chain; computations of bearings, plane coordinate systems, areas, stadia surveying for topographic mapping; public land surveys. Emphasis is on physical measurements and problems. Prerequisites, 102 and trigonometry.

MATHEMATICS

- 104 Plane Trigonometry (3)** **Staff**
Trigonometric functions, identities, graphs, logarithms, and solution of triangles. Not open for credit to students who have taken trigonometry in high school. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101, and one year of plane geometry.
- 155, 156 Algebra and Calculus (3,3)** **Staff**
Selected topics from college algebra, analytic geometry, and elementary calculus. Intended primarily for nonscience majors who need a brief introduction to calculus. Not open to students who have taken either 105, 124, or 153. Prerequisites, 103 or 104 for 155; 155 for 156.

PHYSICAL AND HEALTH EDUCATION**Health Education**

- 110 Health Education (Women) (2)** **Staff**
Health problems of freshman women. Required of all freshman women; exemption without credit by examination. See page 31.

- 175 Personal Health (Men) (2)** **Staff**
Health information that affords a basis for intelligent guidance in the formation of health habits and attitudes. Required of all freshman men; exemption without credit by examination. See page 31.
- 292 First Aid and Safety (Men and Women) (3)** **Staff**
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.

PHYSICAL EDUCATION ACTIVITIES

- 101 through 255 Physical Education Activities (Men) (1 each)** **Staff**
101, adapted activities; 106, handball; 107, basketball; 108, tennis; 109, softball; 110, golf (fee \$1.50 per quarter); 111, track; 112, crew (class), prerequisite, swimming; 114, boxing; 115, gymnastics; 117, wrestling; 118, volleyball; 119, swimming; 121, touch football; 122, badminton; 123, archery; 125, skiing (fee); 126, speedball; 127, bowling (fee); 128, weight training; 129, sailing; 131, beginning, 134, intermediate folk and square dancing; 151, contemporary dance; 154, social dance; 157, canoeing (fee, \$3.00 per quarter); 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; 152, freshman, 252, varsity gymnastics; 155, freshman, 255, varsity wrestling.
- 111 through 162, 211 through 267 Physical Education Activities (Women) (1 each)** **Staff**
111, adapted activities; 112, basic activities (general); 113-114, basic activities (applied); 115, archery; 118, badminton; 119, body conditioning; 121, bowling (fee); 124, fencing; 126, golf (fee, \$1.50 per quarter); 128, riding (fee); 129, sailing; 131, ski conditioning; 132, elementary skiing (fee); 133, tumbling and apparatus; 134, rebound tumbling; 135, tennis; 141, basketball; 142, field sports; 143, hockey; 144, softball; 145, volleyball; 148, folk and square dance; 149, international folk dance; 151, contemporary dance; 154, social dance; 155, tap dance; 157, canoeing (fee, \$3.00 per quarter); 160, adapted swimming; 161, beginning swimming; 162, elementary swimming; 215, intermediate archery; 218, intermediate badminton; 221, intermediate bowling (fee); 222, advanced bowling (fee); 224, intermediate fencing; 228, intermediate riding (fee); 230, ski racing (fee); 231, intermediate skiing (fee); 232, advanced skiing (fee); 235, intermediate tennis; 248, intermediate folk and square dance; 251, intermediate contemporary dance; 252, advanced contemporary dance; 257, intermediate canoeing (fee, \$3.00 per quarter); 263, intermediate swimming; 264, advanced swimming; 265, aquatic art; 266, diving; 267, lifesaving.

PHYSICS

- 101, 102, 103 General Physics (4,4,4)** **Staff**
Concurrent registration in 107, 108, 109 recommended with 101, 102, 103 and may be required by individual departments. 101: mechanics. Prerequisites, trigonometry and one year of high school physics or its equivalent by permission. 102: sound and electricity. No credit in 102 if 112 has been taken. Prerequisite, 101. 103: heat, light, and modern physics. No credit in 103 if 113 has been taken. Prerequisite, 102 or concurrent registration in 102.
- 107, 108, 109 General Physics Laboratory (1,1,1)** **Staff**
107: mechanics laboratory to be taken concurrently with 101. 108: sound, electricity, and magnetism laboratory to be taken concurrently with 102. 109: heat and light laboratory to be taken concurrently with 103.

ZOOLOGY

- 204 Forestry Zoology (5)** **Staff**
Evolution of animals to the level of the Arthropoda and Chordata; emphasis on these as the groups of animals of greatest practical importance in the forest fauna. Prerequisites, Botany 114, 115, and 216.

ELECTIVE COURSES FOR UNDERGRADUATES

The forestry curriculum provides for a considerable number of elective courses which are selected in consultation with faculty advisers to fit the individual student's educational objective. Conventional areas of elective course work include courses from the following list (elective courses are not restricted to this list):

ACCOUNTING

- 150 Fundamentals of Accounting (4)** **Staff**
151 Accounting Techniques (3) **Staff**

BOTANY

- 113 Elementary Botany (5)** **Staff**
431, 432 Taxonomy (5,5) **Staff**
471 Mineral Nutrition (5) **Staff**

BUSINESS WRITING

310 Business Correspondence (5) Staff

CHEMISTRY

170 Qualitative Analysis (3) Staff

221 Quantitative Analysis (5) Staff

231, 232 Organic Chemistry (3,3) Staff

241, 242 Organic Chemistry Laboratory (2,2) Staff

CIVIL ENGINEERING

214 Control Surveys (3) Staff

321 Roads and Pavements (3) Staff

ECONOMICS

340 Labor in the Economy (5) Staff

441 Union-Management Relations (5) Staff

ENGLISH

253 Factual Writing (3) (Required for Forestry Management majors.) Staff

GEOGRAPHY

360 Principles of Cartography (5) Staff

370 Conservation of Natural Resources (5) Staff

444 Geography of Water Resources (3 or 5) Staff

GEOLOGY

205 Rocks and Minerals (5) Staff

206 Elements of Physiography (5) Staff

207 Historical Geology (5) Staff

HISTORY

241 Survey of the History of the United States (5) Staff

463 The Westward Movement (5) Staff

464 History of Washington and the Pacific Northwest (5) Staff

HUMANISTIC-SOCIAL STUDIES (Logging Engineering majors only)

270 Engineering Report Writing (2) Staff

302 Technical Writing (3) Staff

331 Humanities-Social Studies (3) Staff

HUMAN RELATIONS IN BUSINESS AND INDUSTRY

365 Industrial Relations for Engineers (3) Staff

460 Human Relations in Business and Industry (5) Staff

MATHEMATICS

124 Calculus with Analytic Geometry (5) Staff

MECHANICAL ENGINEERING

201 Metal Casting (1) Staff

202 Welding (1) Staff

203 Metal Machining (1) Staff

220 Heat Engines (3) Staff

410 Engineering Administration (3) Staff

411 Engineering Economy (3) Staff

415 Statistical Quality Control (3) Staff

417 Methods Analysis (3) Staff

METEOROLOGY**101 Survey of the Atmosphere (5)****Staff****322 Regional Climatology (5)****Staff****MICROBIOLOGY****301 General Microbiology (5)****Staff****PERSONNEL****310 Personnel Management (5)****Staff****POLITICAL SCIENCE****202 American Government and Politics (5)****Staff****SPEECH****120 Introduction to Public Speaking (5)****Staff****327 Extempore Speaking (3)****Staff****ZOOLOGY****444 Entomology (5)****Staff****464 Natural History of Birds (Ornithology) (5)****Staff****465 Natural History of Mammals (5)****Staff**

BULLETIN • UNIVERSITY OF WASHINGTON



GRADUATE SCHOOL

1961-1963

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes three general bulletins; bulletins of the colleges and schools; two Summer Quarter bulletins; the bulletin of the Center for Graduate Study at Hanford; and bulletins of the Division of Correspondence Study and the Division of Evening Classes.

INTRODUCTION TO THE UNIVERSITY, one of the general bulletins, is especially prepared for new and prospective students. It lists all the University curricula, with their admission requirements, and presents information on other phases of student life, including services for students, student activities, and expenses. UNIVERSITY RULES AND REGULATIONS, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as registered students. HANDBOOK OF SCHOLARSHIPS, the third general bulletin, lists the various scholarships available.

Curricula, courses, and scholarship requirements in each field of study are described in the college and school bulletins. Each of these bulletins also discusses services, organizations, and expenses as they relate to students in the particular college or school.

Requests for copies of any of the bulletins should be addressed to the Addressograph Service.

General Bulletins

HANDBOOK OF SCHOLARSHIPS (RESTRICTED DISTRIBUTION)

INTRODUCTION TO THE UNIVERSITY

UNIVERSITY RULES AND REGULATIONS (FOR REGISTERED STUDENTS ONLY)

Bulletins of the Colleges and Schools

COLLEGE OF ARCHITECTURE AND URBAN PLANNING

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF BUSINESS ADMINISTRATION

SCHOOL OF DENTISTRY

COLLEGE OF EDUCATION

COLLEGE OF ENGINEERING

COLLEGE OF FISHERIES

COLLEGE OF FORESTRY

GRADUATE SCHOOL

SCHOOL OF LAW

SCHOOL OF MEDICINE

SCHOOL OF NURSING

COLLEGE OF PHARMACY

SCHOOL OF SOCIAL WORK

Other Bulletins

SUMMER QUARTER

SUMMER QUARTER SPECIAL FEATURES

CENTER FOR GRADUATE STUDY AT HANFORD

CORRESPONDENCE STUDY

EVENING CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
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CALENDAR

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in the following Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

AUTUMN QUARTER, 1961

REGISTRATION PERIOD

MAY 1-26	Advance Registration only for students in residence Spring Quarter, 1961. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 5-22	In-Person Registration for students in residence Spring Quarter, 1961, who did not complete Autumn Quarter, 1961, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
SEPT. 5-22	In-Person Registration for former students not in residence Spring Quarter, 1961. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is September 15.</i>
AUG. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 7-22	In-Person Registration for ALL new students.
SEPT. 22	Last day to register for Autumn Quarter, 1961. Note application deadlines.
SEPT. 25-29	Change of registration by appointment only.

ACADEMIC PERIOD

SEPT. 25—MONDAY	Instruction begins
SEPT. 29—FRIDAY	Last day to add a course
OCT. 6—FRIDAY	Last day to file applications for master's degrees for Autumn Quarter.
NOV. 11—SATURDAY	State Admission Day holiday
NOV. 22-27	Thanksgiving recess (6:30 p.m. to 7:30 a.m.)
DEC. 6-12	Final examinations
DEC. 12—TUESDAY	Quarter ends

WINTER QUARTER, 1962**REGISTRATION PERIOD**

- OCT. 23-Nov. 17 Advance Registration only for students in residence Autumn Quarter, 1961. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
- DEC. 26-28 In-Person Registration for students in residence Autumn Quarter, 1961, who did not complete Winter Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
- DEC. 26-28 In-Person Registration for former students not in residence Autumn Quarter, 1961. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Appointments or Permits is December 8.*
- DEC. 1 Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
- DEC. 20 Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
- DEC. 26-28 In-Person Registration for ALL new students.
- DEC. 28 Last day to register for Winter Quarter, 1962. Note application deadlines.
- JAN. 2-8 Change of registration by appointment only.

ACADEMIC PERIOD

- JAN. 2—TUESDAY Instruction begins
- JAN. 8—MONDAY Last day to add a course
- JAN. 15—MONDAY Last day to file applications for master's degrees for Winter Quarter.
- FEB. 22—THURSDAY Washington's Birthday and Founder's Day holiday
- MAR. 9-15 Final examinations
- MAR. 15—THURSDAY Quarter ends

SPRING QUARTER, 1962**REGISTRATION PERIOD**

- JAN. 22-FEB. 16 Advance Registration only for students in residence Winter Quarter, 1962. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.

MAR. 20-22	In-Person Registration for students in residence Winter Quarter, 1962, who did not complete Spring Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
MAR. 20-22	In-Person Registration for former students not in residence Winter Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is March 9.</i>
MAR. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
MAR. 15	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
MAR. 20-22	In-Person Registration for ALL new students.
MAR. 22	Last day to register for Spring Quarter, 1962. Note application deadlines.
MAR. 26-30	Change of registration by appointment only.

ACADEMIC PERIOD

MAR. 26—MONDAY	Instruction begins
MAR. 30—FRIDAY	Last day to add a course
APRIL 6—FRIDAY	Last day to file applications for master's degrees for Spring Quarter.
MAY 30—WEDNESDAY	Memorial Day holiday
JUNE 1-7	Final examinations
JUNE 7—THURSDAY	Quarter ends
JUNE 9—SATURDAY	Commencement

SUMMER QUARTER, 1962**REGISTRATION PERIOD**

General In-Person Registration for ALL students (*by appointment only*):

May 31, June 1, 4

June 11-15

Registration may be delayed if new student Applications for Admission or former student Applications for Appointment or Permit to register are received after May 15.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

Students in the Schools of Law, Dentistry, Medicine, and the Hospital Division of the School of Nursing must file an Application for Registration Permit, although no appointment date is necessary.

Registration Appointments or Permits will be issued as follows:

Students in residence Spring Quarter, 1961:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates.....	Monday, April 16, 8 a.m. to 5 p.m.
Juniors	Tuesday, April 17, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 18, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 19, 8 a.m. to 5 p.m.

Former Students not in residence Spring Quarter, 1962, may obtain an Application for Appointment or Permit by writing to, or calling in person at the Registrar's Office, Room 109, Administration Building, or telephoning LAkeview 4-6000, Extension 2551, beginning April 17 and preferably *no later than May 15*. Application for Registration Appointment must be received before registration materials can be processed. *New (entering) Students* will be mailed Registration Appointments with their Official Notice of Admission.

ACADEMIC PERIOD

JUNE 18—MONDAY	Instruction begins
JUNE 19—TUESDAY	Last day to add a course for the first term
JUNE 22—FRIDAY	Last day to add a course for the full quarter
JUNE 29—FRIDAY	Last day to file applications for master's degrees for Summer Quarter.
JULY 4—WEDNESDAY	Independence Day holiday
JULY 18—WEDNESDAY	Final examinations and first term end
JULY 19—THURSDAY	Second term begins
JULY 20—FRIDAY	Last day to add a course for the second term
AUG. 17—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1962

REGISTRATION PERIOD

APR. 30—MAY 25	Advance Registration only for students in residence Spring Quarter, 1962. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 10-28	In-Person Registration for students in residence Spring Quarter, 1962, who did not complete Autumn Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
SEPT. 10-28	In-Person Registration for former students not in residence Spring Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is September 1.</i>

JULY 15	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointments will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 12-28	In-Person Registration for ALL new students.
SEPT. 28	Last day to register for Autumn Quarter, 1962. Note application deadlines.
OCT. 1-5	Change of registration by appointment only.

ACADEMIC PERIOD

OCT. 1—MONDAY	Instruction begins
OCT. 5—FRIDAY	Last day to add a course
OCT. 12—FRIDAY	Last day to file application for master's degrees for Autumn Quarter.
NOV. 12—MONDAY	State Admission Day holiday
NOV. 21-26	Thanksgiving recess (6:30 p.m. to 7:30 a.m.)
DEC. 12-18	Final examinations
DEC. 18—TUESDAY	Quarter ends

WINTER QUARTER, 1963**REGISTRATION PERIOD**

OCT. 29-Nov. 27	Advance Registration only for students in residence Autumn Quarter, 1962. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
JAN. 2-4	In-Person Registration for students in residence Autumn Quarter, 1962, who did not complete Winter Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
JAN. 2-4	In-Person Registration for former students not in residence Autumn Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 1.</i>
DEC. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

JUNE 24—MONDAY	Instruction begins
JUNE 25—TUESDAY	Last day to add a course for the first term
JUNE 28—FRIDAY	Last day to add a course for the full quarter
JULY 4—THURSDAY	Independence Day holiday
JULY 5—FRIDAY	Last day to file applications for master's degrees for Summer Quarter
JULY 24—WEDNESDAY	Final examinations and first term end
JULY 25—THURSDAY	Second term begins
JULY 26—FRIDAY	Last day to add a course for the second term
AUGUST 23—FRIDAY	Final examinations and second term end

For further information concerning subsequent quarters inquire at the Registrar's Office.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

DEC. 20	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
JAN. 2-4	In-Person Registration for ALL new students.
JAN. 4	Last day to register for Winter Quarter, 1963. Note application deadlines.
JAN. 7-11	Change of registration by appointment only.

ACADEMIC PERIOD

JAN. 7—MONDAY	Instruction begins
JAN. 11—FRIDAY	Last day to add a course
JAN. 18—FRIDAY	Last day to file applications for master's degrees for Winter Quarter.
FEB. 22—FRIDAY	Washington's Birthday and Founder's Day holiday

ADMINISTRATION**BOARD OF REGENTS**

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GLENN LEGGETT, Ph.D.	<i>Vice-Provost of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
HAROLD A. ADAMS, M.S.	<i>Director of Admissions</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>
JOSEPH L. MCCARTHY, Ph.D.	<i>Dean of the Graduate School</i>
HENRIETTA WILSON, M.A.	<i>Assistant to the Dean of the Graduate School</i>
GEORGE W. FARWELL, Ph.D.	<i>Associate Dean of the Graduate School</i>
DAVID C. FOWLER, Ph.D.	<i>Associate Dean of the Graduate School</i>
EDWARD C. LINGAFELTER, Ph.D.	<i>Associate Dean of the Graduate School</i>

EXECUTIVE COMMITTEE OF THE GRADUATE SCHOOL

JOSEPH L. MCCARTHY, <i>Chairman</i>	BLAKE D. MILLS, <i>Mechanical Engineering</i>
EDWARD E. BOSTETTER, <i>English</i>	
BARNET BASKERVILLE, <i>Speech</i>	ALLEN M. SCHER, <i>Physiology and Biophysics</i>
WILLIAM T. SIMPSON, <i>Chemistry</i>	
J. RICHARD HUBER, <i>Economics</i>	SAUL SCHLUGER, <i>Dentistry</i>
FRED J. MUELLER, <i>Accounting and Finance</i>	

RESEARCH COMMITTEE OF THE GRADUATE SCHOOL**INITIATIVE 171 SECTION (MEDICINE AND BIOLOGY)**

JOSEPH L. MCCARTHY, <i>Chairman</i>	LLOYD M. NYHUS, <i>Surgery</i>
NEWTON B. EVERETT, <i>Anatomy</i>	RICHARD C. SNYDER, <i>Zoology</i>
DONALD J. HANAHAN, <i>Biochemistry</i>	PAUL P. VAN ARSDEL, Jr., <i>Medicine</i>
THOMAS H. HOLMES, <i>Psychiatry</i>	THEODORE C. WEST, <i>Pharmacology</i>
BERTRAM KRAUS, <i>Dentistry</i>	J. WALTER WOODBURY, <i>Physiology and Biophysics</i>
GEORGE M. MARTIN, <i>Pathology</i>	

RESEARCH FUND OF THE GRADUATE SCHOOL SECTION (ARTS, HUMANITIES, AND SOCIAL SCIENCES)

JOSEPH L. MCCARTHY, <i>Chairman</i>	GUY G. GORDON, <i>Business Administration</i>
ALBERT L. BABB, <i>Chemical Engineering</i>	DOUGLAS C. NORTH, <i>Economics</i>
EDWARD E. BOSTETTER, <i>English</i>	WILLIAM H. REY, <i>Germanics</i>
KENNETH C. CLARK, <i>Physics</i>	

MAY 30—THURSDAY	Memorial Day
JUNE 7-13	Final examinations
JUNE 9—SUNDAY	Baccalaureate Sunday
JUNE 13—THURSDAY	Quarter ends
JUNE 15—SATURDAY	Commencement

SUMMER QUARTER, 1963

REGISTRATION PERIOD

General In-Person Registration for ALL students (*by appointment only*):

June 6, 7, 10

June 17-21

Registration may be delayed if new student Applications for Admission or former student Applications for Appointment or permit to register are received after May 15.

Students in the Schools of Law, Dentistry, Medicine, and the Hospital Division of the School of Nursing must file an Application for Registration Permit, although no appointment date is necessary.

Registration Appointments or Permits will be issued as follows:

Students in residence Spring Quarter, 1963:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates	Monday, April 22, 8 a.m. to 5 p.m.
Juniors	Tuesday, April 23, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 24, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 25, 8 a.m. to 5 p.m.

Former Students not in residence Spring Quarter, 1963, may obtain an Application for Appointment or Permit by writing to, or calling in person at the Registrar's Office, Room 109, Administration Building, or telephoning LAkeview 4-6000, Extension 2551, beginning April 22 and preferably *no later than May 15*. Application for Registration Appointment must be received before registration materials can be processed. *New (entering) Students* will be mailed Registration Appointments with their Official Notice of Admission.

ACADEMIC PERIOD

JUNE 24—MONDAY	Instruction begins
JUNE 25—TUESDAY	Last day to add a course for the first term
JUNE 28—FRIDAY	Last day to add a course for the full quarter
JULY 4—THURSDAY	Independence Day holiday
JULY 5—FRIDAY	Last day to file applications for master's degrees for Summer Quarter
JULY 24—WEDNESDAY	Final examinations and first term end
JULY 25—THURSDAY	Second term begins
JULY 26—FRIDAY	Last day to add a course for the second term
AUGUST 23—FRIDAY	Final examinations and second term end

For further information concerning subsequent quarters inquire at the Registrar's Office.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

ADMINISTRATION

BOARD OF REGENTS

JOSEPH DRUMHELLER, <i>President</i>	Spokane
MRS. A. SCOTT BULLITT, <i>Vice-President</i>	Seattle
JOHN L. KING	Seattle
HERBERT S. LITTLE	Seattle
ALBERT B. MURPHY	Everett
HAROLD S. SHEFELMAN	Seattle
ROBERT J. WILLIS	Yakima
HELEN E. HOAGLAND, <i>Secretary</i>	
DON H. WAGEMAN, <i>Treasurer</i>	

OFFICERS OF ADMINISTRATION

CHARLES E. ODEGAARD, Ph.D.	<i>President of the University</i>
FREDERICK P. THIEME, Ph.D.	<i>Provost of the University</i>
GLENN LEGGETT, Ph.D.	<i>Vice-Provost of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
HAROLD A. ADAMS, M.S.	<i>Director of Admissions</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>
JOSEPH L. MCCARTHY, Ph.D.	<i>Dean of the Graduate School</i>
HENRIETTA WILSON, M.A.	<i>Assistant to the Dean of the Graduate School</i>
GEORGE W. FARWELL, Ph.D.	<i>Associate Dean of the Graduate School</i>
DAVID C. FOWLER, Ph.D.	<i>Associate Dean of the Graduate School</i>
EDWARD C. LINGAFELTER, Ph.D.	<i>Associate Dean of the Graduate School</i>

EXECUTIVE COMMITTEE OF THE GRADUATE SCHOOL

JOSEPH L. MCCARTHY, <i>Chairman</i>	BLAKE D. MILLS, <i>Mechanical Engineering</i>
EDWARD E. BOSTETTER, <i>English</i>	
BARNET BASKERVILLE, <i>Speech</i>	ALLEN M. SCHER, <i>Physiology and Biophysics</i>
WILLIAM T. SIMPSON, <i>Chemistry</i>	
J. RICHARD HUBER, <i>Economics</i>	SAUL SCHLUGER, <i>Dentistry</i>
FRED J. MUELLER, <i>Accounting and Finance</i>	

RESEARCH COMMITTEE OF THE GRADUATE SCHOOL

INITIATIVE 171 SECTION (MEDICINE AND BIOLOGY)

JOSEPH L. MCCARTHY, <i>Chairman</i>	LLOYD M. NYHUS, <i>Surgery</i>
NEWTON B. EVERETT, <i>Anatomy</i>	RICHARD C. SNYDER, <i>Zoology</i>
DONALD J. HANAHAN, <i>Biochemistry</i>	PAUL P. VAN ARSDEL, JR., <i>Medicine</i>
THOMAS H. HOLMES, <i>Psychiatry</i>	THEODORE C. WEST, <i>Pharmacology</i>
BERTRAM KRAUS, <i>Dentistry</i>	J. WALTER WOODBURY, <i>Physiology and Biophysics</i>
GEORGE M. MARTIN, <i>Pathology</i>	

RESEARCH FUND OF THE GRADUATE SCHOOL SECTION (ARTS, HUMANITIES, AND SOCIAL SCIENCES)

JOSEPH L. MCCARTHY, <i>Chairman</i>	GUY C. GORDON, <i>Business Administration</i>
ALBERT L. BABB, <i>Chemical Engineering</i>	DOUGLAS C. NORTH, <i>Economics</i>
EDWARD E. BOSTETTER, <i>English</i>	WILLIAM H. REY, <i>Germanics</i>
KENNETH C. CLARK, <i>Physics</i>	

GRADUATE FACULTY COUNCIL AND GROUP OPERATING COMMITTEES

(The combined membership of the eight Group Operating Committees comprises the Graduate Faculty Council—Joseph L. McCarthy, *Chairman*.)

GROUP 1.

Edward E. Bostetter (Chairman), Abraham Keller, John B. McDiarmid, William H. Rey, and Arnold Stein.

GROUP 2.

Barnet Baskerville (Chairman), Kathleen Munro, Ruth E. Penington, Henry Ladd Smith, and Victor Steinbrueck.

GROUP 3.

Maynard G. Arsove, Allen C. Delacy, J. Hoover Mackin, William T. Simpson (Chairman), and Edwin H. Uehling.

GROUP 4.

W. Stull Holt, J. Richard Huber (Chairman), Clarence Schrag, Donald W. Treadgold, and Edward L. Ullman.

GROUP 5.

Theodore J. Barnowe, Guy G. Gordon, Alice H. Hayden, Fred J. Mueller (Chairman), and Dwight E. Robinson.

GROUP 6.

Ellis H. Dill, Harvey D. Erickson, Billy J. Hartz, Blake D. Mills (Chairman), and Earl C. Roberts.

GROUP 7.

Edmond H. Fischer, Neal B. Groman, Lyle H. Jensen, Allen M. Scher (Chairman), and Theodore C. West.

GROUP 8.

David H. Gronewold, Nathan Hall, Florence L. Hall, Katherine Hoffman, and Saul Schluger (Chairman).

GRADUATE FACULTY

(As of April 21, 1961)

A single date following the name indicates the beginning of service in the University. When two dates are given, the second, in parentheses, is the date of promotion to present academic rank.

Aagaard, George Nelson, 1954, *Professor of Medicine; Dean of the School of Medicine*

B.S., 1934, M.B., 1936, M.D., 1937, Minnesota

Abrahamson, Arthur Clarence, 1956 (1959), *Associate Professor of Social Work*

B.A., 1924, Augustana College; M.A., 1947, Minnesota

Adams, Robert Pardee, 1947, *Associate Professor of English*

B.A., 1931, Oberlin; Ph.D., 1937, Chicago

Alcala, Hugo R., 1961, *Professor of Romance Languages and Literature*

Bachiller, 1936, Doctor of Law, 1943, Asuncion (Paraguay); M.F.L., 1950, State College of Washington; Ph.D., 1953, Wisconsin

Allendoerfer, Carl Barnett, 1951, *Professor of Mathematics; Executive Officer of the Department of Mathematics*

B.S., 1932, Haverford College; B.A., 1934, M.A., 1939, Oxford (England); Ph.D., 1937, Princeton

Alps, Glen Earl, 1945 (1955), *Associate Professor of Art*

B.A., 1940, Colorado State College of Education; M.F.A., 1947, Washington

Alvord, Ellsworth C., Jr. (1960), *Associate Professor of Pathology*

B.S., 1944, Haverford College; M.D., 1946, Cornell

- Ames, William E., 1957, *Assistant Professor of Communications; Acting Director of the School of Communications*
B.S., 1948, South Dakota State; M.S., 1952, Iowa State
- Anderson, Arthur G., Jr., 1946 (1957), *Professor of Chemistry*
A.B., 1940, Illinois; M.S., 1942, Ph.D., 1944, Michigan
- Anderson, Berton Emmett, 1948 (1957), *Professor of Dental Science and Literature; Assistant Dean of the School of Dentistry; Director of Post-graduate Dental Education; Chairman of Admissions*
D.M.D., 1925, Oregon
- Anderson, Frederick Neil, 1945 (1959), *Associate Professor of Art*
B.A., 1943, Washington; M.F.A., 1954, Minnesota
- Archer, Stephen H., 1956 (1960), *Associate Professor of Finance*
B.A., 1949, M.A., 1953, Ph.D., 1958, Minnesota
- Arestad, Sverre, 1937 (1958), *Professor of Scandinavian Languages; Executive Officer of the Department of Scandinavian Languages*
B.A., 1929, Ph.D., 1938, Washington
- Arsove, Maynard Goodwin, 1951 (1961), *Professor of Mathematics*
B.S., 1943, Lehigh; M.S., 1948, Ph.D., 1950, Brown
- Avann, Sherwin Parker, 1946, *Assistant Professor of Mathematics*
B.S., 1938, Washington; M.S., 1940, Ph.D., 1942, California Institute of Technology
- Ayllón, Cándido, 1956 (1957), *Assistant Professor in Spanish*
B.A., 1951, Brooklyn; M.A., 1952, Ph.D., 1956, Wisconsin
- Babb, Albert Leslie, 1952 (1956), *Associate Professor of Chemical Engineering*
B.A.Sc., 1948, British Columbia; M.S., 1949, Ph.D., 1951, Illinois
- Babb, Warren, 1955, *Assistant Professor of Music*
B.A., 1938, M.A., 1939, Harvard
- Badgley, Franklin Ilsley, 1950 (1959), *Associate Professor of Meteorology and Climatology*
B.S., 1935, Chicago; M.S., 1948, Ph.D., 1951, New York
- Bacr, Donald M., 1957 (1961), *Associate Professor of Psychology*
A.B., 1950, Ph.D., 1957, Chicago
- Baily, Athol Romayne, 1949 (1955), *Associate Professor of Industrial Education*
B.S., 1931, Kansas State Teachers College; M.A., 1936, Ed.D., 1949, Missouri
- Balise, Peter Louis, Jr., 1953 (1961), *Professor of Mechanical Engineering*
S.B., 1948, S.M., 1950, Massachusetts Institute of Technology
- Ballantine, John Perry, 1926 (1937), *Professor of Mathematics*
A.B., 1918, Harvard; Ph.D., 1923, Chicago
- Barksdale, Julian Devreau, 1936 (1949), *Professor of Geology*
A.B., 1930, Stanford; Ph.D., 1936, Yale
- Barnes, Clifford Adrian, 1947 (1955), *Professor of Oceanography*
B.S., 1930; Ph.D., 1936, Washington
- Barnowe, Theodore Joseph, 1947 (1955), *Professor of Human Relations and Administration*
B.A., 1939, Morningside College (Iowa); M.A., 1940, Ph.D., 1946, Washington
- Barth, Ernest A. T., 1955 (1959), *Assistant Professor of Sociology*
B.A., Rochester, 1950; M.A., 1953, Ph.D., 1955, North Carolina
- Baskerville, Barnet, 1948 (1960), *Professor of Speech*
B.A., 1940, M.A., 1944, Washington; Ph.D., 1948, Northwestern
- Bassett, David Lee, 1959, *Professor of Anatomy*
A.B., 1934, M.D., 1939, Stanford
- Batey, Marjorie Viola, 1956, (1958), *Assistant Professor of Psychiatric Nursing*
Diploma, 1947, Sacred Heart Hospital, Washington; B.S., 1953, Washington; M.S., 1956, Colorado
- Batie, Harriett Virginia, 1941 (1954), *Assistant Professor of Education; Certification and Academic Adviser*
B.S., 1935, Hastings College; M.A., 1945, Ph.D., 1953, Washington
- Bauer, Harry C., 1945 (1947), *Professor of Librarianship; Special Assistant in Public Information*
A.B., 1927, M.S., 1929, Washington University, St. Louis; Certificate of Librarianship, 1931, St. Louis Library School

- Beale, James MacArthur, Jr., 1948 (1958), *Associate Professor of Music*
B.A., 1945, Harvard; B.Mus., 1946, M.Mus., 1947, Yale
- Bear, Herbert Stanley, Jr., 1957 (1958), *Assistant Professor of Mathematics*
B.A., 1950, Ph.D., 1957, California
- Beaumont, Ross Allen, 1940 (1954), *Professor of Mathematics*
A.B., 1936, M.S., 1937, Michigan; Ph.D., 1940, Illinois
- Benditt, Earl P., 1957, *Professor of Pathology; Executive Officer of the Department of Pathology*
B.A., 1937, Swarthmore; M.D., 1941, Harvard
- Bentley, G. Nelson, 1952 (1957), *Assistant Professor of English*
A.B., 1941, M.A., 1945, Michigan
- Benson, Merritt E., 1931 (1948), *Professor of Communications*
LL.B., 1930, Minnesota; B.A., 1942, Washington
- Berg, Kenneth Bernard, 1950 (1957), *Professor of Accounting*
B.S.C., 1939, North Dakota; M.S., 1941, Ph.D., 1952, Illinois; C.F.A., 1954, State of Washington
- Bergseth, Frederick Robert, 1947 (1957), *Professor of Electrical Engineering*
B.S. in E.E., 1937, Washington; S.M. in E.E., 1938, Massachusetts Institute of Technology
- Bevis, Leura Dorothy, 1947 (1956), *Associate Professor of Librarianship; Associate Director of the School of Librarianship*
B.A., 1927, Pomona; B.S. in L.S., 1947, Southern California; M.A., 1951, Washington
- Bijou, Sidney William, 1948 (1951), *Professor of Psychology; Director of the Bailey and Babette Gatzert Institute of Child Development*
B.S., 1933, Florida; M.A., 1936, Columbia; Ph.D., 1941, Iowa
- Bird, Winfred Wylam, 1928 (1946), *Associate Professor of Speech*
A.B., 1926, Lawrence College (Wisconsin); Ph.D., 1938, Iowa
- Birnbaum, Zygmunt William, 1939 (1950), *Professor of Mathematics; Director of the Laboratory of Statistical Research*
LL.M., 1925, Ph.D., 1929, John Casimir (Lwow, Poland)
- Bjorkstam, John Ludwig, 1955 (1960), *Associate Professor of Electrical Engineering*
B.S. in E.E., 1949, M.S. in E.E., 1952, Ph.D., 1958, Washington
- Blair, John Sanborn, 1952 (1961), *Professor of Physics*
B.S., 1943, Yale; M.S., 1949, Ph.D., 1951, Illinois
- Blandau, Richard Julius, 1949 (1951), *Professor of Anatomy; Associate Dean of the School of Medicine*
A.B., 1935, Linfield College; Ph.D., 1939, Brown; M.D., 1948, Rochester
- Blaser, Henry Weston, 1946 (1948), *Associate Professor of Botany*
B.S., 1931, A.M., 1933, Temple; Ph.D., 1940, Cornell
- Bluestone, George, 1957 (1959), *Assistant Professor of English*
B.A., 1949, Harvard; M.F.A., 1951, Iowa; Ph.D., 1956, Johns Hopkins
- Blumenthal, Robert McCallum, 1956 (1961), *Associate Professor of Mathematics*
B.A., 1952, Oberlin; Ph.D., 1956, Cornell
- Bodansky, David, 1954 (1958), *Associate Professor of Physics*
B.S., 1943, M.A., 1948, Ph.D., 1950, Harvard
- Bodemer, Charles W., 1956 (1959), *Assistant Professor of Anatomy*
B.A., 1951, Pomona College; M.A., 1952, Claremont Graduate School; Ph.D., 1956, Cornell
- Boehme, Thomas Kelman, 1960 (1961), *Assistant Professor of Mathematics*
B.S., 1952, Oklahoma University; M.S., 1957, Oklahoma State; Ph.D., 1960, California Institute of Technology
- Bogan, Richard Herbert, 1954 (1957), *Associate Professor of Civil Engineering*
B.S. in C.E., 1949, Washington; S.M., 1952, Sc.D., 1954, Massachusetts Institute of Technology
- Bollard, R. John, 1961, *Professor and Executive Officer, Aeronautical Engineering*
B.E., 1948, M.E., 1949, Canterbury College, New Zealand; Ph.D., 1954, Purdue University
- Bone, Hugh Alvin, 1948, *Professor of Political Science; Executive Officer of the Department of Political Science*
B.A., 1931, North Central College; M.A., 1935, Wisconsin; Ph.D., 1937, Northwestern
- Boozer, Mary Kathryn, 1960, *Assistant Professor of Medical-Surgical Nursing*
B.S.N., 1947, Colorado; M.N., 1955, Washington

- Boroughs, Homer, Jr., 1948 (1956), *Associate Professor of Elementary Education*
B.A., 1939, Western Washington College of Education; M.A., 1947, Ph.D., 1949, Washington
- Bostetter, Edward Everett, 1940 (1959), *Professor of English*
B.A., 1935, Franklin and Marshall (Pennsylvania); M.A., 1937, Ph.D., 1938, Princeton
- Bourque, Philip J., 1957, *Associate Professor of General Business*
A.B., 1949, Massachusetts; M.A., 1950, Ph.D., 1956, Pennsylvania
- Brabb, George J., 1956 (1960), *Associate Professor of Statistics*
B.S., 1950, M.S., 1954, Idaho; Ph.D., 1957, Illinois
- Brady, Lynn Robert, 1959, *Assistant Professor of Pharmacy*
B.S., 1955, M.S., 1957, Nebraska; Ph.D., 1959, Washington
- Brandt, Edna Mae, 1954 (1958), *Assistant Professor of Medical-Surgical Nursing*
Diploma, 1939, St. Joseph's Hospital School of Nursing, Illinois; B.A., 1952, Redlands; M.N., 1953, Washington
- Brazeau, Wendell Phillips, 1945 (1955), *Associate Professor of Art*
B.F.A., 1933, M.F.A., 1947, Washington
- Brewer, Stanley Harold, 1946 (1956), *Professor of Transportation*
B.A., 1942, M.B.A., 1943, Washington, I.C.C. Practitioner, 1948; F.M.B. Practitioner, 1950
- Brien, Frederick Blyth, 1954 (1957), *Associate Professor of Mineral Engineering*
B.S. in Min.E., 1950, Alberta; M.S. in Min.E., 1951, Columbia
- Briggs, James Robert, 1952 (1955), *Associate Professor of Secretarial Studies*
A.B., 1935, M.A., 1950, Washington; D.Ed., 1954, Stanford
- Brockman, Christian Frank, 1946 (1957), *Professor of Forestry*
B.S., 1924, Colorado State; M.S., 1931, Washington
- Brockway, Doris J., 1951, *Associate Professor of Home Economics*
B.A., 1926, Washington State; M.A., 1939, Washington
- Broer, Marion Ruth, 1947 (1960), *Professor of Physical Education*
B.S., 1933, M.S., 1936, Wisconsin; Ph.D., 1954, New York
- Brown, Arthur Charles, 1960, *Instructor in Physiology and Biophysics*
A.B., 1948, M.S., 1954, Chicago; Ph.D., 1960, Washington
- Brown, David V., 1951 (1960), *Associate Professor of Pathology*
B.A., 1935, Reed College; M.D., 1939, Oregon
- Brown, Edward Gordon, 1948 (1949), *Professor of Business Policy*
A.B., 1929, Washington; M.B.A., 1932, Harvard
- Brown, Malcolm Johnston, 1946 (1956), *Associate Professor of English*
B.A., 1931, Ph.D., 1946, Washington
- Brown, Stephen Darden, 1930 (1937), *Associate Professor of Business Law*
LL.B., 1925, A.B., 1932, Washington; LL.M., 1938, Stanford
- Brownell, Francis Herbert, III, 1950 (1961), *Professor of Mathematics*
B.A., 1943, M.S., 1947, Yale; Ph.D., 1949, Princeton
- Bruno, Pauline Mary, 1958, *Assistant Professor of Medical-Surgical Nursing*
B.S.N., 1952, M.S.N., 1954, Catholic University
- Bryant, Benjamin Smyth, 1949 (1959), *Associate Professor of Forestry; Director of Institute of Forest Products*
B.S.F., 1947, M.S.F., 1948, Washington; D.F., 1951, Yale
- Buck, George Crawford, 1950 (1958), *Assistant Professor of Germanic Literature*
B.A., 1942, Amherst; M.A., 1948, Ph.D., 1954, Yale
- Budel, Oscar, 1956 (1961), *Associate Professor of Italian Language and Literature*
Abitur, 1942, Dr.Phil., 1950, University of Wurzburg (Germany)
- Buettner, Konrad J. K., 1953 (1957), *Professor of Meteorology and Climatology*
B.S., 1922, Gymnasium (Pforte, Germany); Dr.phil., 1926, Göttingen (Germany); Dr.phil.habil., 1934, Kiel (Germany)
- Bunin, Sanford Melvin, 1957 (1960), *Assistant Professor of Human Relations and Personnel*
B.S., 1949, Western Reserve, M.A., 1951, Kent State; Ph.D., 1960, Texas
- Burke, Agnes Evelyn, 1943 (1953), *Associate Professor of Public Health Nursing*
B.S., 1930, Akron Municipal; Diploma, 1930, M.A., 1941, Western Reserve; C.P.H.N., 1943, Washington
- Burke, Robert Eugene, 1957 (1960), *Associate Professor of History*
A.B., 1946, Chico State College; M.A., 1947, Ph.D., 1950, California

- Burns, Harry Hamilton, 1934 (1948), *Associate Professor of English*
B.A., 1928, Ph.D., 1935, Washington
- Burns, Wayne, 1948 (1954), *Associate Professor of English*
A.B., 1938, Miami (Ohio); A.M., 1940, Harvard; Ph.D., 1946, Cornell
- Businger, Joost A., 1958 (1961), *Associate Professor of Meteorology and Climatology*
B.S., 1947, Doctoraal examen, 1950, Ph.D., 1954, Utrecht (Netherlands)
- Butow, Robert J. C., 1960, *Associate Professor of Japanese History*
A.B., 1947, A.M., 1948, Ph.D., 1953, Stanford
- Cady, George Hamilton, 1938 (1947), *Professor of Chemistry; Executive Officer of the Department of Chemistry*
A.B., 1927, A.M., 1928, Kansas; Ph.D., 1930, California
- Campbell, Robert John, Jr., 1955, *Assistant Professor of Ceramic Engineering*
B.S., Ch.E., 1939, Oregon State; M.S. in Cer.E., 1954, Washington
- Campbell, Robert Kenneth, 1958 (1960), *Assistant Professor of Forest Genetics*
B.A., 1951, Montana State University; M.S., 1954, Ph.D., 1958, Washington
- Campbell, Thomas Herbert, 1945 (1955), *Professor of Civil Engineering; Acting Executive Officer of the Department of Civil Engineering*
B.S. in C.E., 1934, Washington; M.S. in C.E., 1938, Massachusetts Institute of Technology
- Carlson, Dale Arvid, 1955 (1961), *Associate Professor of Civil Engineering*
B.S. in C.E., 1950, M.S. in C.E., 1951, Washington; Ph.D., 1960, Wisconsin
- Carr, Kenneth Mills, 1944 (1953), *Assistant Professor of Drama*
B.A., 1942, Eastern Washington College of Education; M.A., 1945, Washington
- Carrell, James Aubrey, 1939 (1947), *Professor of Speech*
A.B., 1927, Nebraska Wesleyan; M.A., 1929, Ph.D., 1936, Northwestern
- Cartwright, Philip Windsor, 1947 (1960), *Professor of Economics; Associate Dean of the College of Arts and Sciences*
A.B., 1940, M.A., 1942, Ph.D., 1950, Stanford
- Catton, William Robert, Jr., 1957, *Assistant Professor of Sociology*
A.B., 1950, Oberlin; M.A., 1952, Ph.D., 1954, Washington
- Chambers, Edward J., 1960, *Associate Professor of General Business*
B.Comm., 1945, B.A., 1946, M.A., 1947, British Columbia; Ph.D., 1953, Nebraska
- Chang, Kun, 1951 (1957), *Associate Professor of Far Eastern and Slavic Languages and Literature*
B.A., 1938, National Tsinghua (China); M.A., 1949, Ph.D., 1955, Yale
- Chapman, Douglas George, 1949 (1957), *Professor of Mathematics*
B.A., 1938, Saskatchewan; M.A., 1940, Ph.D., 1949, California
- Chapple, Stanley, 1948, *Professor of Music; Director of the School of Music*
D.Mus. (Hon.), 1947, Colby College
- Chenoweth, Harry Holt, 1946 (1957), *Associate Professor of Civil Engineering*
B.S. in C.E., 1937, M.S. in C.E., 1957, Washington
- Chessex, Jean-Charles, 1928 (1948), *Professor of French*
B.A., 1920, Gymnase Classique Lausanne, (Switzerland); B.D., 1922, M.A., 1925, Lausanne (Switzerland)
- Childs, Morris Elsmere, 1954 (1961), *Professor of Mechanical Engineering*
B.S. in M.E., 1944, Oklahoma; M.S. in M.E., 1947, Ph.D., 1956, Illinois
- Chiu, John S. Y., 1960, *Assistant Professor of Accounting and Finance*
B.A., 1952, National Taiwan University, Formosa; M.S., 1955, Kentucky; Ph.D., 1960, Illinois
- Church, Phil Edwards, 1935 (1948), *Professor of Meteorology and Climatology; Executive Officer of the Department of Meteorology and Climatology*
B.S., 1923, Chicago; M.A., 1932, Ph.D., 1937, Clark
- Clanton, Jack Reed, 1947 (1958) *Professor of Civil Engineering*
B.S. in C.E., 1936, Missouri School of Mines; M.S. in C.E., 1939, Pittsburgh
- Clark, Kenneth Courtright, 1948 (1960), *Professor of Physics*
B.A., 1940, Texas; A.M., 1941, Ph.D., 1947, Harvard
- Clark, Robert Newhall, 1957 (1959), *Associate Professor of Electrical Engineering*
B.S. in E.E., 1950, M.S. in E.E., 1951, University of Michigan

- Clarke, Henry Leland, 1958 (1959), *Associate Professor of Music*
A.B., 1928, A.M., 1929, Ph.D., 1947, Harvard
- Clawson, David Kay, 1958 (1961), *Associate Professor of Surgery; Head of the Division of Orthopedic Surgery*
M.D., 1952, Harvard
- Cobb, Mary Marguerite, 1953 (1958), *Assistant Professor of Public Health Nursing*
B.S.N., 1949, M.N., 1957, Washington
- Cohen, Joseph, 1932 (1941), *Assistant Professor of Sociology*
B.A., 1925, M.A., 1927, Washington; Ph.D., 1935, Michigan
- Cole, Kenneth Carey, 1924 (1936), *Professor of Political Science*
B.Litt. in Law, 1924, Oxford (England); Ph.D., 1930, Harvard
- Conway, John Ashby, 1927 (1950), *Professor of Drama*
B.A., 1927, Carnegie Institute of Technology
- Coombs, Howard Abbott, 1934 (1949), *Professor of Geology; Executive Officer of the Department of Geology*
B.S., 1929, M.S., 1932, Ph.D., 1935, Washington
- Corbally, John Edward, 1927 (1942), *Professor of Secondary Education; Director of Practice Teaching; Acting Director of the Bureau of School Service and Research*
B.A., 1918, Whitworth College; M.A., 1925, Ph.D., 1929, Washington
- Cornu, Max Donald, 1928 (1953), *Professor of English*
LL.B., 1922, M.A., 1926, Ph.D., 1928, Washington
- Corson, Harry Herbert, 1958 (1959), *Assistant Professor of Mathematics*
A.B., 1952, Vanderbilt; M.A., 1954, Ph.D., 1957, Duke
- Costello, Charles Pierce, Jr., 1958 (1961), *Associate Professor of Mechanical Engineering*
B.S. in M.E., 1954, Washington; M.S. in M.E., 1955, Ph.D., 1958, Stanford
- Costigan, Giovanni, 1934 (1948), *Professor of History*
B.A., 1926, B.Litt., 1930, M.A., 1930, Oxford (England); M.A., 1928, Ph.D., 1930, Wisconsin
- Costner, Herbert Lee, 1959 (1960), *Assistant Professor of Sociology*
A.B., 1953, Oklahoma; M.A., 1956, Ph.D., 1960, Indiana
- Crain, Richard Willson, Sr., 1936 (1953), *Associate Professor of Mechanical Engineering*
B.S. in E.E., 1930, B.S. in M.E., 1932, Colorado Agricultural and Mechanical College; M.S. in M.E., 1946, Washington
- Cramlet, Clyde Myron, 1920 (1948), *Professor of Mathematics*
B.S., 1916, Walla Walla College; M.S., 1920, Ph.D., 1926, Washington
- Creager, Joe S., 1958, *Assistant Professor of Oceanography*
B.A., 1951, Colorado College; M.S., 1953, Ph.D., 1958, Agricultural and Mechanical College of Texas
- Creore, Alvin Emerson, 1940 (1953), *Associate Professor of Romance Languages and Literature*
A.B., 1934, M.A., 1936, Rochester; Ph.D., 1939, Johns Hopkins
- Crider, James Roberts, 1952 (1957), *Assistant Professor of Drama*
B.A., 1945, Cornell College (Iowa); M.A., 1950, Washington
- Crittenden, Alden LaRue, 1947 (1960), *Associate Professor of Chemistry*
B.S., 1942, Ph.D., 1946, Illinois
- Crowell, Laura Irene, 1949 (1955), *Associate Professor of Speech*
B.A., 1929, South Dakota; M.A., 1940, Ph.D., 1948, Iowa
- Crutchfield, James Arthur, 1949 (1957), *Associate Professor of Economics*
A.B., 1940, M.A., 1942, California (Los Angeles); Ph.D., 1954, California
- Culbert, Sidney Spence, 1947 (1961), *Associate Professor of Psychology*
B.A., 1943, Ph.D., 1950, Washington
- Cutler, Russell Kelsey, 1946 (1948), *Associate Professor of Physical Education, Executive Officer of the Department of Physical Education for Men*
B.Ed., 1930, California (Los Angeles); M.S., 1934, Oregon; D.Ed., 1958, Stanford
- Danielsen, Edwin Frederick, 1959, *Assistant Professor of Meteorology and Climatology*
B.S., 1951, M.S., 1954, Ph.D., 1958, Washington

- Dash, Jay Gregory, 1960, *Acting Associate Professor in Physics*
B.S., 1944, New York City College; M.A., 1951, Ph.D., 1951, Columbia
- Dauben, Hyp Joseph, Jr., 1945 (1961), *Professor of Chemistry*
B.A., M.S., 1937, Ohio State; A.M., Ph.D., 1941, Harvard
- David, Jean Ferdinand, 1936 (1957), *Associate Professor of Romance Languages and Literature*
Bacc., 1923 College Grandchamp (Versaille, France); A.B., 1929, M.A., 1932, Saskatchewan; Ph.D., 1936, Johns Hopkins
- David, Morton Morris, 1953 (1957), *Associate Professor of Chemical Engineering*
B.S. in Ch.E., 1942, Colorado; D.Eng., 1950, Yale
- Davis, Alanson Bewick, 1947 (1955), *Lecturer and Stage Designer in Drama*
A.B., 1947, Washington
- Day, Emmett Elbert, 1947 (1954), *Professor of Mechanical Engineering*
B.A., 1936, East Texas State Teachers College; B.S., 1945, M.S., 1947, Massachusetts Institute of Technology
- Dehmelt, Hans Georg, 1955 (1957), *Associate Professor of Physics*
B.S., 1946, M.S., 1949, Ph.D., 1950, University of Goettingen (Germany)
- Dekker, David Bliss, 1948 (1959), *Associate Professor of Mathematics; Director of the Research Computer Laboratory*
A.B., 1941, California; M.S., 1943, Illinois Institute of Technology; Ph.D., 1948, California
- De Lacy, Allan Clark, 1946 (1958), *Professor of Fisheries*
B.S., 1932, M.S., 1933, Ph.D., 1941, Washington
- Delano, Myles S., 1958 (1960), *Associate Professor of Finance and Statistics*
A.B., 1943, Bates; M.A., 1947, Boston; Ph.D., 1960, Brown
- Demmery, Joseph, 1928 (1934), *Professor of General Business*
Ph.B., 1920, M.A., 1924, Chicago
- Denny, Brewster Castberg, 1961, *Associate Professor of Public Administration, Associate Director of School of Public Administration*
A.B., 1945, Washington; M.A., 1948, Ph.D., 1959, Fletcher School of Law and Diplomacy
- Depew, Creighton Arthur, 1960, *Assistant Professor of Mechanical Engineering*
B.S. 1956, M.S., 1957, Ph.D., 1960, California
- de Vries, Mary Aid, 1921 (1939), *Associate Professor of Physical Education*
B.A., 1920, Wisconsin
- Dietrichson, Paul, 1955 (1961), *Associate Professor of Philosophy*
A.B., 1947, Georgia; Ph.D., 1955, Yale
- Dietz, Robert Henry, 1947 (1958), *Professor of Architecture*
B.Arch., 1941, Washington; M.Arch., 1944, Massachusetts Institute of Technology
- Dill, Ellis Harold, 1956 (1959), *Associate Professor of Aeronautical Engineering*
B.S. in C.E., 1954, M.S. in C.E., 1955, Ph.D., 1956, California
- Dillard, David Hugh, 1953 (1959), *Assistant Professor of Surgery*
A.B., 1946, Whitman College; M.D., 1950, Johns Hopkins
- Dille, James Madison, 1936 (1946), *Professor of Pharmacology; Executive Officer of the Department of Pharmacology*
B.S., 1930, M.S., 1933, Nebraska; Ph.D., 1935, Georgetown; M.D., 1946, Illinois
- Dodd, Stuart Carter, 1947, *Professor of Sociology*
B.S., 1922, M.A., 1924, Ph.D., 1926, Princeton
- Dollar, Alexander Melville, 1959, *Assistant Professor of Fisheries*
B.S., 1948, M.S., 1949, California (Berkeley); Ph.D., 1958, Reading (England)
- Donaldson, Lauren Russell, 1935 (1948), *Professor of Fisheries; Director of the Laboratory of Radiation Biology*
A.B., 1926, Intermountain Union College (Montana); M.S., 1931, Ph.D., 1939, Washington
- Dorfman, Eugene, 1955, *Assistant Professor of Romance Linguistics*
A.B., 1938, New Jersey State Teachers College; A.M., 1947, Ph.D., 1950, Columbia
- Douglas, Howard Clark, 1941 (1958), *Professor of Microbiology and Genetics*
A.B., 1936, Ph.D., 1949, California
- Draper, Edgar Marian, 1925 (1936), *Professor of Curriculum; Director of In-Service Teacher Training*
B.A., 1916, M.A., 1925, Ph.D., 1926, Washington

- Du Pen, Everett George, 1945 (1960), *Professor of Art*
B.F.A., 1937, Yale
- Dvorak, August, 1923 (1937), *Professor of Education; Assistant Director of the Division of Counseling and Testing*
B.A., 1920, Ph.D., 1923, Minnesota
- Earle, Frances M., 1931 (1941), *Associate Professor of Geography*
A.B., 1918, Winthrop College; M.S., 1926, Columbia; Ph.D., 1929, George Washington
- Eastman, Austin V., 1924 (1942), *Professor of Electrical Engineering; Executive Officer of the Department of Electrical Engineering*
B.S. in E.E., 1922, M.S. in E.E., 1929, Washington
- Eastman, Fred Scoville, 1927 (1943), *Professor of Aeronautical Engineering*
B.S. in E.E., 1925, Washington; M.S., 1929, Massachusetts Institute of Technology
- Eby, E. Harold, 1927 (1947), *Professor of English*
Ph.B., 1923, Chicago; Ph.D., 1927, Washington
- Edelstein, Alex, 1955 (1959), *Associate Professor of Communications*
A.B., 1946, San Francisco State College; M.A., 1948, Stanford; Ph.D., 1958, Minnesota
- Edmondson, Walles Thomas, 1949 (1957), *Professor of Zoology*
B.S., 1938, Ph.D., 1942, Yale
- Edwards, Allen L., 1944 (1948), *Professor of Psychology*
B.A., 1932, Central College (Chicago); M.A., 1938, Ohio State; Ph.D., 1940, Northwestern
- Eggers, David Frank, Jr., 1950 (1956), *Associate Professor of Chemistry*
B.S., 1943, Illinois; Ph.D., 1950, Minnesota
- Ekse, Martin Ingvald, 1948 (1957), *Professor of Civil Engineering*
B.S., 1932, South Dakota State; M.S., 1948, Wisconsin
- Ellis, Ross C., 1954 (1957), *Assistant Professor of Geology*
B.A., 1953, Occidental College; Ph.D., 1959, Washington
- Emerson, Donald Eugene, 1946 (1953), *Associate Professor of History*
A.B., 1937, Johns Hopkins; M.A., 1938, Columbia; Ph.D., 1942, Johns Hopkins
- Emery, Donald William, 1934 (1954), *Associate Professor of English; Associate Director of the Bureau of School Services and Research*
A.B., 1927, A.M., 1928, Iowa
- Engle, Nathanael Howard, 1941, *Professor of Marketing*
A.B., 1925, A.M., 1926, Washington; Ph.D., 1929, Michigan
- Enos, Lucy DeReid, 1954 (1958), *Assistant Professor of Medical-Surgical Nursing*
Diploma, 1942, Pennsylvania Hospital School of Nursing; B.S., 1946, M.A., 1954, Minnesota
- Erickson, Harvey D., 1947 (1959), *Professor of Forest Products*
B.S., 1933, B.S., 1934, M.S., 1936, Ph.D., 1937, Minnesota
- Erickson, John Wilbur, 1956 (1960), *Assistant Professor of Art*
B.S., 1941, B.F.A., 1947, M.F.A., 1951, Illinois
- Erlich, Victor, 1948 (1959), *Professor of Far Eastern and Slavic Languages and Literature, Assistant Director of the Far Eastern and Russian Institute*
M.A., 1937, Free Polish University (Warsaw, Poland); Ph.D., 1951, Columbia
- Etcheson, Warren W., 1954 (1960), *Professor of Marketing; Assistant Dean of the College of Business Administration*
B.S., 1942, Indiana; M.A., 1951, Ph.D., 1956, Iowa
- Evans, Charles Albert, 1946, *Professor of Microbiology; Executive Officer of the Department of Microbiology*
B.S., 1935, B.M., 1936, M.D., 1937, Ph.D., 1942, Minnesota
- Everett, Newton Bennie, 1946 (1957), *Professor of Anatomy; Executive Officer of the Department of Anatomy*
B.S., 1937, M.S., 1938, North Texas State; Ph.D., 1942, Michigan
- Fairhall, Arthur William, 1954 (1958), *Associate Professor of Physics and Chemistry*
B.Sc., 1946, Queens (Kingston, Ontario); Ph.D., 1952, Massachusetts Institute of Technology
- Falk, Gertrude, 1954 (1957), *Assistant Professor of Pharmacology*
B.S., 1947, Antioch College; Ph.D., 1952, Rochester
- Falls, Gregory Alexander, 1961, *Professor of Drama; Director of the School of Drama*
B.A., 1943, Park College; M.A., 1949, Ph.D., 1953, Northwestern

- Faris, Robert E. Lee, 1948, *Professor of Sociology; Executive Officer of the Department of Sociology*
Ph.B., 1928, M.A., 1930, Ph.D., 1931, Chicago
- Farquharson, Frederick Burt, 1925 (1940), *Professor of Civil Engineering; Director of the Engineering Experiment Station*
B.S. in M.E., 1923, M.E., 1927, Washington
- Farwell, George Wells, 1948 (1959), *Professor of Physics; Associate Dean of the Graduate School*
S.B., 1941, Harvard; Ph.D., 1948, Chicago
- Fea, Henry Robert, 1954 (1959), *Associate Professor of Education*
B.A., 1942, B.Ed., 1947, M.Ed., 1948, Saskatchewan; Ph.D., 1950, California
- Fell, James Michael Gardner, 1956 (1960), *Associate Professor of Mathematics*
B.S., 1943, British Columbia; M.S., 1945, Ph.D., 1951, California
- Fernald, Robert Leslie, 1946 (1959), *Associate Professor of Zoology; Director of Friday Harbor Laboratories*
A.B., 1937, Monmouth College; Ph.D., 1941, California
- Fields, Paul Eldon, 1955, *Professor of Psychology*
A.B., 1926, A.M., 1927, Ohio Wesleyan; Ph.D., 1930, Ohio State
- Firey, Joseph Carl, 1954 (1960), *Professor of Mechanical Engineering*
B.S. in M.E., 1940, Washington; M.S. in M.E., 1941, Wisconsin
- Fischer, Edmond H., 1953 (1961), *Professor of Biochemistry*
Ph.D., 1947, Geneva
- Fischer, Louis, 1929 (1945), *Professor of Pharmaceutical Chemistry; Associate Dean of the College of Pharmacy; Chairman of the Department of Pharmaceutical Chemistry*
B.S., Ph.C., 1926, M.S., 1928, Ph.D., 1933, Washington
- Flanagan, William Francis, 1959, *Assistant Professor of Metallurgical Engineering*
B.S. in Physics, 1951, M.S., 1953, Sc.D., 1959, Massachusetts Institute of Technology
- Fleagle, Robert Guthrie, 1948 (1956), *Professor of Meteorology and Climatology*
A.B., 1940, Johns Hopkins; M.S., 1944, Ph.D., 1949, New York
- Fleming, Richard Howell, 1951, *Professor of Oceanography; Executive Officer of the Department of Oceanography*
B.A., 1929, M.A., 1931, British Columbia; Ph.D., 1935, California
- Florey, Ernst, 1956 (1960), *Associate Professor of Zoology*
Ph.D., 1953, University of Graz (Austria)
- Flowers, W. Baker, 1958 (1960), *Associate Professor of Accounting*
B.S., 1943, M.S., 1949, Alabama; Ph.D., 1959, Texas; C.P.A., 1954, State of Texas
- Foltz, Eldon Leroy, 1950 (1958), *Associate Professor of Neurosurgery*
B.S., 1941, Michigan State; M.D., 1943, Michigan
- Foote, Hope Lucille, 1923 (1948), *Professor of Art*
A.B., 1920, Iowa State Teachers College; M.A., 1923, Columbia
- Foster, Clifford Donald, 1959, *Assistant Professor in Education*
B.S., 1947, Northeast Missouri State College; M.A., 1952, Ph.D., 1957, Washington
- Fowler, David Covington, 1952 (1959), *Associate Professor of English; Associate Dean of the Graduate School*
B.A., 1942, Florida; M.A., 1947, Ph.D., 1949, Chicago
- Fox, Katharine Shirley, 1945 (1948), *Assistant Professor of Physical Education*
B.S., 1938, Washington; M.S., 1943, Oregon; Ph.D., 1955, Iowa
- Franzke, Albert Leonard, 1936 (1939), *Associate Professor of Speech*
B.A., 1916, M.A., 1923, Lawrence College (Wisconsin)
- French, Wendell L., 1958, *Associate Professor of Personnel*
B.A., 1948, M.P.S., 1949, Colorado; D.Ed., 1956, Harvard
- Fuller, Steven D., 1946 (1958), *Associate Professor of Art*
B.A., 1939, M.F.A., 1948, Washington
- Fyfe, Ian Millar, 1959, *Assistant Professor of Aeronautical Engineering*
A.R.T.C., 1950, Royal College of Science and Technology (Glasgow, Scotland); M.M.E., 1954, Delaware; Ph.D., 1957, Stanford
- Gallagher, Marian Gould, 1944 (1953), *Professor of Law; Law Librarian*
B.A., 1935, LL.B., 1937, B.A. in L.S., 1939, Washington

- Galstaun, Vanick Samuel, 1950 (1959), *Assistant Professor of Drama*
B.A., 1946, San Francisco State College; M.A., 1948, Washington
- Ganzer, Victor Martin, 1947 (1953), *Professor of Aeronautical Engineering*
B.A., 1933, Augustana College (Illinois); B.S. in A.E., 1941, Washington
- Garfield, Viola Edmundson, 1937 (1955), *Associate Professor of Anthropology*
B.A., 1928, M.A., 1931, Washington; Ph.D., 1939, Columbia
- Garlid, Kermit L., 1960, *Assistant Professor of Chemical Engineering*
B.S., 1950, River Falls State College (Wisconsin); B.Ch.E., 1956, Ph.D., 1961, Minnesota
- Gartler, Stanley Michael, 1957 (1961), *Associate Professor of Medicine and Genetics*
B.S., 1948, California (Los Angeles); Ph.D., 1952, California (Berkeley)
- Gates, Charles Marvin, 1936 (1951), *Professor of History*
B.A., 1926, Yale; M.A., 1928, Harvard; Ph.D., 1934, Minnesota
- Geballe, Ronald, 1943 (1959), *Professor of Physics; Executive Officer of the Department of Physics*
B.S., 1938, M.S., 1940, Ph.D., 1943, California
- Gerhart, James Basil, 1956 (1961), *Associate Professor of Physics*
B.S., 1950, California Institute of Technology; M.A., 1952, Ph.D., 1954, Princeton
- Gerstenberger, Donna L., 1960 (1961), *Assistant Professor of English*
B.A., 1951, Whitman College; M.A., 1952, Ph.D., 1958, Oklahoma
- Gessel, Stanley Paul, 1948 (1961), *Professor of Forest Soils*
B.S., 1939, Utah State Agricultural College; Ph.D., 1950, California
- Getoor, Ronald Kay, 1956 (1960), *Associate Professor of Mathematics*
A.B., 1950, M.S., 1951, Ph.D., 1954, Michigan
- Giblin, Elizabeth Clare, 1959, *Associate Professor of Medical-Surgical Nursing*
B.S.N., 1943, M.N., 1954, Washington; Ed.D. 1959, Colorado
- Gillam, Cornelius W., 1954 (1956), *Associate Professor of Business Law*
B.A., 1945, Carleton College; M.A., 1946, Minnesota; J.D., 1950, Ph.D., 1954, Chicago
- Gillingham, John Benton, 1947 (1961), *Associate Professor of Economics; Executive Officer of the Department of Economics*
A.B., 1939, Washington State; M.A., 1941, Wisconsin
- Goldberg, Leonard D., 1947 (1956), *Associate Professor of Business Law*
A.B., 1943, J.D., 1945, Chicago
- Golde, Hellmut, 1959, *Assistant Professor of Electrical Engineering*
Dip.-Ing, 1953, Technische Hochschule; M.S., 1955, Ph.D., 1959, Stanford
- Gonzales, Boyer, 1954, *Professor of Art; Director of the School of Art; Director, Henry Art Gallery*
B.S. in Architecture, 1931, Virginia; Student of McFee and Kuniyoshi
- Gordon, Donald Flemming, 1950 (1957), *Associate Professor of Economics*
B.A., 1944, Saskatchewan; M.A., 1946, Toronto; Ph.D., 1949, Cornell
- Gordon, Guy C., 1949 (1957), *Associate Professor of Marketing*
B.A., 1949, M.B.A., 1950, Washington; Ph.D., 1957, California
- Gordon, Milton P., 1959, *Assistant Professor of Biochemistry*
B.A., 1950, Minnesota; Ph.D., 1953, Illinois
- Gottfried, Alex, 1950 (1961), *Associate Professor of Political Science*
Ed.B., 1941, Chicago Teachers College; A.M., 1948, Ph.D., 1952, Chicago
- Gould, Florence Jones, 1948 (1958), *Associate Professor of English*
A.B., 1928, M.A., 1931, Oregon
- Grathwohl, Harrison L., 1958 (1960), *Associate Professor of Marketing*
B.S., 1951, M.B.A., 1952, D.B.A., 1957, Indiana
- Gray, Florence Irene, 1945 (1959), *Associate Professor of Nursing*
B.S.N., 1945, M.S., 1950, Washington
- Gray, Robert Simpson, 1939 (1961), *Associate Professor of Drama*
B.A., 1936, M.A., 1938, Washington
- Gregory, Norman Wayne, 1946 (1957), *Professor of Chemistry*
B.S., 1940, M.S., 1941, Washington; Ph.D., 1943, Ohio State
- Greengo, Robert E., 1957, *Assistant Professor of Anthropology*
A.B., 1948, M.A., 1951, California; Ph.D., 1957, Harvard

- Greenwald, Gilbert S., 1956 (1959), *Assistant Professor of Anatomy*
A.B., 1949, M.A., 1951, Ph.D., 1954, University of California (Berkeley)
- Griffiths, Gordon, 1959, *Associate Professor of History, Acting Executive Officer of the Department of History*
A.B., 1936, Ph.D., 1942, California (Berkeley); B.A., 1939, M.A., 1946, Oxford (England)
- Grimes, Wilma Horrell, 1953 (1961), *Associate Professor of Speech*
B.A., 1928, Wisconsin; M.A., 1947, Northwestern; Ph.D., 1953, Illinois
- Grimshaw, Austin, 1949, *Professor of Business Policy; Dean of the College of Business Administration*
S.D. in C.E., 1927, M.B.A., 1934, D.C.S., 1938, Harvard
- Groman, Neal Benjamin, 1950 (1958), *Associate Professor of Microbiology*
S.B., 1947, Ph.D., 1950, Chicago
- Gronewold, David H., 1954 (1960), *Professor of Social Work*
B.A., 1929, North Central College; M.A., 1952, Chicago
- Grummel, William Charles, 1950 (1955), *Associate Professor of Classics*
A.B., 1937, St. Louis; A.M., 1940, Washington University (St. Louis); Ph.D., 1949, New York
- Guidon, Michael, III, 1946 (1956), *Associate Professor of Mechanical Engineering*
B.S. in M.E., 1942, Lehigh; M.S. in M.E., 1952, Washington
- Guilford, Edward Charles, 1959 (1961), *Associate Professor of Electrical Engineering*
B.A., 1942, M.A., 1950, Utah; Ph.D., 1959, California (Berkeley)
- Gullans, Charles Bennett, 1955 (1957), *Assistant Professor of English*
B.A., 1948, M.A., 1951, Minnesota; Ph.D., 1956, Stanford
- Gunther, Erna, 1923 (1941), *Professor of Anthropology; Director of the Washington State Museum*
A.B., 1919, Barnard; A.M., 1920, Ph.D., 1928, Columbia
- Haag, Richard, 1958 (1960), *Associate Professor of Landscape Design*
B.S.L.A., 1950, California (Berkeley); M.L.A., 1952, Harvard
- Haaga, Agnes Marie, 1947 (1960), *Associate Professor of Drama*
B.A., 1936, Siena College (Tennessee); M.A., 1952, Northwestern
- Hafermehl, C. Louis, 1957 (1960), *Associate Professor of Art*
B.F.A., 1940, Bethany College (Kansas); M.F.A., 1955, Cranbrook Academy of Art (Michigan)
- Haggis, Alex John, 1960 (1961), *Assistant Professor of Zoology*
A.B., 1949, M.S., 1951, Wayne State; Ph.D., 1955, Rochester
- Hall, Florence Turnbull, 1952, *Assistant Professor of Home Economics*
B.Sc., 1943, Manitoba; M.S., 1945, Minnesota
- Hall, James Kendall, 1930 (1934), *Professor of Economics*
A.B., 1925, A.M., 1926, Oregon; Ph.D., 1929, Stanford
- Hall, James Winford, 1949 (1961), *Professor of English*
A.B., 1937, Kansas City; M.A., 1938, Wisconsin; Ph.D., 1949, Cornell
- Hall, Nathan Albert, 1952 (1961), *Professor of Pharmacy*
B.S., 1939, Ph.D., 1948, Washington
- Haller, Mary Elizabeth, 1931 (1949), *Associate Professor of Mathematics*
B.A., 1924, M.S., 1931, Ph.D., 1934, Washington
- Halpern, Isaac, 1953 (1960), *Professor of Physics*
B.S., 1943, City College of New York; Ph.D., 1948, Massachusetts Institute of Technology
- Halsey, George Dawson, Jr., 1951 (1958), *Professor of Chemistry*
B.S. in Ch.E., 1943, South Carolina; Ph.D., 1948, Princeton
- Hamack, Frank Hartmond, 1921 (1942), *Lecturer in Accounting*
LL.B., 1916, Georgetown
- Hamilton, Albert Charles, 1952 (1959), *Associate Professor of English*
B.A., 1945, Manitoba; M.A., 1948, Toronto; Ph.D., 1952, Cambridge
- Hammarlund, Edwin Roy, 1960, *Associate Professor of Pharmacy*
B.S., 1944, M.S., 1949, Ph.D., 1951, Washington
- Hanahan, Donald James, 1948 (1959), *Professor of Biochemistry*
B.S., 1941, Ph.D., 1944, Illinois

- Hanley, Clair Norton, 1952 (1956), *Associate Professor of Speech*
B.A., 1947, M.A., 1950, Ph.D., 1952, Iowa
- Hanneman, Carl Frederick, 1960, *Assistant Professor of Social Work*
B.A., 1949, Washington State; M.A., 1951, Indiana
- Hanson, Gordon Harold, 1960, *Assistant Professor of Electrical Engineering*
B.A., 1949, M.A., 1951, British Columbia; Ph.D., 1957, Minnesota
- Hanson, Kermit Osmond, 1948 (1954), *Professor of Accounting, Finance, and Statistics; Associate Dean of the College of Business Administration*
A.B., 1938, Luther College (Iowa); M.S., 1940, Ph.D., 1950, Iowa State College
- Hanzeli, Victor Egon, 1957 (1961), *Assistant Professor of Romance Languages and Literature*
LL.B., 1947, Pazmany Peter University (Budapest); M.A., 1955, Ph.D., 1961, Indiana
- Harbold, William Henry, 1949 (1955), *Assistant Professor of Political Science*
A.B., 1947, Pennsylvania State; M.A., 1949, Ph.D., 1953, Harvard
- Harder, Virgil E., 1955 (1959), *Associate Professor of Business Communications*
B.S.C., 1950, M.A., 1950, Iowa; Ph.D., 1958, University of Illinois
- Harkins, Henry Nelson, 1947, *Professor of Surgery; Executive Officer of the Department of Surgery*
B.S., 1925, M.S., 1926, Ph.D., 1928, M.D., 1931, Chicago
- Harrington, Donal Francis, 1938 (1952), *Professor of Drama*
B.A., 1928, Montana; M.A., 1933, Columbia
- Harris, Edison Davis, 1947, *Associate Professor of Music*
B.S., 1942, New York
- Harris, Markham, 1946 (1957), *Associate Professor of English*
A.B., 1929, M.A., 1931, Williams
- Harrison, Arthur Elliot, 1948 (1952), *Professor of Electrical Engineering*
B.S. in E.E., 1936, California; M.S., 1937, Ph.D., 1940, California Institute of Technology
- Hartz, Billy J., 1955 (1957), *Associate Professor of Civil Engineering*
B.S. (C.E.), 1952, M.S. (C.E.), 1954, Ph.D., 1955, California
- Hatch, Melville Harrison, 1927 (1941), *Professor of Zoology*
B.A., 1919, M.A., 1921, Ph.D., 1925, Michigan
- Hayden, Alice Hazel, 1942 (1952), *Professor of Education; Director of Graduate Studies in Education*
Ph.C., 1928, B.S., M.S., 1929, Oregon State; Ph.D., 1932, Purdue
- Hayner, Norman Sylvester, 1925 (1937), *Professor of Sociology*
A.B., 1920, Washington; M.A., 1921, Ph.D., 1923, Chicago
- Heath, Willis Robertson, 1957 (1959), *Assistant Professor of Geography*
B.A., 1954, M.A., 1956, Ph.D., 1958, Washington
- Heathers, Louise Bussard, 1945, *Assistant Professor of Psychology; Senior Clinical Psychologist in the Counseling Center*
B.A., 1933, Washington; Ph.D., 1940, Yale
- Heideger, William Joseph, 1957, *Assistant Professor in Chemical Engineering*
B.S., 1954, Carnegie Institute of Technology; M.S.E., 1955, Ph.D., 1959, Princeton
- Heilman, Robert Bechtold, 1948, *Professor of English; Executive Officer of the Department of English*
A.B., 1927, Lafayette; M.A., 1930, Ohio State College; M.A., 1931, Ph.D., 1935, Harvard
- Heinemann, Margot Edith, 1954 (1956), *Assistant Professor in Medical-Surgical Nursing; Educational Coordinator of the Harborview Teaching Unit*
B.S.N., 1945, Seattle University; M.N., 1954, Washington
- Heinitz, Eva, 1948 (1956), *Associate Professor of Music*
- Henderson, Joseph Edmonds, 1929 (1942), *Professor of Physics; Director of the Applied Physics Laboratory*
B.S., 1922, College of Wooster; Ph.D., 1928, Yale
- Henley, Ernest M., 1954 (1961), *Professor of Physics*
B.E.E., 1944, City College of New York; Ph.D., 1951, California
- Hennes, Robert Graham, 1934 (1947), *Professor of Civil Engineering*
B.S. in C.E., 1927, Notre Dame; M.S., 1928, Massachusetts Institute of Technology

- Henning, Charles Nathaniel, 1948 (1955), *Professor of Finance; Director Faculty Research and Publications in College of Business Administration*
A.B., 1938, M.A., 1940, Ph.D., 1952, California (Los Angeles)
- Henning, Dale A., 1955 (1956), *Associate Professor of Policy and Administration and Production*
B.S., 1948, M.B.A., 1949, Pennsylvania; Ph.D., 1954, Illinois
- Henry, Bernard Stauffer, 1931 (1941), *Professor of Microbiology*
B.S., 1925, M.A., 1926, Ph.D., 1931, California
- Hensley, Mercedes Hoover, 1939 (1952), *Lecturer in Art*
B.F.A., 1930, M.F.A., 1938, Washington
- Hermans, Thomas Gerald, 1929 (1940), *Assistant Professor of Psychology*
B.S., 1923, M.A., 1927, Washington
- Hewitt, Edwin, 1948 (1954), *Professor of Mathematics*
A.B., 1940, M.A., 1941, Ph.D., 1942, Harvard
- Hickey, Maurice J., 1956, *Professor of Oral Surgery; Dean of the School of Dentistry*
D.M.D., 1932, Harvard; M.D., 1937, Columbia
- Higgs, Paul McClellan, 1926 (1959), *Associate Professor of Physics*
B.S., 1919, Washington
- Hilen, Andrew Reuben, Jr., 1945 (1959), *Professor of English*
B.A., 1937, Washington; Ph.D., 1943, Yale
- Hill, W. Ryland, 1941 (1953), *Professor of Electrical Engineering; Associate Dean of the College of Engineering*
B.S. in E.E., 1934, Washington; M.S. in E.E., 1938, E.E., 1941, California
- Hitchcock, C. Leo, 1937 (1944), *Professor of Botany; Executive Officer of the Department of Botany; Curator of Herbarium*
A.B., 1927, Pomona; A.M., 1929, Claremont Colleges; Ph.D., 1931, Washington University (St. Louis)
- Hitchner, Dell Gillette, 1947 (1951), *Associate Professor of Political Science*
B.A., 1936, Wichita; M.A., 1937, Missouri; Ph.D., 1940, Wisconsin
- Hixson, William John, 1950 (1958), *Associate Professor of Art*
B.A., 1948, M.F.A., 1950, Oregon
- Hoffman, Katherine Janet, 1942 (1956), *Professor of Nursing; Assistant Dean of the School of Nursing; Director of the Graduate Programs in Nursing*
A.B., 1929, College of Puget Sound; Diploma, 1934, Tacoma General Hospital School of Nursing; M.N., 1941, Ph.D., 1956, Washington
- Holland, John Joseph, 1959, *Assistant Professor of Microbiology*
B.S., 1953, Loyola; Ph.D., 1957, California (Los Angeles)
- Holt, William Stull, 1940, *Professor of History*
A.B., 1920, Cornell; Ph.D., 1926, Johns Hopkins
- Hopkins, William Stephen, 1946, *Professor of Economics*
B.S., 1925, M.A., 1928, Oregon; Ph.D., 1932, Stanford
- Horita, Akira, 1954 (1961), *Associate Professor of Pharmacology*
A.B., 1950, M.S., 1951, Ph.D., 1954, Washington
- Horst, A. Paul, 1947, *Professor of Psychology*
B.A., 1927, California; Ph.D., 1931, Chicago
- Horton, George Plant, 1934 (1946), *Associate Professor of Psychology; Acting Executive Officer of the Department of Psychology*
B.S., 1926, M.A., 1930, Ph.D., 1932, Princeton
- Horwood, Edgar Miller, 1946 (1957), *Associate Professor of Civil Engineering*
B.S. in M.E., 1942, Georgia Institute of Technology; M.S. in Regional Planning, 1951, Washington; Ph.D., 1959, University of Pennsylvania
- Hosmer, Margaret George, 1948 (1954), *Lecturer in Home Economics*
B.S., 1918, North Carolina
- Hougie, Cecil, 1960, *Associate Professor of Pathology; Director, Hospital Clinical Hematology Laboratory*
M.R.C.S. (England), L.R.C.P. (London), 1945; M.B., B.S., 1946, University of London
- Howery, Victor I., 1952 (1953), *Professor of Social Work; Dean of the School of Social Work*
B.S., 1936, Wisconsin State; Ph.M., 1946, M.S.W., 1948, Ph.D., 1949, Wisconsin

- Hsiao, Kung-chuan, 1951 (1959), *Professor of Far Eastern Languages and Literature; Assistant Director of the Far Eastern and Russian Institute*
Graduate, 1920, National Tsinghua (China); B.A., 1922, M.A., 1923, Missouri;
Ph.D., 1926, Cornell
- Hsu, Chih-Chi, 1958, *Assistant Professor of Electrical Engineering*
B.S., 1945, Chiao-Tung University, Shanghai, China; M.S.E., 1949, University of Michigan;
Ph.D., 1951, Ohio State University
- Hsu, Wellington Siang, 1944 (1960), *Professor of Zoology*
B.S., 1922, Illinois; M.S., 1924, D.Sc., 1928, Harvard
- Huber, J. Richard, 1939 (1949), *Professor of Economics*
B.A., 1931, College of Wooster; M.A., 1933, Ph.D., 1937, Princeton
- Hudson, G. Donald, 1951, *Professor of Geography; Executive Officer of the Department of Geography*
Ph.B., 1925, A.M., 1926, Ph.D., 1934, Chicago
- Huenekens, Frank, 1951 (1961), *Professor of Biochemistry*
B.S., 1943, Ph.D., 1948, California
- Hufford, George Allen, 1958, *Assistant Professor of Mathematics*
B.S., Engr., 1946, California Institute of Technology; MSEE, 1948, Washington;
M.A., 1952, Ph.D., 1953, Princeton
- Hughes, Eric Lester, 1951 (1956), *Assistant Professor of Physical Education*
B.S., 1947, M.S., 1948, Illinois; D.Ed., 1956, Washington
- Hughes, Glenn Arthur, 1919 (1942), *Professor of Drama*
B.A., 1916, Stanford; M.A., 1920, Washington
- Huitric, Alain C., 1955 (1957), *Assistant Professor of Pharmaceutical Chemistry*
B.S., 1950, Loyola; M.S., 1952, Ph.D., 1954, California
- Hunt, Marguerite, 1949 (1960), *Professor of Social Work*
A.B., 1929, Brown; M.S., 1936, Western Reserve
- Hurvitz, Leon Nahum, 1955 (1957), *Assistant Professor of Japanese Language and Literature*
B.A., 1949, Chicago; M.A., 1951, Ph.D., 1959, Columbia
- Illg, Paul Louis, 1952 (1959), *Professor of Zoology*
A.B., 1936, M.A., 1941, California; Ph.D., 1952, George Washington
- Immerwahr, Raymond Max, 1958 (1960), *Professor of Germanic Languages and Literature*
B.A., 1934, Swarthmore; M.A., 1935, Northwestern; Ph.D., 1941, California (Berkeley)
- Ingle, John Ide, 1948 (1959), *Professor of Periodontics and Endodontics; Executive Officer of the Department of Periodontics and Endodontics*
D.D.S., 1942, Northwestern; M.S.D., 1948, Michigan
- Irmischer, William Frederick, 1960, *Associate Professor of English; Director of Freshman English*
B.A., 1941, Louisville; M.A., 1947, Chicago; Ph.D., 1950, Indiana
- Irvine, Demar Buel, 1937 (1960), *Professor of Music*
A.B., 1929, M.A., 1931, California; Ph.D., 1937, Harvard
- Isbell, John Rolfe, 1957 (1959), *Associate Professor of Mathematics*
B.S., 1951, Chicago; Ph.D., 1954, Princeton
- Ishimaru, Akira, 1954 (1961), *Associate Professor of Electrical Engineering*
B.S. in E.E., 1951, Tokyo; Ph.D., 1958, Washington
- Jackson, William A. Douglas, 1955 (1960), *Professor of Geography and of Far Eastern and Slavic Languages and Literature*
B.A., 1946, M.A., 1949, Toronto; Ph.D., 1953, Maryland
- Jacobs, Melville, 1928 (1952), *Professor of Anthropology*
A.B., 1922, City College of New York; A.M., 1923, Ph.D., 1931, Columbia
- Jacobsohn, Boris Abbott, 1948 (1959), *Professor of Physics*
A.B., 1938, A.M., 1939, Columbia; Ph.D., 1947, Chicago
- Jacobson, Berthe Poncy, 1937 (1948), *Professor of Music*
Diploma, 1915, Conservatory of Music (Geneva); Diploma, 1917, Schola Cantorum (Paris);
Diploma, 1921, Dalcroze School (Geneva)
- Jans, James P., 1957 (1960), *Associate Professor of Mathematics*
A.B., 1949, M.A., 1950, Ph.D., 1955, Michigan

- Jensen, Lyle Howard, 1949 (1961), *Professor of Anatomy*
B.A., 1939, Walla Walla College; Ph.D., 1943, Washington
- Jerbert, Arthur Rudolph, 1921 (1937), *Associate Professor of Mathematics*
B.S., 1916, M.S., 1923, Ph.D., 1928, Washington
- Jessup, John Hunnicutt, 1926 (1927), *Associate Professor of Educational Sociology*
A.B., 1920, Earlham College; M.A., 1924, Iowa
- Johanson, Lennart Noble, 1951 (1956), *Associate Professor of Chemical Engineering*
B.S., 1942, Utah; M.S., 1943, Ph.D., 1948, Wisconsin
- Johnson, David Laurence, 1955 (1961), *Professor of Electrical Engineering*
B.S. in E.E., 1948, Idaho; Ph.D., 1955, Purdue
- Johnson, Dudley W., 1960, *Associate Professor of Finance and Business Statistics*
B.A., 1950, Pacific University (Oregon); M.A., 1953, Ph.D., 1957, Northwestern
- Johnson, Fletcher Ormond, 1950, *Lecturer in Accounting*
B.B.A., 1924, Washington; C.P.A., 1925, States of Washington, Pennsylvania, California, Illinois
- Johnson, Mary Louise, 1945 (1957), *Professor of Home Economics;*
Director of the School of Home Economics
B.A., 1940, Hardin-Simmons (Texas); M.S., 1942, Wisconsin; D.Sc., 1954, Harvard School of Public Health
- Johnson, Pauline, 1941 (1958), *Professor of Art*
B.A., 1929, Washington; M.A., 1936, Columbia
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B.B.A., 1949, M.B.A., 1952, Minnesota; D.B.A., 1958, Washington
- Johnson, Walter G., 1948 (1956), *Professor of Scandinavian Languages*
B.A., 1927, Augsburg College; M.A., 1929, Minnesota; Ph.D., 1935, Illinois
- Johnston, Norman John, 1960 (1961), *Associate Professor of Architecture and Urban Planning*
B.A., 1942, Washington; B.Arch., 1949, Oregon; Master of City Planning, 1959, Pennsylvania
- Jolivet, Vincent M., 1956 (1959), *Associate Professor of Finance*
B.S., 1952, McGill; M.B.A., 1954, D.B.A., 1957, Harvard
- Jones, Frank William, 1955, *Associate Professor of English and Comparative Literature*
B.A., 1934, Manitoba; Ph.D., 1941, Wisconsin; B.A., M.A., 1955, Oxford (England)
- Joppa, Robert Glenn, 1945 (1957), *Associate Professor of Aeronautical Engineering*
B.S. in A.E., 1945, M.S. in A.E., 1951, Washington
- Kahn, Robert Ludwig, 1948 (1960), *Associate Professor of Germanic Literature*
B.A., 1944, M.A., 1945, Dalhousie (Nova Scotia); Ph.D., 1950, Toronto
- Kakiuchi, Hiroaki George, 1957 (1960), *Assistant Professor of Geography*
A.B., 1952, A.M., 1953, Ph.D., 1957, Michigan
- Kaminsky, Howard, 1957, *Assistant Professor of History*
M.A., 1949, Ph.D., 1952, Chicago
- Kaplan, Alex, 1960, *Associate Professor of Biochemistry*
A.B., 1932, Ph.D., 1936, California (Berkeley)
- Kast, Fremont E., 1951 (1961), *Professor of Production, Policy and Administration*
A.B., 1946, San Jose State College; M.B.A., 1949, Stanford; D.B.A., 1956, Washington
- Katz, Solomon, 1936 (1950), *Professor of History; Dean of the College of Arts and Sciences*
A.B., 1930, Ph.D., 1933, Cornell
- Keller, Abraham Charles, 1948 (1952), *Associate Professor of Romance Languages and Literature*
B.A., 1936, M.A., 1937, Ohio State; Ph.D., 1946, California
- Kent, Joseph Chan, 1952 (1961), *Associate Professor of Civil Engineering*
B.S. in C.E., 1945, British Columbia; M.S. in C.E., 1948, Stanford; Ph.D., 1952, California
- Kenworthy, Ray W., 1929 (1950), *Associate Professor of Physics*
B.A., 1924, M.S., 1925, Iowa; Ph.D., 1938, Washington
- Key, David, 1957 (1960), *Assistant Professor of Philosophy*
A.B., 1951, Kenyon College; M.A., 1953, Ph.D., 1955, Cornell

- Kidwell, M. Kathro, 1939 (1950), *Associate Professor of Physical Education*
B.S., 1927, Nebraska; M.S., 1928, Wisconsin; Ed.D., 1954, Columbia
- Kim, Young Bae, 1955 (1957), *Assistant Professor of Physics*
B.S., 1950, Washington; Ph.D., 1954, Princeton
- Kingston, John Maurice, 1940 (1959), *Associate Professor of Mathematics;*
Executive Secretary of the Department of Mathematics
B.A., 1935, Western Ontario; M.A., 1936, Ph.D., 1939, Toronto
- Klee, Victor L., Jr., 1953 (1957), *Professor of Mathematics*
B.A., 1945, Pomona College; Ph.D., 1949, Virginia
- Klutas, Edna May, 1960, *Assistant Professor of Occupational Health Nursing and*
Public Health Nursing
Diploma, 1940, Columbia-Presbyterian School of Nursing, New York; B.S., 1951, Washington; M.P.H., 1957, Yale
- Knowles, Henry P., 1957 (1961), *Assistant Professor of Personnel*
B.S., 1935, U.S. Naval Academy; M.B.A., 1947, Harvard, Ph.D., 1961, Stanford
- Knudson, Harry R., Jr., 1958 (1961), *Associate Professor of Personnel and*
Human Relations
B.S., 1952, M.B.A., 1953, Indiana; D.B.A., 1958, Harvard
- Kobayashi, Albert Satoshi, 1958 (1961), *Associate Professor of Mechanical*
Engineering
B.S., 1947, Tokyo; M.S. in M.E., 1952, Washington; Ph.D., 1958, Illinois Institute of Technology
- Kolb, Keith Robert, 1952 (1960), *Associate Professor of Architecture*
B.Arch., 1947, Washington; M.Arch., 1950, Harvard
- Kolde, Endel Jakob, 1951 (1959), *Professor of International Business and*
Marketing
B.S., 1949, National Military Academy (Estonia); D.H.S., 1947, Stockholm (Sweden); M.A., 1951, D.B.A., 1954, Washington
- Korg, Jacob, 1955 (1956), *Assistant Professor of English*
B.A., 1943, City College of New York; M.A., 1947, Ph.D., 1952, Columbia
- Kraus, Bertram S., 1957, *Professor of Physical Anthropology*
A.B., 1934, Western Reserve University; M.A., Ph.D., 1949, Chicago
- Kraut, Joseph, 1953 (1958), *Assistant Professor of Biochemistry*
B.S., 1950, Bucknell; Ph.D., 1953, California Institute of Technology
- Krebs, Edwin Gerhard, 1948 (1957), *Professor of Biochemistry*
A.B., 1940, Illinois; M.D., 1943, Washington University (St. Louis)
- Kruckeberg, Arthur Rice, 1950 (1960), *Associate Professor of Botany*
B.A., 1941, Occidental College; Ph.D., 1950, California
- Krupski, Edward, 1944 (1955), *Associate Professor of Pharmaceutical Chemistry*
B.S., 1939, M.S., 1941, Ph. D., 1949, Washington
- Kunde, Norman Frederick, 1931 (1949), *Associate Professor of Physical Education*
B.S., 1928, M.S., 1932, Washington; D.Ed., 1946, New York
- Larsen, Otto Nyholm, 1949 (1958), *Associate Professor of Sociology; Director,*
Washington Institute for Sociological Research
B.A., 1947, M.A., 1949, Ph.D., 1955, Washington
- La Russo, Dominic Anthony, 1951 (1956), *Assistant Professor of Speech*
B.A., 1950, M.A., 1952, Ph.D., 1956, Northwestern
- Law, David Barclay, 1947 (1949), *Associate Professor of Pedodontics; Executive*
Officer of the Department of Pedodontics
D.D.S., B.S.D., 1938, M.S., 1941, Northwestern
- Lawrence, Richard Glenn, 1956 (1961), *Associate Professor of Social Work,*
Assistant Dean of the School of Social Work
B.A., 1948, M.A., 1951, Iowa
- LeBreton, Preston P., 1960, *Professor of Policy and Administration and Executive*
Officer of the Department of Policy, Personnel Relations and Production
B.S., 1947, M.B.A., 1949, Louisiana State; Ph.D., 1953, Illinois
- Lee, Gordon Canfield, 1961, *Professor and Dean, College of Education*
A.B., 1937, University of California; M.A., 1938, Ph.D., 1948, Columbia

- Leggett, Glenn Hubert, 1952, *Associate Professor of English; Vice Provost*
B.A., 1940, Middlebury College; B.A., 1941, Ph.D., 1949, Ohio State
- Leik, Robert Kendric, 1959, *Assistant Professor of Sociology*
B.S., 1953, Oregon; M.S., 1957, Ph.D., 1959, Wisconsin
- Lewis, Laurel Jones, 1946 (1954), *Professor of Electrical Engineering*
A.B., 1933, E.E., 1935, Ph.D., 1947, Stanford
- Li, Fang-kuei, 1949 (1950), *Professor of Chinese Linguistics and of Anthropology*
A.B., 1926, Michigan; A.M., 1927, Ph.D., 1928, Chicago
- Lieberman, Irving, 1956, *Professor of Librarianship; Director of the School of Librarianship*
B.S., 1935, New York; B.S. (L.S.), 1939, Ed.D., 1955, Columbia
- Lingafelter, Edward Clay, Jr., 1939 (1952), *Professor of Chemistry; Associate Dean of the Graduate School*
B.S., 1935, Ph.D., 1939, California
- Liston, John, 1957 (1960), *Associate Professor of Fisheries*
B.S., 1952, University of Edinburgh (Scotland); Ph.D., 1955, University of Aberdeen (Scotland)
- Little, Wallace I., 1954 (1956), *Associate Professor of Transportation*
B.S., 1943, M.S., 1947, Illinois; Ph.D., 1952, Wisconsin
- Loomis, Ted Albert, 1947 (1957), *Professor of Pharmacology; State Toxicologist*
B.S., 1939, Washington; M.S., 1941, Ph.D., 1943, Buffalo; M.D., 1946, Yale
- Lord, Jere Johns, 1952 (1957), *Associate Professor of Physics*
A.B., 1943, Reed College; M.A., 1948, Ph.D., 1950, Chicago
- Lorig, Arthur Nicholas, 1934 (1949), *Professor of Accounting*
B.A., 1922, Wisconsin; M.A., 1932, Stanford; Ph.D., 1936, Chicago; C.P.A., 1927, State of California
- Loucks, Roger Brown, 1936 (1948), *Professor of Psychology*
B.S. in C.E., 1927, Ph.D., 1930, Minnesota
- Lounsbury, Warren Carson, 1948 (1958), *Lecturer in Drama*
A.B., 1946, Western Reserve; M.A., 1953, Washington
- Lovett, Wendell Harper, 1948 (1960), *Associate Professor of Architecture*
B.Arch., 1947, Washington; M.Arch., 1948, Massachusetts Institute of Technology
- Luft, John H., 1956 (1961), *Associate Professor of Anatomy*
B.S., 1949, M.D., 1953, Washington
- Lytle, Dean, 1958, *Assistant Professor of Electrical Engineering*
B.S. in E.E., 1950, University of California; M.S. in E.E., 1954, Ph.D., 1957, Stanford
- Lytle, Scott Harrison, 1949 (1957), *Associate Professor of History*
A.B., 1940, Princeton; Ph.D., 1948, Cornell
- Macdonald, Catherine Joan, 1945 (1954), *Assistant Professor of Social Work*
B.A., 1936, Washington
- MacDonald, Cecilia, 1949 (1957), *Associate Professor of Elementary Education*
B.A., 1946, Central Washington College of Education; M.Ed., 1952, Washington
- Mackin, Joseph Hoover, 1934 (1947), *Professor of Geology*
B.S., 1930, New York; M.A., 1932, Ph.D., 1936, Columbia
- Magee, Donal Francis, 1951 (1957), *Associate Professor of Pharmacology*
B.A., 1944, M.A., B.Med., B.Ch., 1948, Oxford (England); Ph.D., 1952, Illinois
- Maier, Henry William, 1959 (1960), *Associate Professor of Social Work*
A.B., 1947, Oberlin College; M.S., 1949, Western Reserve; Ph.D., 1959, Minnesota
- Maki, John McGilvrey, 1939 (1956), *Professor of Japanese Government and Politics*
B.A., 1932, M.A., 1936, Washington; Ph.D., 1948, Harvard
- Mallory, Virgil Standish, 1952 (1957), *Associate Professor of Geology*
A.B., 1943, Oberlin; M.A., 1948, Ph.D., 1952, California
- Mander, Linden Alfred, 1928 (1937), *Professor of Political Science*
B.A., 1917, M.A., 1920, Adelaide (Australia)
- Mansfield, Louise Wasson, 1951 (1952), *Assistant Professor of Medical-Surgical Nursing*
Diploma, 1937, Samaritan Hospital School of Nursing (Idaho); B.S., 1947, Ohio State; M.A., 1951, Columbia

- Marckworth, Gordon Dotter, 1939, *Professor of Forest Management; Dean of the College of Forestry*
B.S.F., 1916, Ohio State; M.F., 1917, Yale
- Marcus, Sumner, 1955 (1961), *Professor of Business Law; Executive Officer of the Department of General Business*
A.B., 1931, M.B.A., 1933, LL.B., 1936, Harvard; D.B.A., 1958, Washington
- Martin, Arthur Wesley, Jr., 1937 (1950), *Professor of Physiology; Executive Officer of the Department of Zoology*
B.S., 1931, College of Puget Sound; Ph.D., 1936, Stanford
- Martin, Charles Emanuel, 1924, *Professor of Political Science; Director of the Institute of International Affairs*
B.Litt., 1914, M.A., 1915, California; Ph.D., 1918, Columbia; LL.D., 1942, Southern California
- Martin, George M., 1957 (1960), *Assistant Professor of Pathology*
B.S., 1949, M.D., 1953, Washington
- Martin, Harold Clifford, 1948 (1952), *Professor of Aeronautical Engineering*
B.S. in M.E., 1934, M.S., 1937, New York; Ph.D., 1950, California Institute of Technology
- Martin, Howard Hanna, 1930 (1940), *Professor of Geography*
B.S., 1922, Pennsylvania; A.M., 1923, Ph.D., 1929, George Washington; Sc.D. (Hon.), 1937, Monmouth College
- Marts, Marion Ernest, 1946 (1961), *Professor of Geography; Director of Evening Classes and of Summer Quarter*
B.A., 1937, M.A., 1944, Washington; Ph.D., 1950, Northwestern
- Masek, George E., 1957 (1961), *Associate Professor of Physics*
B.S., 1950, M.S., 1951, Ph.D., 1955, Stanford
- Mason, Alden C., 1946 (1957), *Associate Professor of Art*
B.A., 1942, M.F.A., 1947, Washington
- Matchett, William H., 1954 (1961), *Associate Professor of English*
B.A., 1949, Swarthmore; M.A., 1950, Ph.D., 1957, Harvard
- McAdams, Laura Elizabeth, 1941 (1951), *Associate Professor of Home Economics*
B.S., 1923, M.S., 1932, Kansas State
- McCaffree, Kenneth Maurice, 1949 (1956), *Associate Professor of Economics*
B.A., 1940, Southwestern College (Kansas); M.A., 1942, Denver; Ph.D., 1950, Chicago
- McCarthy, Joseph Le Page, 1941 (1952), *Professor of Chemical Engineering; Dean of the Graduate School*
B.S. in Ch.E., 1934, Washington; M.S., 1936, Idaho; Ph.D., 1938, McGill
- McCarthy, Walter Charles, 1949 (1957), *Associate Professor of Pharmaceutical Chemistry*
B.S., 1943, Massachusetts Institute of Technology; Ph.D., 1949, Indiana
- McDiarmid, John Brodie, 1949 (1956), *Professor of Classics; Executive Officer of the Department of Classics*
B.A., 1936, Toronto; Ph.D., 1940, Johns Hopkins
- McFarlan, Lee Horace, 1927 (1946), *Professor of Mathematics*
B.S., 1917, Kansas State Teachers College; M.A., 1921, Ph.D., 1924, Missouri
- McFeron, Dean Earl, 1958, *Professor of Mechanical Engineering*
B.S. in M.E., 1943, M.S. in M.E., 1948, Colorado; Ph.D., 1956, Illinois
- McGuire, Joseph William, 1950 (1961), *Professor of Business Fluctuations*
Ph.B., 1948, Marquette; M.B.A., 1950, Ph.D., 1956, Columbia
- McKay, George Frederick, 1927 (1943), *Professor of Music*
B.Mus., 1923, Rochester
- McKee, Bates, 1958, *Assistant Professor of Geology*
B.S., 1955, Yale; Ph.D., 1958, Stanford
- McKeever, Benjamin Butler, 1949, *Associate Professor of Psychology*
A.B., 1930, M.A., 1931, Harvard; Ph.D., 1940, Iowa
- McKinnon, Richard Nichols, 1951 (1957), *Associate Professor of Japanese Language and Literature*
A.B., 1947, A.M., 1949, Ph.D., 1951, Harvard

- McMinn, Bryan Towne, 1920 (1946), *Professor of Mechanical Engineering; Executive Officer of the Department of Mechanical Engineering*
B.S. in M.E., 1918, Oregon State; M.S. in M.E., 1926, M.E., 1931, Washington
- McMinn, Trevor James, 1956, *Assistant Professor of Mathematics*
B.A., 1942, Utah; Ph.D., 1955, California
- McNeilly, Clyde Emerson, 1959, *Assistant Professor of Ceramic Engineering*
B.S. Cer. E., 1954, Ph.D., 1958, Alfred
- Meeuse, Bastiaan Jacob Dirk, 1952 (1960), *Professor of Botany*
B.Sc., 1936, Doctoraal Examen, 1939, Leiden (Holland); Doctor, 1943, Delft (Holland)
- Meier, Robert C., 1957 (1961), *Assistant Professor of Production*
B.S., 1952, Indiana; M.A., 1955; Ph.D., 1961, Minnesota
- Melden, Abraham Irving, 1946 (1956), *Professor of Philosophy*
A.B., 1931, California (Los Angeles); A.M., 1932, Brown; Ph.D., 1938, California
- Merendino, K. Alvin, 1948 (1955), *Professor of Surgery*
B.A., 1936, Ohio; M.D., 1940, Yale; Ph.D., 1946, Minnesota
- Metzger, Lore, 1960 (1961), *Assistant Professor of English*
B.A., 1946, Hunter College; M.A., 1947, Ph.D., 1956, Columbia
- Meyer, Herman Carl Henry, 1934 (1942), *Associate Professor of Germanic Languages; Executive Secretary of the Department of Germanics*
B.A., 1924, Capital (Ohio); Ph.D., 1936, Chicago
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B.A., 1947, Cornell; M.A., 1948, Harvard; Ph.D., 1951, Chicago
- Michael, Franz H., 1942 (1948), *Professor of Far Eastern History and Government*;
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- Miller, Alfred Lawrence, 1923 (1937), *Professor of Mechanics and Structures*
B.S. in C.E., 1920, C.E., 1926, Washington
- Miller, Charles John, 1927 (1945), *Professor of Marketing; Executive Officer of the Department of Marketing, Transportation, and International Business*
B.B.A., 1922, M.B.A., 1927, Washington
- Mills, Blake David, Jr., 1946 (1947), *Professor of Mechanical Engineering*
B.S. in M.E., B.S. in E.E., 1934, Washington; M.S. in M.E., 1935, Massachusetts
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- Mills, Caswell Albert, 1942 (1961), *Associate Professor of Physical Education; Lecturer in Public Health*
B.A., 1935, North Dakota State Teachers College; M.A., 1943, Ph.D., 1960, Washington
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D.Sc., 1932, Göttingen (Germany)
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B.S. in C.E., 1937, Washington; M.S. in C.E., 1938, Massachusetts Institute of Technology
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B.A., 1936, M.A., 1938, Washington; Ph.D., 1950, Chicago
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D.D.S., 1941, California; M.S., 1948, Illinois
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B.A., 1941, California (Los Angeles); Ph.D., 1953, California
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B.A.S.C., 1948, M.A.S.C., 1949, British Columbia; D.I.C., 1953, Imperial College of Science and Technology (London); Ph.D., 1959, London
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B.S. in M.E., 1921, Massachusetts Institute of Technology
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A.B., 1941, Ph.D., 1954, California
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B.S. in M.E., 1943, Virginia Polytechnic Institute; M.S. in M.E., 1954, Washington
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B.A., 1948, M.F.A., 1951, Washington
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- Motulsky, Arno Gunther, 1953 (1961), *Professor of Medicine and Genetics*
B.S., 1945, M.D., 1947, Illinois
- Moulton, Ralph Wells, 1941 (1950), *Professor of Chemical Engineering; Executive Officer of the Department of Chemical Engineering*
B.S. in Ch.E., 1932, M.S. in Ch.E., 1934, Ph.D., 1938, Washington
- Mueller, Fred J., 1956 (1959), *Associate Professor of Accounting and Finance*
B.A., 1953, M.A., 1954, Washington; Ph.D., 1956, Ohio State
- Mueller, James Irving, 1949 (1955), *Professor of Ceramic Engineering*
B.Cer.E., 1939, Ohio State; Ph.D., 1949, Missouri
- Mund, Vernon Arthur, 1932 (1937), *Professor of Economics*
B.B.A., 1928, M.B.A., 1929, Washington; Ph.D., 1932, Princeton
- Munro, Kathleen, 1929 (1945), *Professor of Music*
B.M., 1924, Washington; M.A., 1929, Columbia; Ph.D., 1937, Washington
- Murphey, W. Rhoads, III, 1952 (1956), *Associate Professor of Geography*
A.B., 1941, Harvard College; A.M., 1942, A.M., 1948, Ph.D., 1950, Harvard University
- Murray, B. Louise, 1957, *Assistant Professor of Maternal Child Nursing*
B.S., 1938, Portland; M.N., 1950, Washington
- Nash, Shirley Istars, 1952 (1957), *Assistant Professor of Nursing; Educational Coordinator, Virginia Mason Hospital Teaching Unit*
Diploma, 1941, Virginia Mason Hospital School of Nursing; B.S., C.N.S., 1949, M.N., 1956, Washington
- Nece, Ronald Elliott, 1959 (1961), *Associate Professor of Civil Engineering*
B.S. in C.E., 1949, Washington; M.S. in C.E., 1951, Lehigh; Sc.D., 1958, Massachusetts Institute of Technology
- Neddermeyer, Seth Henry, 1946 (1952), *Professor of Physics*
A.B., 1929, Stanford; Ph.D., 1935, California Institute of Technology
- Nelson, Oliver Wendell, 1945 (1952), *Associate Professor of Speech*
B.A., 1933, M.A., 1939, Ph.D., 1949, Washington
- Nelson, Robert A., 1955 (1956), *Associate Professor of Transportation*
A.B., 1941, Clark; M.B.A., 1947, Boston; Ph.D., 1954, Clark
- Neurath, Hans, 1950, *Professor of Biochemistry; Executive Officer of the Department of Biochemistry*
Ph.D., 1933, Vienna
- Neushul, Michael, Jr., 1960, *Instructor in Botany*
B.A., 1955, Ph.D., 1959, University of California (Los Angeles)
- Nielsen, Mabel, 1957 (1959), *Assistant Professor of Home Economics*
B.S., 1935, Idaho; M.S., 1941, Iowa State College
- Nijenhuis, Albert, 1956 (1961), *Professor of Mathematics*
B.S., 1947, M.S., 1950, Ph.D., 1952, Amsterdam (The Netherlands)
- Nilsen, Thomas Robert, 1946 (1954), *Assistant Professor of Speech*
B.A., 1940, M.A., 1948, Washington; Ph.D., 1953, Northwestern
- Niven, Harold Franklin, Jr., 1958, *Assistant Professor of Radio-Television*
B.A., 1948, Denver; M.A., 1949, Stanford; Ph.D., 1958, Ohio State
- Noges, Endrik, 1958, *Assistant Professor of Electrical Engineering*
B.S., 1954, M.S., 1956, Ph.D., 1958, Northwestern
- Nordquist, William Bertil, 1947 (1955), *Associate Professor of Mechanical Engineering*
B.M.E., 1941, Rensselaer Polytechnic Institute; M.S., 1946, Massachusetts Institute of Technology
- Normann, Theodore Frederick, 1940 (1958), *Professor of Music*
B.A., 1925, Macalester College; M.A., 1928, Columbia
- North, Douglass Cecil, 1950 (1960), *Professor of Economics; Director of the Institute of Economic Research*
B.A., 1942, Ph.D., 1952, California
- Northwood, Lawrence K., 1959 (1960), *Associate Professor of Social Work*
B.A., 1947, Wayne; Ph.D., 1953, Michigan

- Nostrand, Howard Lee, 1939, *Professor of Romance Languages and Literature; Executive Officer of the Department of Romance Languages and Literature*
B.A., 1932, Amherst College; A.M., 1933, Harvard; Docteur, 1934, Université de Paris (France)
- Nunke, Ronald John, 1958, *Assistant Professor of Mathematics*
B.S., 1950, M.S., 1951, Ph.D., 1955, Chicago
- Nyhus, Lloyd M., 1952 (1959), *Associate Professor of Surgery*
B.A., 1945, Pacific Lutheran; M.D., 1947, Alabama
- O'Brien, Timothy Frederick, 1956 (1958), *Associate Professor of Aeronautical Engineering*
B.S. in A.E., 1947, M.S. in A.E., 1951, Sc.D., 1958, Massachusetts Institute of Technology
- Ogilvie, Alfred Livingston, 1951 (1957), *Associate Professor of Periodontics and Endodontics*
D.D.S., 1944, Toronto; M.S., 1948, California
- O'Keefe, Kathleen Baxter, 1959 (1960), *Assistant Professor of Mathematics*
A.B., 1946, M.S., 1948, Ph.D., 1959, California (Berkeley)
- Olcott, Virginia, 1931 (1945), *Associate Professor of Medical-Surgical Nursing*
Diploma, 1926, Peter Bent Brigham Hospital School of Nursing (Massachusetts); B.S., 1927, M.S., 1931, C.P.H.N., 1949, Washington
- Ordal, Erling Josef, 1937 (1957), *Professor of Microbiology*
B.A., 1927, Luther College; Ph.D., 1936, Minnesota
- Orians, Gordon H., 1960, *Assistant Professor of Zoology*
B.S., 1954, Wisconsin; Ph.D., 1960, California (Berkeley)
- Orr, Jack E., 1956, *Professor of Pharmacy; Dean of the College of Pharmacy; State Chemist*
B.S., 1940, Purdue; Ph.D., 1943, Wisconsin
- Osterud, Kenneth Leland, 1949, *Assistant Professor of Zoology*
B.A., 1935, Randolph-Macon College; Ph.D., 1941, New York
- Ottenberg, Simon, 1955 (1961), *Associate Professor of Anthropology*
B.A., 1948, Wisconsin; Ph.D., 1957, Northwestern
- Palmer, John Milton, 1952 (1954), *Assistant Professor of Speech*
B.A., 1946, M.A., 1950, Washington; Ph.D., 1952, Michigan
- Paris, Paul Croce, 1957, *Assistant Professor of Civil Engineering*
B.S. in C.E., 1953, Michigan; M.S., 1955, Lehigh
- Parsons, Jack R., 1955 (1957), *Associate Professor of Social Work*
B.A., 1935, M.A., 1940, College of the Pacific; M.S., 1943, Columbia; Ph.D., 1958, Chicago
- Pascal, Paul, 1953 (1956), *Assistant Professor of Classics*
B.A., 1948, Vermont; Ph.D., 1953, North Carolina
- Patterson, Viola Hansen, 1947 (1958), *Associate Professor of Art*
B.S. in L.S., 1921, B.F.A., 1925, M.F.A., 1947, Washington
- Patton, Harry Dickson, 1947 (1956), *Professor of Physiology and Biophysics*
B.A., 1939, Arkansas; Ph.D., 1943, M.D., 1946, Yale
- Payne, Blanche, 1927 (1942), *Professor of Home Economics*
B.S., 1916, Kansas State Teachers College; M.A., 1924, Columbia
- Pearce, John Kenneth, 1934 (1943), *Professor of Logging Engineering*
B.S.F., 1921, Washington
- Peck, Charles Elwin, 1951 (1955), *Associate Professor of Business Communications*
B.A., 1935, Wichita; M.A., 1947, Ph.D., 1950, Iowa
- Pedersen, Roma M. Kittelsby, 1953 (1961), *Associate Professor of Medical-Surgical Nursing*
B.S.N., 1943, Minnesota; M.N., 1955, Washington
- Peck, Clifford L., 1938, *Assistant Professor of Physical Education*
B.S., 1929, Washington; M.A., 1931, Columbia
- Pence, Orville Leon, 1941 (1954), *Associate Professor of Speech*
B.A., 1935, M.A., 1939, Washington; Ph.D., 1946, Iowa
- Penington, Ruth Esther, 1928 (1951), *Professor of Art*
B.F.A., 1927, M.F.A., 1929, Washington

- Perrin, Porter Gale, 1947, *Professor of English*
A.B., 1917, Dartmouth; A.M., 1921, Maine; Ph.D., 1936, Chicago
- Person, Henry Axel, 1937 (1961), *Associate Professor of English*
A.B., 1927, Ph.D., 1942, Washington
- Peterson, Marion Elizabeth, 1951 (1958), *Associate Professor of Librarianship*
B.A., 1930, B.A. in Librarianship, 1941, M.A., 1957, Washington
- Phillips, William Louis, 1949 (1961), *Associate Professor of English; Assistant Dean of the College of Arts and Sciences*
B.A., 1942, Iowa State Teachers College; M.A., 1947, Ph.D., 1949, Chicago
- Pierce, Richard Scott, 1955 (1960), *Professor of Mathematics*
B.S., 1950, Ph.D., 1952, California Institute of Technology
- Pifer, Drury Augustus, 1945 (1948), *Professor of Mining Engineering; Director of the School of Mineral Engineering*
B.S. in Min.E., 1930, M.S. in Min.E., 1931, Washington
- Pigott, William, III, 1957 (1960), *Associate Professor of Finance*
B.S.S., 1949, Seattle; M.A., 1955, Ph.D., 1957, Washington
- Plein, Elmer Michael, 1938 (1951), *Professor of Pharmacy; Coordinator of Pharmaceutical Services*
PhC., B.S., 1929; M.S., 1931, Ph.D., 1936, Colorado
- Polonis, Douglas Hugh, 1955 (1958), *Associate Professor of Metallurgical Engineering*
B.A.Sc., 1951, British Columbia; M.A.Sc., 1953, Toronto; Ph.D., 1955, British Columbia
- Poppe, Nicholas Nikolaevich, 1949 (1951), *Professor of Slavic and Altaic Studies and of Anthropology*
Master, 1923, Petrograd (Russia); Ph.D., 1934, Petersburg (Russia)
- Powell, Sargent Gastman, 1919 (1943), *Professor of Chemistry*
B.S., M.S., 1916, Washington; Ph.D., 1920, Illinois
- Powers, Francis Fountain, 1928 (1940), *Professor of Educational Psychology*
B.A., 1923, Washington; M.A., 1927, Oregon; Ph.D., 1928, Washington
- Prehn, Richmond T., 1958 (1960), *Associate Professor of Pathology*
M.D., 1947, Long Island College of Medicine
- Pressly, Thomas James, 1949 (1960), *Professor of History*
A.B., 1940, A.M., 1941, Ph.D., 1950, Harvard
- Pyke, Ronald, 1960, *Assistant Professor of Mathematics*
B.A., 1953, McMaster; M.S., 1955, Ph.D., 1956, Washington
- Rabinovitch, Benton Seymour, 1948 (1957), *Professor of Chemistry*
B.S., 1939, Ph.D., 1942, McGill
- Rader, Melvin Miller, 1930 (1948), *Professor of Philosophy*
A.B., 1925, M.A., 1927, Ph.D., 1929, Washington
- Rahskopf, Horace G., 1928 (1944), *Professor of Speech; Executive Officer of the Department of Speech*
A.B., 1920, Willamette; M.A., 1927, Ph.D., 1935, Iowa
- Rattray, Maurice, Jr., 1950 (1957), *Associate Professor of Oceanography*
B.S., 1944, M.S., 1947, Ph.D., 1951, California Institute of Technology
- Ray, Dixy Lee, 1945 (1957), *Associate Professor of Zoology (on leave 1961-63)*
B.A., 1937, M.A., 1938, Mills College; Ph.D., 1945, Stanford
- Ray, Verne Frederick, 1933 (1947), *Professor of Anthropology*
B.A., 1931, M.A., 1933, Washington; Ph.D., 1937, Yale
- Read, Kenneth E., 1957 (1958), *Associate Professor of Anthropology; Acting Executive Officer of the Department of Anthropology*
B.A., 1940, M.A., 1946, Sydney (Australia); Ph.D., 1948, London (England)
- Read, William Merritt, 1927 (1945), *Professor of Classics; Director of University Press*
A.B., 1923, DePauw; M.A., 1924, Ph.D., 1927, Michigan
- Redford, Grant H., 1945 (1956), *Associate Professor of English*
B.S., 1937, Utah State; M.A., 1940, Iowa
- Reed, Carroll Edward, 1946 (1959), *Professor of Germanic Languages*
B.A., 1936, M.A., 1937, Washington; Ph.D., 1941, Brown

- Reed, Richard John, 1954 (1958), *Associate Professor of Meteorology and Climatology*
B.S., 1945, California Institute of Technology; Sc.D., 1949, Massachusetts Institute of Technology
- Reeves, George Spencer, 1935 (1948), *Associate Professor of Physical Education*
B.S., 1933, Oregon State; M.S., 1937, Oregon; M.P.H., 1951, California
- Reiffer, Erwin, 1947 (1955), *Professor of Chinese Language*
Dr.Rer.Pol., 1931, Vienna (Austria)
- Reinert, Otto, 1956 (1958), *Assistant Professor of English*
B.A., 1947, Lafayette; M.A., 1948, Ph.D., 1952, Yale
- Reiss, Grace Dewey, 1947 (1960), *Associate Professor of Social Work*
B.A., 1932, Iowa; M.A., 1940, Minnesota
- Reshetar, John Stephen, Jr., 1957 (1958), *Associate Professor of Political Science*
B.A., 1945, Williams; M.A., 1946, Ph.D., 1950, Harvard
- Rey, William Henry, 1950 (1959), *Professor of Germanic Literature; Executive Officer of Germanic Languages*
Ph.D., 1937, Frankfurt (Germany)
- Reynolds, Donald Kelly, 1959 (1960), *Professor of Electrical Engineering*
B.A., 1941, M.A., 1942, Stanford; Ph.D., 1948, Harvard
- Richards, Francis Asbury, 1959, *Associate Professor of Oceanography*
B.S., 1939, Illinois; M.S., 1942, Nevada; Ph.D., 1950, Washington
- Richardson, Frank, 1956 (1959), *Associate Professor of Zoology; Curator in Zoology, Washington State Museum*
B.A., 1934, Pomona; Ph.D., 1939, California
- Richardson, Roger Wolcott, Jr., 1960, *Assistant Professor of Mathematics*
B.S., 1951, Louisiana State; Ph.D., 1958, Michigan
- Richey, Eugene Porter, 1954 (1956), *Associate Professor of Civil Engineering*
B.S. in C.E., 1941, Alaska; M.S., 1947, M.S. in C.E., 1948, California Institute of Technology; Ph.D., 1955, Stanford
- Riedel, Richard Anthony, 1949 (1950), *Assistant Professor of Orthodontics*
D.D.S., 1945, Marquette; M.D.S., 1948, Northwestern
- Rieke, William O., 1958 (1961), *Assistant Professor of Anatomy*
M.D., 1958, Washington
- Rising, L. Wait, 1934 (1936), *Professor of Pharmacy; Chairman of the Department of Pharmacy and Pharmacy Administration*
Ph.G., B.S., 1924, Oregon State; M.S., 1926, Ph.C., 1928, Ph.D., 1929, Washington
- Ritter, David Moore, 1944 (1959), *Professor of Chemistry*
S.B., 1933, Ph.D., 1937, Chicago
- Roberts, Earl Champion, 1954 (1958), *Professor of Metallurgical Engineering*
B.S. in Met.E., 1943, Montana School of Mines; M.S. in Met.E., 1950, D.Sc., 1952, Massachusetts Institute of Technology
- Robertson, James Campbell H., 1945 (1956), *Professor of Forest Management*
B.S.F., 1927, Washington; M.S.F., 1933, California; D.F., 1947, Duke
- Robinson, Dwight E., 1950 (1956), *Professor of Business Fluctuations*
B.A., 1936, Yale; M.A., 1946, Oxford (England); Ph.D., 1948, Columbia
- Robinson, Rex Julian, 1929 (1945), *Professor of Chemistry*
B.A., 1925, DePauw; M.A., 1927, Ph.D., 1929, Wisconsin
- Roethke, Theodore Huebener, 1947 (1948), *Professor of English*
A.B., 1929, A.M., 1936, Michigan
- Rogers, Walter Edwin, 1946 (1956), *Professor of Electrical Engineering*
B.S. in E.E., 1934, California; M.S. in E.E., 1948, Washington
- Roller, Julius Abraham, 1945 (1960), *Professor of Accounting; Acting Executive Officer of the Department of Accounting, Finance and Statistics*
B.B.A., 1934, Washington
- Roman, Herschel Lewis, 1942 (1952), *Professor of Genetics; Executive Officer of the Department of Genetics*
A.B., 1936, Ph.D., 1942, Missouri

- Roosen-Runge, Edward C., 1952 (1959), *Professor of Anatomy*
M.D., 1936, Hamburg (Germany)
- Rosenmeyer, Thomas Gustav, 1955 (1960), *Professor of Classics*
B.A., 1944, McMaster (Hamilton, Ontario); M.A., 1945, Toronto; Ph.D., 1949, Harvard
- Rosenzweig, Jim, 1956 (1959), *Associate Professor of Policy, Administration and Operations Research*
B.A., 1951, M.B.A., 1954, Washington; Ph.D., 1956, Illinois
- Rosinbum, Ralph Rambo, 1948 (1953), *Assistant Professor of Music*
B.A., 1947, M.A., 1948, Washington
- Royce, William F., 1958, *Professor of Fisheries; Director of the Fisheries Research Institute*
B.S., 1937, Ph.D., 1943, Cornell
- Ruch, Theodore Cedric, 1946, *Professor of Physiology; Executive Officer of the Department of Physiology and Biophysics*
B.A., 1927, Oregon; M.A., 1928, Stanford; B.A., 1930, B.Sc., 1932, Oxford (England); Ph.D., 1933, Yale
- Rushmer, Robert Frazer, 1947 (1956), *Professor of Physiology and Biophysics*
B.S., 1936, M.D., 1939, Chicago
- Ryan, Milo, 1946 (1957), *Professor of Journalism and Radio-Television*
B.A., 1928, M.A., 1934, Michigan
- Salyer, Rufus Coleman, Jr., 1953 (1956), *Assistant Professor of Education; Director of College of Education Bureau of Teacher Service and Placement*
B.A., 1930, Seattle Pacific; M.A., 1931, Ph.D., 1955, Washington
- Sanderman, Llewellyn Arthur, 1928 (1952), *Associate Professor of Physics; Executive Secretary of the Department of Physics*
B.S., 1923, Linfield College; M.S., 1931, Ph.D., 1943, Washington
- Saporta, Sol, 1960 (1961), *Associate Professor of Romance Languages*
B.A., 1944, Brooklyn College; M.A., 1952, Ph.D., 1955, Illinois
- Sarason, Irwin Gerald, 1956 (1959), *Associate Professor of Psychology*
B.A., 1951, Rutgers; M.A., 1953, Iowa; Ph.D., 1955, Indiana
- Sarkanen, Kyosti Vilho, 1961, *Associate Professor of Wood Chemistry in the College of Forestry; Lecturer in Chemical Engineering; Associate Director of the Institute of Forest Products*
B.Sc., 1947, Helsinki University; M.Sc., 1952, Ph.D., 1956, State University College of Forestry (New York)
- Sauerlander, Annemarie, 1947 (1949), *Associate Professor of Germanic Literature*
B.A., 1928, M.A., 1930, Buffalo; Ph.D., 1936, Cornell
- Savalle, Max, 1947, *Professor of History*
A.B., 1925, M.A., 1926, Ph.D., 1932, Columbia
- Sawhill, Roy Bond, 1956 (1960), *Associate Professor of Civil Engineering*
B.S. in C.E., 1950, Washington; M. of E., 1952, California
- Saxberg, Borje O., 1957, *Assistant Professor of Policy, Administration, and Production*
B. Econ., 1950, Swedish University College of Commerce (Finland); B.S., 1952, Oregon State; M.S., 1953, Ph.D., 1958, Illinois
- Scarf, Frederick Leonard, 1956 (1961), *Associate Professor of Physics*
A.B., 1951, Temple; Ph.D., 1955, Massachusetts Institute of Technology
- Schaeffer, Walter Howard, 1952 (1960), *Professor of Forestry*
B.S.F., 1936, Washington; M.S.F., 1937, Yale; Ph.D., 1952, Washington
- Schaller, Gilbert Simon, 1922 (1937), *Professor of Mechanical Engineering*
B.S. in M.E., 1916, Illinois; M.B.A., 1925, Washington
- Scher, Allen Myron, 1950 (1957), *Associate Professor of Physiology and Biophysics*
B.A., 1942, Ph.D., 1951, Yale
- Schluger, Saul, 1958, *Professor of Periodontics; Director, Graduate Dental Education*
D.D.S., 1931, Louisville

- Schmid, Calvin Fisher, 1937 (1941), *Professor of Sociology; Director of the Office of Population Research*
A.B., 1925, Washington; Ph.D., 1930, Pittsburgh
- Schmidt, Fred Henry, 1946 (1956), *Professor of Physics*
B.S.E., 1937, Michigan; M.A., 1940, Buffalo; Ph.D., 1945, California
- Schrag, Clarence Clyde, 1944 (1960), *Professor of Sociology*
B.A., 1939, Washington State; M.A., 1945, Ph.D., 1950, Washington
- Schrieber, Albert N., 1948 (1956), *Professor of Production and Policy and Administration*
B.S. in M.E., 1938, Illinois Institute of Technology; M.B.A., 1947, Harvard
- Schubert, Wolfgang Manfred, 1947 (1958), *Professor of Chemistry*
B.S., 1941, Illinois; Ph.D., 1947, Minnesota
- Scott, David Robert Main, 1955 (1960), *Associate Professor of Silviculture*
B.A., 1942, Virginia; M.F., 1947, Ph.D., 1950, Yale
- Segal, Jack, 1960 (1961), *Assistant Professor of Mathematics*
B.S., 1955, M.S., 1957, Miami; Ph.D., 1960, Georgia
- Selfridge, John Lewis, 1960 (1961), *Associate Professor of Mathematics*
B.S., 1951, Washington; Ph.D., 1958, California (Los Angeles)
- Sergev, Sergius Ivan, 1923 (1946), *Professor of Engineering Mechanics*
B.S. in M.E., 1923, M.E., 1931, Washington
- Seyfried, Warren R., 1956 (1958), *Associate Professor of Business Fluctuations and Real Estate*
B.S. (M.E.), 1943, Vanderbilt; M.B.A., 1954, D.B.A., 1956, Indiana
- Sherman, John Clinton, 1942 (1954), *Associate Professor of Geography*
A.B., 1937, Michigan; M.A., 1943, Clark; Ph.D., 1947, Washington
- Sherris, John Charles, 1959 (1960), *Associate Professor of Microbiology; Director of the Clinical Microbiology Laboratories at the University Hospital*
M.B., B.S., 1948, M.D., 1950, London (England)
- Shih, Vincent Yu-Chung, 1945 (1956), *Professor of Chinese Literature and Philosophy*
B.A., 1925, Fukien Christian (China); M.A., 1930, Yenching (China); Ph.D., 1939, Southern California
- Shimada, Katsunori, 1958, *Assistant Professor of Electrical Engineering*
B.S., 1945, Tokyo U.; M.S., 1954, Ph.D., 1958, Minnesota
- Shipman, George Anderson, 1946, *Professor of Political Science; Director of the Institute of Public Affairs*
B.A., 1925, M.A., 1926, Wesleyan (Connecticut); Ph.D., 1931, Cornell
- Siks, Geraldine Brain, 1950 (1961), *Associate Professor of Drama*
B.A., 1935, Central Washington College of Education; M.A., 1940, Northwestern
- Simpson, Lurline Violet, 1924 (1944), *Associate Professor of Romance Languages and Literature*
B.A., 1920, M.A., 1924, Ph.D., 1928, Washington
- Simpson, William Tracy, 1948 (1957), *Professor of Chemistry*
A.B., 1943, Ph.D., 1948, California
- Sivertz, Victorian, 1926 (1949), *Associate Professor of Chemistry, Executive Secretary of Department of Chemistry*
B.S., 1922, Washington; M.S., 1924, West Virginia; Ph.D., 1926, McGill
- Skahen, Julia Goodsell, 1946 (1961), *Associate Professor of Anatomy, Physiology and Biophysics*
B.S., 1926, M.S., 1928, Washington; Ph.D., 1940, Chicago
- Smith, Charles Wallace, 1948 (1959), *Associate Professor of Art*
Pratt Institute; B.A., 1954, Washington; M.F.A., 1956, Cranbrook Academy of Art
- Smith, Edmund Arthur, 1957 (1959), *Assistant Professor of Social Work*
B.A., 1953, M.A., 1954, Washington; Ph.D., 1957, Harvard
- Smith, Harriet Holbrook, 1949 (1960), *Associate Professor of Nursing Service Administration*
A.B., 1918, Mount Holyoke; Diploma, 1920, Seattle General Hospital School of Nursing; M. of Nursing, 1957, Washington

- Smith, Henry Ladd, 1955, *Professor of Journalism*
Ph.B., 1929, Yale; M.A., 1936, Ph.D., 1946, Wisconsin
- Smith, Moncrieff Hynson, Jr., 1949 (1959), *Professor of Psychology*
A.B., 1940, M.A., 1941, Missouri; Ph.D., 1947, Stanford
- Smith, Orville A., Jr., 1958 (1959), *Assistant Professor of Anatomy, Physiology and Biophysics*
B.A., 1949, Arizona; M.A., 1950, Ph.D., 1953, Michigan State
- Smullyan, Arthur Francis, 1946 (1956), *Professor of Philosophy; Executive Officer of the Department of Philosophy*
B.A., 1937, City College of New York; M.A., 1940, Ph.D., 1941, Harvard
- Snyder, Richard Craine, 1949 (1957), *Associate Professor of Zoology*
A.B., 1940, Bucknell; A.M., 1941, Ph.D., 1948, Cornell
- Sommerfeld, Franz Rene, 1947 (1961), *Associate Professor of Germanic Literature*
A.B., 1944, California (Berkeley); M.A., 1946, Columbia
- Sparks, Albert K., 1958 (1959), *Associate Professor of Fisheries*
B.S., 1947, M.S., 1949, Ph.D., 1957, Texas A and M
- Spector, Ivar, 1931 (1943), *Associate Professor of Russian Civilization*
Graduate, 1919, Teacher's Seminar (Russia); M.A., 1926, Northwestern; Ph.D., 1928, Chicago
- Sperry, Robert, 1954 (1960), *Associate Professor of Art*
B.A., 1950, Saskatchewan; M.F.A., 1955, Washington
- Spiro, Melford E., 1957, *Professor of Anthropology*
B.A., 1941, Minnesota; Ph.D., 1950, Northwestern
- Sreebny, Leo M., 1957, *Associate Professor of Oral Pathology; Executive Officer of the Department of Oral Pathology; Associate Professor Department of Pathology in the School of Medicine*
A.B., 1942, D.D.S., 1945, M.S., 1950, Ph.D., 1954, University of Illinois
- Stadler, David R., 1956 (1957), *Assistant Professor of Genetics*
A.B., 1948, Missouri; M.A., 1950, Ph.D., 1952, Princeton
- Stanton, Robert Bruce, 1956 (1958), *Assistant Professor of English*
B.A., 1949, M.A., 1950, Kansas City; Ph.D., 1953, Indiana
- Stein, Arnold Sidney, 1948 (1953), *Professor of English*
A.B., 1936, Yale; A.M., 1938, Ph.D., 1942, Harvard
- Steinbrueck, Victor, 1946 (1960), *Professor of Architecture*
B.Arch., 1935, Washington
- Stenzel, George, 1949 (1957), *Associate Professor of Logging Engineering*
B.S., 1938, New Hampshire; M.F., 1939, Yale
- Stevens, Leonard Woodbury, 1937 (1961), *Associate Professor of Physical Education*
B.S., 1933, M.S., 1941, Washington
- Stevens, Walter William, 1959, *Assistant Professor of Speech*
B.A., 1951, M.A., 1953, Wayne State; Ph.D., 1959, Michigan
- Stevenson, John K., 1954 (1959), *Assistant Professor of Surgery*
M.D., 1949, University of Rochester
- Stibbs, Gerald Denike, 1948, *Professor of Operative Dentistry and Fixed Partial Dentures; Executive Officer of the Department of Operative Dentistry; Director of the Dental Operatory*
B.S., D.M.D., 1931, Oregon
- Stirling, Brents, 1932 (1949), *Professor of English*
L.L.B., 1926, Ph.D., 1934, Washington
- Storey, Reed K., 1956 (1960), *Associate Professor of Accounting*
B.S., 1952, Utah; C.P.A., 1952, State of Utah; Ph.D., 1958, California
- Stotland, Ezra, 1957 (1961), *Associate Professor of Psychology*
B.S. in Social Science, 1948, City College of New York; M.A., 1949, Ph.D., 1953, Michigan
- Stout, George Hugh, 1957, *Assistant Professor of Chemistry*
B.S., 1953, M.S., 1954, Ph.D., 1956, Harvard
- Strausser, Howard Samuel, Jr., 1955 (1957), *Associate Professor of Civil Engineering*
B.S. in C.E., 1942, Virginia Military Institute; M.S.E., 1950, Johns Hopkins

- Strayer, George Drayton, Jr., 1949, *Professor of Educational Administration*
B.S., 1927, Princeton; M.A., 1928, Ph.D., 1934, Columbia
- Street, Robert Elliott, 1948 (1955), *Professor of Aeronautical Engineering*
B.S., 1933, Rensselaer Polytechnic Institute; A.M., 1934, Ph.D., 1939, Harvard
- Streib, John Frederick, Jr., 1947 (1960), *Associate Professor of Physics*
B.S., 1936, Ph.D., 1942, California Institute of Technology
- Strother, Charles Riddell, 1947, *Professor of Psychology; Professor of Clinical Psychology in the School of Medicine; Director of the Pilot School*
B.A., 1929, M.A., 1932, Washington; Ph.D., 1935, Iowa
- Strother, David Boyd, 1958, *Assistant Professor of Speech*
A.B., 1950, Georgetown College; M.A., 1951, Northwestern; Ph.D., 1958, Illinois
- Stuntz, Daniel Elliot, 1940 (1958), *Professor of Botany*
B.S., 1935, Washington; Ph.D., 1940, Yale
- Stutsman, Louise M., 1956 (1959), *Assistant Professor of Social Work*
B.A., 1940, Cornell College; M.A., 1949, Chicago
- Sugar, Peter Frigyes, 1959, *Assistant Professor of History*
A.B., 1954, City College of New York; A.M., 1956, Ph.D., 1959, Princeton
- Suh, Doo Soo, 1955, *Lecturer in Korean Languages and Literature*
Graduate, 1930, Keijo Imperial University (Seoul, Korea); M.A., Ph.D., 1953, Columbia University
- Sutermeister, Robert A., 1949 (1952), *Professor of Personnel Industrial Relations*
A.B., 1934, Harvard; M.A., 1942, Washington
- Swarm, Howard Myron, 1947 (1959), *Professor of Electrical Engineering*
B.S. in E.E., 1940, M.S. in E.E., 1950, Washington, Ph.D., 1960, Stanford
- Sylvester, Robert Ohrum, 1947 (1957), *Professor of Sanitary Engineering*
B.S. in C.E., 1936, Washington; S.M., 1941, Harvard
- Szeftal, Marc Moise, 1961, *Professor of Russian History; Professor of History*
Matura, 1919, Stan. Staszic Gymnasium, Magister of Laws, 1925, University of Warsaw;
Docteur en droit, 1934, Lic. Slav. Phil. Hist., 1939, Université Libre (Belgium)
- Taggart, Raymond, 1959, *Assistant Professor of Mechanical Engineering*
B.S., 1948, London; Ph.D., 1956, Queens (Belfast)
- Tate, Robert F., 1953 (1961), *Associate Professor of Mathematics*
A.B., 1944, California; M.A., 1949, North Carolina; Ph.D., 1952, California
- Taylor, Donald Stewart, 1954 (1955), *Assistant Professor of English*
A.B., 1947, M.A., 1948, Ph.D., 1950, California
- Taylor, George Edward, 1939 (1941), *Professor of Far Eastern History and Politics; Executive Officer of the Department of Far Eastern and Slavic Languages and Literature; Director of the Far Eastern and Russian Institute*
A.B., 1927, A.M., 1928, D.Litt., 1957, Birmingham (England)
- Terrell, Margaret Elma, 1928 (1944), *Professor of Home Economics*
A.B., 1923, Penn College (Iowa); M.A., 1927, Chicago
- Terry, Miriam, 1930 (1950), *Associate Professor of Music*
B.Mus., 1926, M.A., 1948, Washington
- Thomas, David Phillip, 1950 (1959), *Associate Professor of Forest Products*
B.S.F., 1941, M.F., 1948, Washington
- Thomas, Morgan David, 1959 (1960), *Associate Professor of Geography*
B.A., 1951, Ph.D., 1954, Queen's (Belfast, Northern Ireland)
- Thompson, Laurence C., Jr., 1957 (1959), *Assistant Professor of Linguistics and Russian*
A.B., 1949, Middlebury; M.A., 1950, Ph.D., 1954, Yale
- Tiffany, William Robert, 1947 (1956), *Associate Professor of Speech*
B.A., 1946, M.A., 1947, Washington; Ph.D., 1951, Iowa
- Torney, John Alfred, Jr., 1930 (1948), *Associate Professor of Physical Education*
B.S., 1928, Washington; M.A., 1930, Columbia
- Torrence, Gerard Rutgers, 1954 (1961), *Associate Professor of Architectural Engineering*
B.S. in C.E., 1949, Washington; M.S. in S.E., 1950, Massachusetts Institute of Technology
- Towe, Arnold L., 1953 (1957), *Assistant Professor of Physiology and Biophysics*
B.A., 1948, Pacific Lutheran; Ph.D., 1953, Washington

- Treadgold, Donald Warren, 1949 (1959), *Professor of Russian History; Professor of History*
B.A., 1943, Oregon; M.A., 1947, Harvard; D.Phil., 1950, Oxford (England)
- Tschudin, Mary Stickels, 1942 (1955), *Professor of Nursing; Dean of the School of Nursing*
B.S.N., 1935, C.P.H.N., 1936, M.S., 1939, Ph.D., 1959, Washington
- Tsutakawa, George, 1946 (1957), *Associate Professor of Art*
B.A., 1937, M.F.A., 1950, Washington
- Turner, Mabel Alexandra, 1941 (1959), *Associate Professor of Librarianship*
A.B., 1926, Oregon; B.S. in L.S., 1931, M.S. in L.S., 1959, Columbia
- Tyler, Varro E., Jr., 1957 (1961), *Professor of Pharmacognosy; Chairman of the Department of Pharmacognosy; Director, Drug Plant Gardens*
B.S., 1949, Nebraska; M.S., 1951, Ph.D., 1953, Connecticut
- Uehling, Edwin Albrecht, 1936 (1947), *Professor of Physics*
A.B., 1925, Wisconsin; M.A., 1930, Ph.D., 1932, Michigan
- Ullman, Edward L., 1951, *Professor of Geography*
S.B., 1934, Chicago; A.M., 1935, Harvard; Ph.D., 1942, Chicago
- Vance, Joseph Alan, 1957, *Assistant Professor of Geology*
B.S., 1951, Ph.D., 1957, Washington
- Van Cleve, Richard, 1948, *Professor of Fisheries; Dean of the College of Fisheries*
B.S., 1927, Ph.D., 1936, Washington
- Vanderbilt, Rolfe Kermit, 1958 (1960), *Assistant Professor of English*
B.A., 1947, Luther College (Iowa), M.A., 1949, Ph.D., 1956, Minnesota
- Van Horn, Robert Bowman, 1925 (1936), *Professor of Hydraulic Engineering*
B.S. in C.E., 1916, C.E., 1926, Washington
- Vargas-Barón, Anibal, 1949, *Associate Professor of Spanish*
B.A., 1926, Asbury College; M.A., 1929, Ph.D., 1943, Washington
- Vasarhelyi, Desi D., 1949 (1961), *Professor of Civil Engineering*
B.A., 1928, Ref. Collegium Kolozsvár (Romania); Dipl.Ingr., 1932, Dr.Ingr., 1944, Technical University (Budapest, Hungary)
- Verrall, John Weedon, 1948 (1959), *Professor of Music*
R.Mus., 1929, Minneapolis College of Music; Certificate of Music, 1932, Liszt Conservatory (Budapest); B.A., 1934, Minnesota
- Vopni, Sylvia Freda, 1952 (1961), *Associate Professor of Education*
B.A., 1931, M.A., 1938, Ph.D., 1955, Washington
- Wager, Leonard Wesley, 1954 (1957), *Assistant Professor of Sociology*
B.A., 1949, M.A., 1952, Washington; Ph.D., 1959, Chicago
- Wagner, Louis Charles, 1947 (1955), *Professor of Marketing*
B.B.A., 1938, Washington; M.A., 1940, Minnesota
- Wagoner, David R., 1954 (1961), *Associate Professor of English*
B.A., 1947, Pennsylvania State; M.A., 1949, Indiana
- Waibler, Paul John, 1954 (1961), *Professor of Mechanical Engineering*
B.S. in M.E., 1943, Kansas State; M.S. in M.E., 1944, Yale; Ph.D., 1958, Illinois
- Walker, Lauren McNeal, 1946 (1957), *Professor of Accounting*
B.A., 1939, M.B.A., 1943, Washington; C.F.A., 1943, State of Washington
- Walker, Richard Battson, 1948 (1960), *Professor of Botany*
B.S., 1938, Illinois; Ph.D., 1948, California
- Walter, Edward D., 1953 (1957), *Associate Professor of Social Work*
B.A., 1940, Carleton College; M.S.W., 1951, Southern California
- Ward, Arthur Allen, Jr., 1948 (1955), *Professor of Surgery; Head of the Division of Neurosurgery*
B.A., 1938, M.D., 1942, Yale
- Warner, Daniel S., 1954 (1955), *Associate Professor of Journalism*
B.A., 1928, Michigan; M.A., Oregon, 1958
- Warnke, Frank Joseph, 1961, *Associate Professor of English*
A.B., 1948, Yale; M.A., 1951, Ph.D., 1954, Columbia
- Watson, James Bennett, 1955, *Professor of Anthropology*
A.B., 1941, A.M., 1945, Ph.D., 1948, Chicago

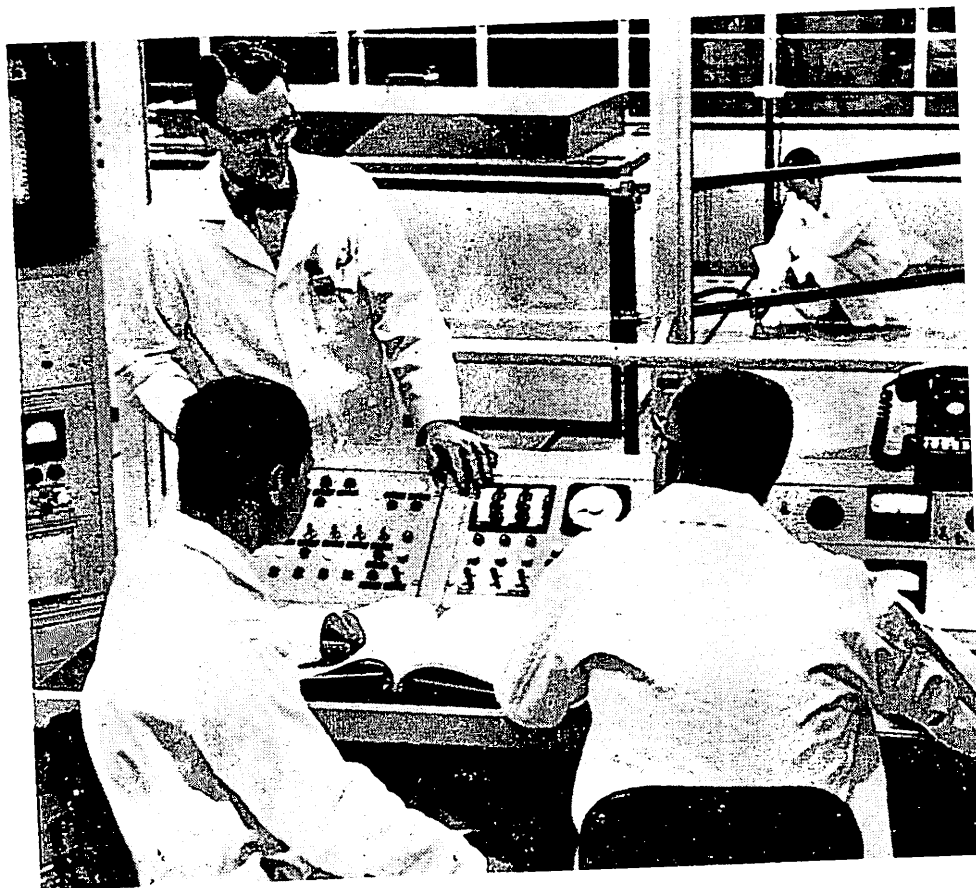
- Watson, Walter, 1958 (1959), *Assistant Professor of Sociology*
B.A., 1953, Southern Methodist; M.S., 1954, Ph.D., 1959, Wisconsin
- Watt, Lynn Alexander Keeling, 1959, *Assistant Professor of Electrical Engineering*
B.S., 1947, Manitoba; S.M., 1951, Chicago; Ph.D., 1959, Minnesota
- Webster, Donald Hopkins, 1939 (1948), *Professor of Political Science; Director of the Bureau of Governmental Research and Services*
B.A., 1929, LL.B., 1931, Ph.D., 1933, Washington
- Weiner, Seymour S., 1953 (1959), *Associate Professor of Romance Languages and Literature*
B.A., 1940, City College of New York; M.A., 1941, California; M.S. in L.S., Ph.D., 1952, Columbia
- Weiser, Russell Shivley, 1934 (1949), *Professor of Microbiology*
B.S., 1930, M.S., 1931, North Dakota State; Ph.D., 1934, Washington
- Weiss, Daniel Aaron, 1955 (1958), *Assistant Professor of English*
B.A., 1939, Northwestern; M.A., 1950, Columbia; Ph.D., 1955, Northwestern
- Welander, Arthur Donovan, 1937 (1958), *Professor of Fisheries, Professor in Laboratory of Radiation Biology*
B.S., 1934, M.S., 1940, Ph.D., 1946, Washington
- Welman, Valentine S., 1954 (1957), *Assistant Professor of Art*
B.F.A., 1952, Denver; M.F.A., 1954, Colorado
- Wessman, Harold Everett, 1948, *Professor of Civil Engineering; Dean of the College of Engineering*
B.S., 1924, M.S., 1925, C.E., 1929, Ph.D., 1936, Illinois
- West, Theodore Clinton, 1949 (1959), *Associate Professor of Pharmacology*
B.S., 1948, M.S., 1949, Ph.D., 1952, Washington
- Wheatley, John J., 1960, *Assistant Professor of Marketing*
S.B., 1947, Harvard; M.B.A., 1954, Ph.D., 1959, Buffalo
- Wheeler, Bayard O., 1948 (1953), *Professor of General Business and Real Estate*
A.B., 1928, California; M.A., 1930, Washington; Ph.D., 1942, California
- Wheeler, Harry Eugene, 1948 (1951), *Professor of Geology*
B.S., 1930, Oregon; A.M., 1932, Ph.D., 1935, Stanford
- Wheeler, Sara H., 1955 (1960), *Associate Professor of Librarianship*
B.A., 1936, Nebraska; B.S., (L.S.), 1940, Columbia; M.A., 1954, Chicago
- Whiteley, Arthur Henry, 1947 (1959), *Professor of Zoology*
B.A., 1938, Kalamazoo College; M.A., 1939, Wisconsin; Ph.D., 1945, Princeton
- Wilcox, Philip E., 1952 (1957), *Associate Professor of Biochemistry*
B.S., 1943, California Institute of Technology; Ph.D., 1949, Wisconsin
- Wilets, Lawrence, 1958 (1959), *Associate Professor of Physics*
B.S., 1948, Wisconsin; M.A., 1950, Ph.D., 1952, Princeton
- Wilhelm, Hellmut, 1948 (1953), *Professor of Chinese History and Literature*
Ph.D., 1932, Berlin (Germany)
- Wilkie, Richard Francis, Jr., 1937 (1948), *Assistant Professor of Germanic Literature*
B.A., 1934, M.A., 1936, Washington; Ph.D., 1953, California
- Williams, Robert Walter, 1959 (1960), *Professor of Physics*
A.B., 1941, Stanford; M.A., 1943, Princeton; Ph.D., 1948, M.I.T.
- Williston, Frank Goodman, 1943 (1949), *Professor of Far Eastern History*
A.B., 1922, Ohio Wesleyan; M.A., 1926, Ph.D., 1935, Chicago
- Wilsing, Weston C., 1953 (1960), *Associate Professor of Secretarial Studies*
B.Ed., 1943, Wisconsin Teachers College; M.A., 1946, Columbia; D.B.A., 1959, Washington
- Wilson, Clotilde, 1929 (1961), *Associate Professor of Romance Languages*
B.A., 1926, M.A., 1927, Ph.D., 1931, Washington
- Wilson, Ruth Marian, 1936 (1945), *Associate Professor of Physical Education; Executive Officer of the Department of Physical Education for Women*
B.S., 1931, Utah; M.S., 1936, Wisconsin
- Wilson, William Charles Eade, 1928 (1947), *Professor of Romance Languages*
B.A., 1922, Montana; M.A., 1925, Ph.D., 1928, Washington
- Wilson, William Ronald, 1920 (1929), *Professor of Psychology*
B.A., 1917, M.S., 1920, Ph.D., 1925, Washington

- Wingate, Marcel E., 1957, *Assistant Professor of Speech*
B.A., 1948, Grinnell; M.S., 1952; Ph.D., 1956, Washington
- Winther, Sophus Keith, 1925 (1940), *Professor of English*
B.A., 1918, M.A., 1919, Oregon; Ph.D., 1926, Washington
- Wittfogel, Karl August, 1949, *Professor of Chinese History*
Ph.D., 1938, Frankfurt (Germany)
- Wolfe, Myer Richard, 1949 (1958), *Professor of Urban Planning*
B.S., 1940, New Hampshire; M. Regional Planning, 1947, Cornell
- Wood, Richard Lyman, 1959, *Instructor in Anatomy*
B.A., 1950, Linfield College; Ph.D., 1957, Washington
- Woodburne, Lloyd Stuart, 1950, *Professor of Psychology*
A.B., 1929, M.A., 1930, Ph.D., 1932, Michigan
- Woodbury, J. Walter, 1950 (1957), *Associate Professor of Physiology and Biophysics*
B.S., 1943, M.S., 1947, Ph.D., 1950, Utah
- Woodcock, Edith, 1930 (1945), *Associate Professor of Music*
B.M., 1925, Rochester; M.M., 1936, Washington
- Woolf, William Blauvelt, 1959 (1960), *Assistant Professor of Mathematics*
B.A., 1953, Pomona College; M.A., 1955, Claremont College; Ph.D., 1959, Michigan
- Worcester, Dean Amory, Jr., 1946 (1951), *Associate Professor of Economics*
B.A., 1939, M.A., 1940, Nebraska; Ph.D., 1943, Minnesota
- Wykhuis, Walter A., 1956, *Associate Professor of Prosthodontics*
B.A., 1932, Calvin College; D.D.S., 1936, Chicago College of Dental Surgery
- Wylie, Turrell Verl, 1958 (1959), *Assistant Professor of Tibetan Language and Civilization*
B.A., 1952, Ph.D., 1958, Washington
- Yen, Isabella Yiyun, 1960, *Associate Professor of Chinese Language*
B.A., 1938, National Peking (China); A.M., 1951, Michigan; Ph.D., 1956, Cornell
- Young, Allan Charles, 1949 (1960), *Professor of Physiology and Biophysics*
B.A., 1930, M.A., 1932, British Columbia; Ph.D., 1934, Toronto
- Young, Harry Allen, 1948, *Professor of Prosthodontics; Executive Officer of the Department of Prosthodontics*
D.D.S., 1919, Indiana
- Zelle, Max Romaine, 1961, *Professor of Genetics; Director, Center for Radiological Sciences*
B.S., 1937, Ph.D., 1940, Iowa State College
- Zetlin, Emanuel Roman, 1947, *Professor of Music*
B.A., 1916, Imperial Conservatory (Petrograd); D.Mus. (Hon.), 1936, Washington College of Music, Washington, D. C.
- Zillman, Lawrence John, 1932 (1953), *Professor of English*
B.A., 1928, Ph.D., 1936, Washington
- Zuckerman, Herbert Samuel, 1939 (1952), *Professor of Mathematics*
B.S., 1932, California Institute of Technology; M.S., 1934, Chicago; Ph.D., 1936, California

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.



GENERAL INFORMATION

GENERAL INFORMATION

The University of Washington Graduate School was formally established in 1911 and over the years it has grown steadily in quality, scope, and size.

Programs leading to the master's and doctor's degrees are offered in fifty-eight departments or other organizational units within twelve schools and colleges of the University. Graduate instruction and the supervision of the research of graduate students is conducted by a Graduate Faculty of some seven hundred senior professors. More than three thousand graduate students are now seeking their master's or doctorate degrees in the Graduate School at the University of Washington, and some three hundred postdoctorate students are also in residence.

In addition to its primary role in relation to graduate students, graduate faculty, and graduate study programs and degrees, the Graduate School is also responsible for the administration of certain academic or research activities and facilities of general significance in all or many fields of knowledge throughout the University.

ORGANIZATION AND ADMINISTRATION

The Graduate School is administratively responsible for graduate study in whatever division of the University such study is undertaken. This involves supervision of student programs which go beyond formal undergraduate work or the work of the professional schools into areas of advanced training education, research, and scholarship.

The Graduate School is administered through the Office of the Dean, the Executive Committee of the Graduate School, Group Operating Committees, and the Graduate Faculty Council. The Graduate Faculty Council is composed of representatives elected to eight Group Operating Committees by the members of the graduate faculty, and it and the Executive Committee of the Graduate School serve as the legislative and policy-making bodies of the graduate faculty. The Executive Committee consists of the Dean of the Graduate School and the elected chairman of each of the eight group Operating Committees; it acts as an advisory group to the Dean and as an administrative committee for the Graduate Faculty Council.

PHILOSOPHY AND OBJECTIVES

The Graduate School recognizes major responsibilities in three closely related fields—teaching, research, and public service.

Highly able students who have completed baccalaureate programs are offered the opportunity further to improve their knowledge, understanding, and ability to create and to practice in their chosen fields. Their achievements may be recognized by the award of the degree of Master at the end of one or two years of study, or Doctor at the end of three or more years of study. Students who have completed advanced degree programs usually serve as teachers, research or administrative leaders, or professional practitioners in their respective fields.

In contrast with undergraduate work, graduate study is ordinarily focused quite sharply on some specific field and the student is expected to develop and demonstrate substantial initiative, mature judgment, and creativeness. Often the graduate student carries on his program in close association with his chosen professor in a tutorial type relationship.

Many diverse programs of graduate study are available. In nearly all of these two objectives can be distinguished, although their relative importance may differ. In many programs particular emphasis is placed on leading the student to excellence in his ability to teach, and to create new knowledge by research; his achievements are recognized by the award to him of the Master of Arts or the Master of Science degree, or the Doctor of Philosophy degree. In other programs emphasis is placed on leading the student to excellence in his ability to practice the art of his field or profession; in these cases his achievements are recognized by the award to him of a more specifically designated degree such as Master of Nursing or Master of Science in Electrical Engineering or of Doctor of Education.

A program of graduate study normally includes advanced class work and lectures but is particularly characterized by the independent study and research which the graduate student is expected to conduct. The results of this independent study and research are set forth in a Master's thesis or a Doctor's dissertation. A Master's thesis is a modest contribution to knowledge, or a review or a report on knowledge, or a design, or a composition in the student's field. A Doctor's dissertation should set forth a significant contribution to knowledge in the student's field presented in scholarly form and demonstrating that he is now competent to conduct reliable, important, and independent research.

The Graduate School is concerned basically with the fundamental and applied research activities conducted throughout the University, and endeavors to assist in the development of arrangements, funds, and facilities needed to encourage and support the research activities of the professors, students, and other scholars and scientists engaged in investigational work. The Graduate School is also concerned with the maintenance and steady improvement in the public service provided by the University to the state, the region, and the nation, and especially including research cooperation with other institutions and with business and industry.

The primary contributions from the University's Graduate School to the community are to be found in the students who have achieved high levels of competence as evidenced by their completion of programs of advanced study, and in the significant research results obtained by these students, their professors, and other scholars and scientists associated with the University.

UNIVERSITY RESEARCH COORDINATION

Research is of particular concern to the Graduate School since the advanced instruction of graduate students is largely guidance in research, and since the continuing effectiveness of professors in instruction of graduate students rests largely upon continuation of the scholarly research activities of these professors. Thus the research policies and practices of the University are to a considerable degree developed through and administered by the Graduate School.

THE GRADUATE SCHOOL RESEARCH FUND

Modest funds are available through the University to aid in the support of research activities of the faculty and graduate students. These monies are allocated by the Dean of the Graduate School with the advice of the Graduate School Research Fund Committee, appointed by the Dean, which reviews proposals for research support, formulates regulations concerning personnel and use of funds, and stimulates interest in investigative activities. The Committee is concerned with allocations of the Initiative 171 monies which help to support research in medicine and biology, and of the other funds of the Graduate School, which support research primarily in the fields of the arts, humanities, and social sciences.

AGNES H. ANDERSON RESEARCH FUND

The Agnes H. Anderson Research Fund for the support of research was formed from the proceeds of a very generous gift donated by two anonymous friends of the University. Accepted by the Board of Regents in 1943, the fund is named in memory of the donor of Alfred H. Anderson Hall and the Agnes Healy Anderson Forestry Trust Fund. The selection of research projects and allocation of funds for their support are recommended to the President of the University by the Dean of the Graduate School after consultation with a faculty committee.

THE GRADUATE SCHOOL CONSULTANTS FUND

Modest funds are available through the Graduate School to provide assistance in bringing distinguished scholars and scientists in the vicinity to the University for a day or for short periods for consultations and seminar discussions to assist members of the faculty and graduate students in carrying forward their research. For information relating to the Consultants Fund, communication may be addressed to the Dean of the Graduate School.

GIFT, GRANT, AND CONTRACT RESEARCH FUNDS

Research requiring substantial amounts of faculty, graduate student, or other staff time, or significant use of University facilities may be undertaken by the University under arrangements specified in a gift, grant, or contract agreement between the research sponsor and the University. The sponsor usually pays all of the costs associated with the project, such as salaries, wages, supplies, travel, and special equipment needed for the research. Participation of faculty members in grant or contract research activities is on a voluntary basis, and assignments to such research are usually treated as part of the regular academic load. Graduate students, postdoctorate students, and full-time technical or professional research personnel may aid in carrying out the research program.

Whenever possible, results of sponsored research are published in appropriate technical or professional journals as soon as publication appears warranted.

Patent provisions may be made part of an agreement covering sponsored research work. In such a case recognition is given to the interests of the sponsor, the research worker or inventor, the University, and the general public whose taxes and gifts support the University.

Grants are often made by foundations, industries, and other agencies for basic research in designated fields without explicit definition of projects or goals. Grants of this kind contribute in an especially important way to the advancement of knowledge through basic research.

The Graduate School is the academic agency of the University responsible for the administration of research funds supported by grants or contracts and for the final review and transmission of research proposals to outside agencies.

OFFICE OF UNIVERSITY RESEARCH

The Office of University Research has been established to assist in the further development of the research activities of the University and the community. Its two main responsibilities are (1) to provide a central point of contact for off-campus agencies turning to the University for research assistance, and (2) to aid members of the faculty in developing and maintaining their several research programs.

RESEARCH COOPERATION WITH BUSINESS OR INDUSTRY

University research cooperation with business or industry may be developed through the Office of University Research. This cooperation usually takes one of two forms. In one of these, a faculty member provides advice or other assistance toward the solution of a business or industrial problem in accordance with the terms of a consulting agreement. In the other, sponsorship of a research project is assumed by an outside agency through a research grant or a research contract established between the agency and the University. The Office of University Research is prepared to assist in the initiation of either type of arrangement. Requests for information and assistance should be addressed to: University of Washington, The Coordinator, Office of University Research, Graduate School, Seattle 5, Washington.

SPECIAL ACTIVITIES, UNITS, AND FACILITIES

Some academic or research activities and facilities are of general significance in all or many fields of knowledge throughout the University. In certain cases, special University units have been established and are administered by the Graduate School. A description of these organizations is given in the following paragraphs.

BUREAU OF GOVERNMENTAL RESEARCH AND SERVICES

Director: Donald H. Webster, 266 Smith Hall

The Bureau of Governmental Research and Services was established in 1934 as a research and service arm of the University of Washington to carry out community responsibilities to the state by contributing toward the solution of governmental problems and in helping to advance the science of public administration. The Bureau is administratively a part of the Graduate School.

The primary purpose of the Bureau is to provide research and advisory services to the governmental agencies of the state and its political subdivisions. The published research of the Bureau appears in the form of reports, information bulletins, and research memoranda. Although the Bureau has specialized in municipal research, its services are available to all levels of state and local government. It functions as a central organization to which inquiries may be directed, and provides information concerning governmental problems. In addition, its personnel serve as advisers and consultants to quasi-public agencies and various civic organizations.

Another major function of the Bureau is organizing and sponsoring educational and training conferences, the most important of which is the annual Institute of Government. The Bureau also engages in a number of supplementary activities, including maintenance of a library reference service and ordinance file, a news and publicity service, and the training and placement of governmental administrators, teachers, and research personnel.

Through the facilities of the Bureau of Governmental Research and Services graduate students are afforded special opportunities for study and research in problems of state and local government.

CENTER FOR GRADUATE STUDY AT HANFORD

Director: Kermit B. Bengtson, Richland, Washington

The Center for Graduate Study at Hanford, located at Richland, Washington, is an off-campus facility maintained by the University of Washington in cooperation with Washington State University and Oregon State University. The facility is available for graduate study and research to students associated with the participating universities, as well as other institutions of higher learning in the Pacific Northwest and elsewhere. Course work completed through the Center, and research performed in the Hanford laboratories, upon approval in advance, may be

applied toward the fulfillment of the requirements for certain advanced degrees offered by the University of Washington and other institutions.

The Center particularly serves professionally trained people working at the Hanford Atomic Products Operation and others who wish to obtain advanced degrees. The courses available in most cases correspond closely with those included in the advanced degree programs available on the Seattle campus. Currently upper-division and graduate-level courses are available in business administration, chemistry, librarianship, mathematics, physics, radiology, and in chemical, electrical, mechanical, metallurgical, and nuclear engineering. Atomic Energy Commission-owned laboratory facilities, operated by the General Electric Company, are available for research purposes on an individual arrangement basis and provide an exceptional opportunity to do research work requiring facilities not available at most institutions of higher learning.

Most of the students and faculty of the Center are employees of the Atomic Energy Commission or its prime contractor, the General Electric Company, although such employment is not a prerequisite for enrollment at the Center or appointment to the faculty. Classes at the Center are presently held only in the evening or late afternoon. Employment at the Hanford Atomic Products Operation and access to Atomic Energy Commission laboratories are generally available only to citizens of the United States.

All requests for information concerning the activities and the programs of study and research at the Center, availability of facilities, admission to activities, and for copies of the Center's *Bulletin* containing general information and course offerings should be addressed to: The Director, Center for Graduate Study at Hanford, University of Washington, Richland, Washington.

CENTER FOR RADIOLOGICAL SCIENCES

Director: Max R. Zelle, 104 Fisheries Building

The Center for Radiological Sciences, located in the Fisheries Building on the University of Washington campus, is an organization and a set of facilities maintained to coordinate teaching, research, and service programs relating to the radiological sciences. During recent years knowledge relating to radiations of various types has expanded rapidly and the effects of radiation on materials and biological systems are of much scientific interest as well as practical importance. Since these developments have occurred and are proceeding within several of the conventional fields of science, the Center functions to bring together faculty members, research scientists, and graduate students interested in one or another of the various fields of science relating to radiation. Specialized laboratories and facilities for research in the radiological sciences are available in the Center and close relations are maintained with research scientists in the laboratories of the Hanford Atomic Products Operations at Richland, Washington. For students interested in graduate degrees related to the radiological sciences, a program leading to the degree of Master of Science in Radiological Science is available (see page 197 in section on Graduate Programs), as well as a number of programs leading to the degree of Doctor of Philosophy.

Requests for information concerning the activities, facilities, and programs of study and research coordinated through the Center and for copies of Center literature, should be addressed to: University of Washington, The Director, Center for Radiological Sciences, Seattle 5, Washington.

FRIDAY HARBOR LABORATORIES

Director: Robert L. Fernald, 201 Johnson Hall

The Friday Harbor Laboratories, the marine laboratories of the University of Washington, are administered by the Dean of the Graduate School with the aid of a committee of the faculty. The staff of the Laboratories is made up of professors from various Departments of the University (Botany, Fisheries, Meteorology, Oceanography, and Zoology) and visiting professors from other institutions.

The Friday Harbor Laboratories are located approximately eighty miles north of Seattle near the town of Friday Harbor on San Juan Island. This island is one of the largest of the 172 which make up the San Juan Archipelago located in the northwest section of the state of Washington between Vancouver Island and the United States mainland.

The islands of the San Juan Archipelago are, in general, rocky, wooded, and with precipitous shores. Many are deeply indented by narrow, fjord-like inlets. They have been strongly glaciated leaving valleys filled with drift and occasional lakes, swamps, and sphagnum and peat bogs. The Laboratories are located on a state game preserve of 484 acres of wooded land with about two miles of shore line. This is an admirable location for the study of various aspects of marine science and for many types of investigations.

Within a relatively short distance from the Laboratories are sea waters varying from oceanic to those highly diluted by streams, with depths to 1,000 feet, bottoms varying from mud to rock, and water movements ranging from those of quiet bays and lagoons to those of swift tideways.

The waters about the San Juan Archipelago have exceptionally abundant and varied marine flora and fauna. The area is rich in both phytoplankton and zooplankton. Brown, green, blue-green, and red algae are present in quantity.

Representatives of all major and most minor phyla of invertebrates can be collected within a reasonable distance from the Laboratories. Shore collecting and dredging in the many diverse ecological situations provide an abundance of forms for ecological, experimental, morphological, and systematic work.

The laboratory buildings are provided with aquaria and running sea water supplied through either polyethylene or glass pipes and fittings which deliver water free from metallic contamination.

During the summer the Laboratories offer an opportunity for independent and supervised research as well as a varied program of instruction primarily for graduate students (exceptional, advanced undergraduates are occasionally admitted). The program of courses usually includes work in algology, fish biology, oceanographic meteorology, oceanography, invertebrate zoology, invertebrate physiology or embryology. An annual bulletin is published describing the summer program and the facilities available. Throughout the year, the use of the facilities of the Laboratories for research in various areas of marine science is encouraged.

All requests for information concerning the program of study and research, availability of facilities, and admission to the Laboratories should be addressed to: University of Washington, The Director, Friday Harbor Laboratories, Seattle 5, Washington.

THE INSTITUTE OF FOREST PRODUCTS

Director: Ben S. Bryant, 303 Anderson Hall

The Institute of Forest Products, established by action of the 1947 Legislature of the State of Washington, was transferred in 1959 to the administration of the University of Washington through the Graduate School.

Objectives of the Institute program are: To provide students with increased opportunity for advanced study and research in fields relative to products of the forest; To provide for additional new and important research results in fields relative to forest products; To provide for increased University research cooperation with industry and government in fields relative to forest products.

The Institute grants Research Assistantships to graduate students who are or will become candidates for doctor's or master's degrees in fields relating to forest products. These Institute students are sponsored and supervised by members of the faculty and the students conduct graduate study and research in the usual academic programs, Forestry, Forest Products, Chemistry, Chemical Engineering, Mechanical Engineering, Economics, and Marketing, in the corresponding Colleges of Forestry, Engineering, Arts and Sciences, and Business Administration.

Research proposals are made by members of the faculty and the Scientific Committee of the Institute approves as many as possible in favor of recommended graduate students.

Postdoctoral research assistantships are also available to provide for part-time or full-time devotion to the study of significant fundamental problems in fields relating to forest products.

Excellent research facilities are established. Complete equipment is available in the Forest Products Laboratory for research on wood anatomy (microscopy and photomicrography), wood preservation, wood chemistry, lumber and plywood adhesives, mechanical properties testing, mechanical pulping and wood-moisture relations. Three forests, a sawmill, a bark-chipper unit, and an experimental dry kiln are available in the College of Forestry. In the Chemical Engineering and Chemistry laboratories equipment is available for chemical pulping studies, the isolation and identification of chemical components of wood, the processing of cellulose and paper and related products, as well as excellent general apparatus and facilities for research in chemical engineering and chemistry. Electron microscopes, IBM 650 and 709 high speed machine computing equipment, and extensive libraries are available. Many important forest products industry laboratories are situated near the University in the Pacific Northwest region.

The Institute serves as a point of contact between the University and the forest products industry. Short courses and special conferences for members of the industry may be provided as well as technical information. Institute seminars are held fortnightly through the academic year. A new Forest Science Laboratory will soon provide additional housing and laboratory facilities for the Institute.

All requests for information concerning the programs of study and research of the Institute, the availability of facilities, admission to activities, and for copies of the Institute's literature should be addressed to: University of Washington, The Director, Institute of Forest Products, Seattle 5, Washington.

INSTITUTE OF PUBLIC AFFAIRS

Director: George A. Shipman, 204D Smith Hall

The Institute of Public Affairs, established in 1947 and a part of the Graduate School since 1960, is concerned with research and service activities relative to public affairs and with graduate professional education for public administration. A program of graduate study leading to the degree of Master of Public Administration (M.P.A.) is offered and this is described on page 213 under School of Public Administration.

Basic research and consultation work directly related to instructional activities may be undertaken on a project basis. Projects range from major undertakings supported by foundation grants to individual undertakings reinforced by Institute facilities. The primary objective is to formulate and to test working assumptions in the broad area of public policy formation and expression, with a view toward enriching the resources of instruction and applied analysis. Field projects, usually in the form of short-term consultation agreements, are undertaken from time to time when the problem involved has a place in the interests of the Institute and its staff.

The Institute, in a service capacity, also carries on a variety of activities designed to reinforce public agencies and professional organizations in strengthening the professional performances of administrative people. These activities for the most part, are forms of continuing education. They include cooperation with the American Society for Public Administration, the United States Civil Service Commission, and various agencies of the state government. An annual conference on public administration is held. Workshops and mid-career seminars are also sponsored.

All requests for information concerning the program and facilities of the Institute of Public Affairs should be addressed to: University of Washington, The Director, Institute of Public Affairs, Seattle 5, Washington.

LABORATORY OF RADIATION BIOLOGY

Director: Lauren R. Donaldson, 110 Fisheries Center

The University of Washington Board of Regents, in January 1958, established the Laboratory of Radiation Biology to expand University studies of the biological effects of atomic radiation. (The Laboratory absorbed and supplanted the Applied Fisheries Laboratory, established in 1943.) The Laboratory, which is supported by funds provided to the University under contracts with the Atomic Energy Commission, is an administrative unit of the Graduate School.

A research program is carried on by the Laboratory at the Pacific Proving Ground, the Fern Lake Research Station, and in the laboratories at the University of Washington.

The program is planned to aid in meeting the need for trained specialists in the field of radiation biology, in which the physical and biological sciences join forces to combine the skills of the two areas of learning.

Graduate students wishing to enter the field of radiation biology should hold degrees in the biological sciences with supporting course work in physics, chemistry, and mathematics, or in the physical sciences of chemistry or physics with supporting courses in the biological sciences.

Requests for information concerning the activities and programs of study and research available through the Laboratory, admission to activities and for copies of the Laboratory's literature should be addressed to: University of Washington, The Director, Laboratory for Radiation Biology, Seattle 5, Washington.

OFFICE OF SCHOLARLY JOURNALS

Acting Director: Emily Johnson, 3 Administration Building

The University has established and now maintains an Office of Scholarly Journals in association with the Graduate School. The function of the Office is to provide assistance to members of the University faculty who have editorial responsibilities in relation to the publication of the many scholarly journals now associated with the University of Washington.

Requests for information concerning the activities and facilities of the Office should be addressed to: University of Washington, The Director, Office of Scholarly Journals, Graduate School, Seattle 5, Washington.

RESEARCH COMPUTER LABORATORY

Director: David B. Dekker, 812 Mechanical Engineering

The Research Computer Laboratory, established in September, 1956, as an agency of the Graduate School, provides electronic calculating facilities and auxiliary punched-card equipment for use by faculty and research personnel of the University. The facilities of the Research Computer Laboratory are also available to neighboring institutions which do not have their own computers.

The facilities include an IBM 650 and an IBM 709 with a 32K core, twelve tape units, complete off-line tape-to-card, card-to-tape, and tape-to-printer equipment.

The Research Computer Laboratory is administered by the Dean of the Graduate School with the aid of a committee of the faculty of the University of Washington, and a Pacific Northwest Research Computer Laboratory Committee consisting of faculty representatives from all interested colleges and universities of the Pacific Northwest.

All requests for information concerning the facilities of the Laboratory should be addressed to: University of Washington, The Director, Research Computer Laboratory, Seattle 5, Washington.

UNIVERSITY OF WASHINGTON PILOT SCHOOL

Director: C. R. Strother, 3737 Brooklyn Ave.

Opportunities for research and training in various aspects of special education were expanded by the establishment of the Pilot School on September 1, 1960.

This was made possible by a grant from a private source. The objectives to be achieved are threefold:

1. To provide training and experience for appropriate University students who will serve during their professional life to assist handicapped children. Students from the fields of education, psychology, speech and hearing, medicine, nursing, social work, and others may participate.

2. To provide for research on central nervous system impairments leading to perceptual difficulties, to be carried out by University faculty and graduate students and other interested and qualified persons.

3. To provide high quality diagnostic and educational assistance to a small number of neurologically impaired children and, in addition, to provide a model applicable elsewhere for the establishment and maintenance of special schools for handicapped children.

The Pilot School is in operation in temporary facilities located adjacent to the University campus. The school serves children between the ages of two to fifteen. Children are selected to participate in the Pilot School program by an Admissions Committee. Only a limited number of children can be accommodated. The service aspects of the program are extended only to the extent that they are needed to serve the research and training objectives of the program.

The Pilot School represents an inter-disciplinary, cooperative program administered by the Graduate School. The University Pilot School Committee has representatives from such disciplines as: pediatrics, psychology, psychiatry, speech and hearing, education, and social work. A lay Advisory Board works with the Pilot School Committee in consideration of policies and in relating the work of the School to that of different agencies and groups concerned with problems of handicapped children. This program provides an important opportunity for improved training of teachers and professional workers. It also offers important opportunities for research in fields of special education, psychology, psychiatry, and medicine.

Requests for information concerning the activities, facilities, and programs of study and research available through the Pilot School, and for copies of the Pilot School's literature should be addressed to: University of Washington, The Director, Pilot School, Seattle 5, Washington.

UNIVERSITY OF WASHINGTON PRESS

**Director: William M. Read, Helen Ardelle Building, Northwest 41st Street and
University Way Northeast**

The University of Washington Press, a division of the Graduate School, is the publishing arm of the University. It publishes scholarly books of both specialized and general interest, and original works in the arts, whether written by members of the faculty or by qualified persons outside the University. It also handles textbooks and the publications of certain University laboratories and bureaus. The Press manages all details of editing and design of its products, buys its printing and binding on a contract basis, and has facilities to distribute its books over all the world.

The Committee on the University Press assists the Dean of the Graduate School in general administration of the Press. This Committee also screens the manuscripts offered to the Press, selects those that are to be published, authorizes the use of the Press imprint, and promotes the interests of the Press. Individually, the members of the Committee represent the various publishing interests of the University and encourage their colleagues to submit manuscripts to the Press.

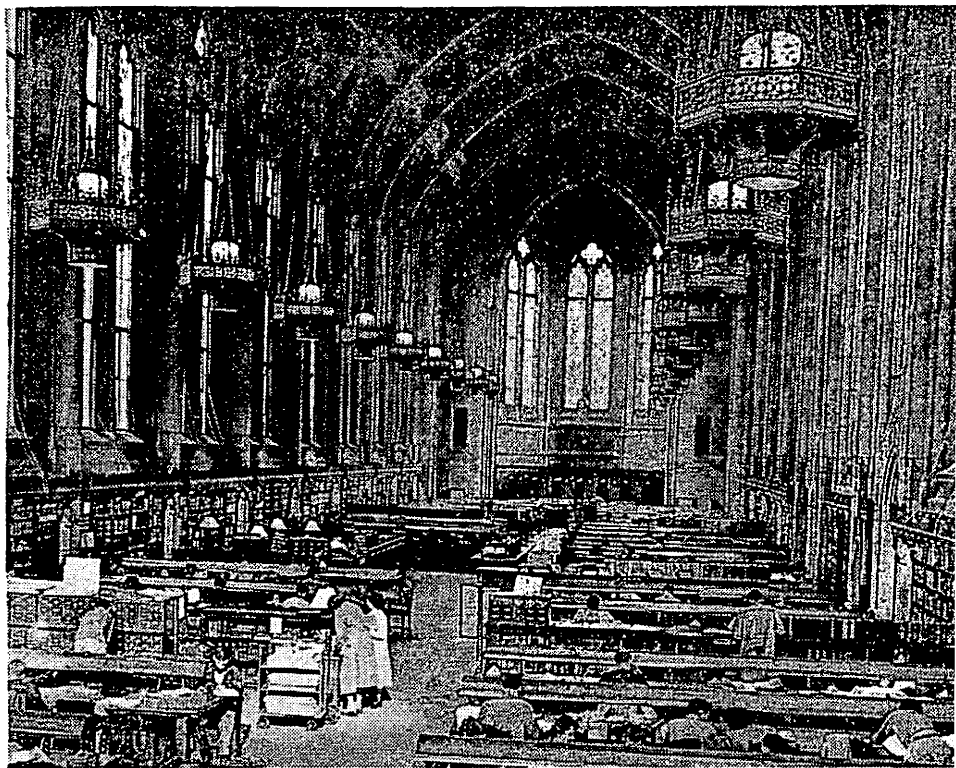
The Press invites members of the faculty and other scholars to bring to it publications problems at an early stage in the development of a project.

Requests for information concerning the Press should be addressed to: University of Washington, The Director, University of Washington Press, Seattle 5, Washington.

WALKER-AMES AND VISITING PROFESSORSHIPS

The Walker-Ames Fund was founded in 1931 by Maud Walker Ames and her husband, Edwin Gardner Ames. Its purpose was to enable the University of Washington "to guarantee to the state of Washington the scholarly and educational services of the most distinguished minds available in this and other countries . . ." Since the first Walker-Ames visiting professor was appointed in 1936, well over one hundred notable scholars have come to the University as temporary members of the faculty and have enriched the intellectual life of the University community.

For information relating to the Walker-Ames Fund and to Walker-Ames Professorships, communications may be addressed to: University of Washington, The Chairman, Walker-Ames Committee, Graduate School, Seattle 5, Washington.



GRADUATE STUDY INFORMATION

GRADUATE STUDY INFORMATION

ADMISSION TO THE GRADUATE SCHOOL

In general, properly qualified students who are graduates of the University of Washington or of other colleges or Universities of recognized rank may be admitted to the Graduate School.

The primary criterion for admission to the Graduate School is the applicant's apparent ability, as decided by the University, to progress satisfactorily in a graduate degree program. The applicant's scholastic record is of major importance and, ordinarily, the applicant should have at least a B or a 3.00 grade-point average for the courses taken during the junior and senior years of his undergraduate study. He should also show completion of an undergraduate program appropriate as preparation for graduate study in his chosen field. Consideration will also be given to other evidence which may be available. In some cases, an applicant may give promise of making satisfactory progress in graduate work although his undergraduate grade average may be less than B or 3.00 or his undergraduate preparation may be inadequate; in these cases and other unusual cases an applicant may be admitted to the Graduate School on the favorable written recommendation of the appropriate University of Washington executive officer with approval by the Dean of the Graduate School. The University will be able to grant admission only if sufficient faculty and facilities are available to provide for the applicant's program.

Ordinarily, only students who have been admitted to the Graduate School are permitted to enroll in courses numbered 500 or above and to gain credits applicable to the fulfillment of advanced degree programs.

Admission to the Graduate School provides the opportunity for continuance of graduate study and research only for the period during which the graduate student maintains satisfactory performance and progress toward completion of his graduate degree program, along with a status of physical and mental health approved by the University. The Dean of the Graduate School may alter the status of a graduate student.

ADMISSION PROCEDURE

Requests for the form, "Application for Admission to the Graduate School," and correspondence regarding admission should be addressed to the University of Washington, Office of Admissions, Seattle 5, Washington.

The application form and required transcripts must be filed, according to instructions appearing on the application form, with the Office of Admissions prior to the following dates in order to be assured of consideration for admission to the quarter for which application is being made: August 1 for Autumn Quarter, 1961 (July 15 for subsequent Autumn Quarters); December 1 for Winter Quarter; March 1 for Spring Quarter; May 15 for Summer Quarter. In some cases, departments have an earlier admission deadline which must be observed. Please check in this bulletin the section pertaining to the appropriate department.

When the required application forms and credentials have been received and evaluated, the applicant will be notified of his admission status. Students wishing an unofficial evaluation of their transcripts and advanced information regarding their eligibility for admission may submit credentials in the spring term preceding graduation.

All records become a part of the official file and can neither be returned nor duplicated for any purpose. A student should obtain an additional copy of his official credentials to keep in his possession for advisory purposes. Failure to submit complete credentials will be considered a serious breach of honor, and may result in permanent dismissal from the University.

A leaflet giving general information and instructions for registration is mailed with the notice of admission. In the event of a discrepancy, instructions in the leaflet supersede those found in earlier publications. *The University assumes no responsibility for students who do not apply the information or observe the instructions given in the leaflet or for applicants who come to the campus before they have been officially notified of their admission.*

The admissions credentials of applicants who do not register for the quarter to which they have been admitted are normally retained in the Office of Admissions for a period of one year from the date of application. At the end of this period, credentials on file are discarded unless the applicant has notified the Admissions Office of his continued interest in attending the University or of his enrollment in the Evening Classes program. Should a student wish to renew his application after the one-year lapse, he must submit new credentials in advance of the dates given above for the quarter desired.

A student entering the University for the first time is required to submit to the Student Health Service (Hall Health Center) a form containing his health history, as well as a report of a physical examination by a physician. The Office of Admissions will send new students the form and necessary instructions.

ADMISSION OF UNIVERSITY OF WASHINGTON GRADUATES

University of Washington graduates apply for admission in the same manner and satisfy the same requirements as students completing their baccalaureate degrees at other schools. They may obtain the appropriate forms from the Office of Admissions. Former students of the University of Washington who were not in residence the preceding Spring Quarter are given until September 15 to file complete credentials for an Autumn Quarter application.

University of Washington students who are within six credits of completing their undergraduate work, and who otherwise meet the requirements for admission to the Graduate School, may register the quarter just prior to admission to the Graduate School for as many as six credits in graduate courses in addition to their six credits of undergraduate work. This registration and these arrangements must receive prior approval by the Graduate School; however, students concerned will not be reclassified as graduates until the bachelor's degree has been granted and after their official admission to the Graduate School. Only under these circumstances may graduate work taken as an undergraduate be applied toward an advanced degree. Further registration for graduate work is contingent upon completion of the requirements for the bachelor's degree.

ADMISSION OF VETERANS

Veterans and children of deceased veterans should meet the general admission criteria and follow the general procedures outlined for all applicants. Applications

for and questions about government aid should be addressed to the Veterans Division Regional Office.

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Applicants for admission with graduate standing are expected to meet the same general requirements as nonresidents of Washington educated in American schools. However, they must file their credentials before March 1 to be considered for admission Autumn Quarter or six months before the opening of another quarter in which they may wish to enroll. In addition, they must demonstrate a satisfactory command of the English language.

FELLOWSHIP AND ASSISTANTSHIP APPLICATIONS

Students applying for fellowships and assistantships should make certain that complete transcripts and credentials are on file. Usually awards and appointments are made about March 15 or earlier. Application forms may be secured by writing to the Graduate School.

SECOND BACHELOR'S DEGREE

Students who wish to obtain a second bachelor's degree register in the undergraduate college from which they expect to obtain the degree, not in the Graduate School.

VETERANS INFORMATION

WORLD WAR I OR II VETERANS

Under certain conditions a veteran of World War I or II who is not eligible for Veterans Administration benefits is fully or partly exempt from tuition charges (see page 63).

KOREAN VETERANS

A Korean veteran under Public Law 550 should obtain admittance to the University prior to making application for a Certificate for Education and Training, thus eliminating the chance of obtaining a certificate valid for an incorrect degree. If the veteran has any questions regarding application for a certificate, he should consult the Veterans Division, Safety Division Building. Educational allowance payments are made directly to the veteran by the Veterans Administration after the veteran and institution submit a monthly attendance certification.

KOREAN CERTIFICATE

Application for this certificate should be made at least four weeks prior to the beginning of University instruction. If the veteran is eligible, the Veterans Administration will issue him a Certificate for Education and Training which must be presented, along with his Program of Studies, to the Veterans Division, Safety Division Building, as soon as registration is completed. A Korean veteran should be prepared to meet all his own expenses, as well as the cost of tuition, fees, and supplies for at least two months, because allowances are not made until after a full month's attendance has been established.

GRADUATE CREDIT REQUIREMENTS (Public Law 550) 500-level Courses or Above

9 credits.....	Full subsistence
7 to 8 credits.....	Three-fourths subsistence
5 to 6 credits.....	One-half subsistence
4 credits or less.....	Established tuition and fees
or credits \div 14 x \$110.00, whichever is the lesser	

If a graduate is combining 400-level courses with 500-level courses he should check with the Veterans Division, Safety Division Building, to determine the scale of pay.

TERMINATION OF TRAINING

A veteran *eligible* under Public Law 550 must complete his training by *eight* years after his release from active service, or by January 31, 1965, whichever is earlier.

DISABLED VETERANS

A veteran with a disability under Public Law 894 should contact a training officer in the nearest Veterans Administration Office approximately four weeks prior to registration.

CHILDREN OF DECEASED VETERANS

Public Law 634 grants federal benefits to children of deceased veterans of World War I, World War II, or the Korean Conflict who died as a result of injury or disease incurred or aggravated while in the service. Information regarding eligibility under this law should be requested from a Veterans Administration Regional Office.

The Certificate for a Program of Education issued to those eligible persons by the Veterans Administration is to be presented along with his Program of Studies to the Veterans Division, Safety Division Building, on the date of registration.

REQUIRED EXAMINATIONS**MEDICAL EXAMINATION**

A student entering the University for the first time, or returning to the University after an absence of more than one calendar year, or who has previously attended Summer Quarter classes but is entering regular University classes for the first time, is required to submit to the Student Health Service (Hall Health Center) a form containing his health history and a report of a physical examination by a physician. The form will be sent to new students by the Office of Admissions, and to returning former students by the Registrar. This examination, which is required before a student may register, is taken at the student's expense. A chest X ray, also required of the above students, is given at the Student Health Service without charge.

With the exception of Canadian students, who will follow the above instructions, foreign students must take the required physical examination at the Student Health Service when they arrive on the campus.

REGISTRATION**REGULAR STUDENT**

A regular student is a student who fulfills the following requirements: (1) he has been granted regular admission to the Graduate School; (2) his current Program of Studies is satisfactory to the Dean of the Graduate School; (3) he has received medical clearance from the Student Health Service and has completed all of the required steps for registration, including paying tuition and fees, the filing of class cards, and the depositing of registration materials at Sections.

PROCEDURE

ALL students, currently in school, who plan to register for a succeeding quarter (Summer Quarter excepted) must register by Advance Registration and pay fees by the stated deadline. Students are held responsible for knowing and observing registration procedures, dates, and deadlines which appear in the bulletins, in "Official Notices" in the *Daily*, and on campus bulletin boards.

New students are given appointments when they are notified of admission, and they receive complete directions for registering at the time of registration.

Students expecting to return to the University after an absence of a quarter or more (excluding Summer Quarter) must register by In-Person Registration. The required registration appointment may be obtained by writing to, calling at, or telephoning the Registrar's Office at the time specified in the Calendar, but in *no case* later than the stated deadline (see pages 5 to 10).

ADVISING

After notification of admission and before registration, the student should confer with his departmental adviser about the program for his current registration,

which must be approved by the adviser before it is presented to the Graduate School Office. As soon as the student's Supervisory Committee is appointed, he should meet with this Committee and work out plans for his entire graduate program. It is primarily to this Committee, and especially the Chairman of this Committee that the student must look for individual counsel, guidance, and instruction in the scholarly study and research which characterize graduate work.

REGISTERED CREDITS ALLOWED EACH QUARTER

The maximum load for graduate students is regarded as 15 credits per quarter; 12 credits constitute a normal load. The programs of students employed in the University or elsewhere will be limited; such students must discuss their schedules with the Dean when they register. Students who are employed full time cannot register for more than 6 credits.

Only courses numbered 400, 500, and 600 can be applied to credit in the major field for advanced degrees. Courses numbered 300 are not applicable to credit toward advanced degrees except when applied by permission toward the graduate minor or supporting courses.

CHANGES OF REGISTRATION

After students have registered, they cannot change their schedules except with permission of the Dean of the Graduate School. No student is permitted to make a registration change that involves entering a new course after the first calendar week of the quarter. After that time no student may register without the consent of the Dean of the Graduate School and of the instructor whose class the student wishes to enter.

WITHDRAWAL FROM A COURSE

Official withdrawal from a course is made only under the following conditions: (1) during the first 15 calendar days of a quarter, with the consent of the withdrawing student's adviser; (2) after the first 15 calendar days of a quarter and before the end of the first six calendar weeks of a quarter, with the approval of both the instructor of the course from which withdrawal is sought and of the dean of the college in which the withdrawing student is enrolled; and (3) after the first six calendar weeks of a quarter and before final examination week, only upon certification in writing to the Registrar by the dean of the college in which the withdrawing student is enrolled that, in the judgment of the dean, withdrawal is necessitated by the student's hardship. Withdrawals from courses by any other method are unofficial withdrawals which are entered on a student's record as EW, and are assigned the value of E in the computation of the student's grade-point average. No official withdrawal may be made during final examination week.

Official withdrawals are entered on a student's record as follows: (1) a withdrawal within the first 15 calendar days of a quarter, as W; (2) a withdrawal after the first 15 calendar days of a quarter, and before Final Examination Week, as PW, if the student's work has been satisfactory, and as E, if the student's work has been unsatisfactory. Grades of PW and W are assigned no value in the computation of grade-point averages.

WITHDRAWAL FROM THE UNIVERSITY

The student should obtain at the office of the Dean of the Graduate School the Request for Withdrawal From the University form. The same system of grading applies as that prescribed under Withdrawal From a Course.

ASSISTANTSHIPS, FELLOWSHIPS, AND SCHOLARSHIPS

The Graduate School provides for the employment of many graduate students as research and teaching assistants and predoctoral associates. Such appointments give students opportunities for self-support and for valuable experience. More than 750 such appointments were made during the past year.

Appointments are granted only to graduate students of high intellectual competence and attainment whose educational goals are clearly defined. An appointment shall be made only when it is reasonably certain that it will help the student toward the attainment of his goal. Succeeding appointments may be made if the student's progress toward the degree is satisfactory. Maintenance of high scholarship shall also be a condition of reappointment.

Students holding appointments are required to render an average of 20 hours of service per week to the University. The appointments may be on a nine-month basis and ordinarily cover the period running from September 16 through June 15. Predoctoral associate appointments and other student assistantships do not provide for paid vacation or sick leave.

Students who accept appointments as predoctoral associates, and/or teaching and research assistants must confine their employment to such appointments and **MUST BE REGISTERED FOR A MINIMUM OF 9 CREDITS OF RESEARCH, COURSE, OR THESIS WORK EACH QUARTER DURING THE PERIOD OF THEIR APPOINTMENTS.**

Students holding these appointments pay resident tuition and fees.

Students holding appointments may not also hold foreign student tuition scholarships.

PREDOCTORAL ASSOCIATES. Persons holding such appointments shall hold a master's degree or its equivalent and shall give evidence of teaching and/or research ability. They must be actively pursuing the doctor's degree. Such persons may be appointed to either teaching or research responsibilities in the University; they shall not have faculty status. Appointments are ordinarily on a nine-month basis and may not be renewed for more than three years. The current stipend for a nine-month appointment is \$2,376.

TEACHING ASSISTANTS. The services of teaching assistants shall be limited to the supervision and leadership of quiz sections, discussion sections, or laboratory sections, service as class assistants, and other services strictly comparable to these. No assistant shall be given the reading and grading of papers as his whole assignment, but reading may be combined with the duties enumerated. Teaching assistants shall not be permitted to be in charge of a course, but shall be given some degree of responsibility in the supervision of laboratory or classroom work so that they may be introduced to teaching activities gradually and effectively. The current stipend for a nine-month appointment is \$2,115.

RESEARCH ASSISTANTS. Recipients of research assistantships shall engage in systematic research as assistants in research activities for which a faculty member is responsible. The current stipend for a nine-month appointment is \$2,115.

OTHER STUDENT ASSISTANTSHIPS. Graduate students may be hired on an hourly basis to assist faculty members in teaching and research. Readers are so classified, as are students who give routine assistance in research.

RESEARCH FELLOWSHIPS. Special fellowships are available from private, industrial, foundation, government, and other sources. Examples of these are the Standard Oil Company of California Fellowship in chemical engineering, The RCA Scholarship in electrical engineering, and the Family Society Fellowships in social work. Inquiries and applications may be directed to the Graduate School or to the Executive Officer of the appropriate academic department of your interest.

SCHOLARSHIPS AND LOANS. In addition to assistantships and fellowships, the University offers a variety of financial aids to graduate students. These include special fellowships, scholarships, loans, and a wide range of work opportunities.

Scholarship grants are usually available only after a student has earned a good record at the University of Washington. Some graduate scholarships are awarded by academic departments from funds available only to their students. The Schools of Drama and Music have such funds. Special Graduate School Fellowships may be awarded to graduate students in any field. Inquiries and applications should be sent to the Graduate School office.

Emergency and long-term loans are available through the Office of the Dean of Students. Application for a loan should be made at least six weeks before the money is needed.

FOREIGN STUDENT SCHOLARSHIPS. The University of Washington awards 100 tuition scholarships each academic year to worthy students from other countries. There are no scholarships available for the Summer Quarter. These awards are made on the basis of the academic record of the student, recommendations from his professors, his need for such assistance, and the availability of such openings in his department at the University. These scholarships cover tuition only and are administered by the Foreign Exchange Scholarship Committee, Foreign Students Office, University of Washington, Seattle 5, Washington, U.S.A. Application for these scholarships must be made by March 1 for the following year.

FEES, EXTRA SERVICE CHARGES, AND RENTALS

All tuition and fees are payable in United States dollars at the time of registration. The University reserves the right to change any of its fees without notice.

The following fee schedule for resident and nonresident students apply to the academic year (Autumn, Winter, and Spring Quarters). Summer fees are listed in the *Summer Quarter Bulletin*.

Veterans of World Wars I or II

Exemption from tuition charges is granted resident students who either (1) served in the United States Armed Forces during World War I and received honorable discharges; or (2) served in the United States Armed Forces during World War II at any time after December 6, 1941, and before January 1, 1947, and received honorable discharges, but are no longer entitled to federal educational benefits; or (3) are United States citizens who served in the armed forces of governments associated with the United States during World Wars I or II and received honorable discharges. Nonresident students who meet one of these requirements pay one-half of the nonresident tuition. This exemption is not granted to Summer Quarter or Evening Classes students.

Proof of eligibility should be met as follows:

- (1) World War I veterans should present copy of discharge papers to Comptroller's Office, 203 Administration Building.
- (2) World War II veterans with Korean service or who have suffered disability should present a letter from the Veterans Administration Regional Office to the Veterans Division, Safety Division Building, stating they are no longer eligible for any federal educational benefits. (Excepted are those veterans who have had both World War II benefits and Korean benefits and have expired those benefits at the University of Washington.)
- (3) World War II veterans who have not suffered any disability or served in the Korean Conflict should present an 8½-inch x 11-inch photostat of discharge papers to the Veterans Division, Safety Division Building.

Exemption must be cleared prior to student's appointment day for registration in order to prevent personal payment.

Advanced Degree Fees, dentistry and surgery

Resident students, per quarter, tuition, incidental, and ASUW fees \$175.00

Nonresident students, per quarter, tuition, incidental, and ASUW fees 290.00

Students working toward advanced degrees in dentistry and surgery (but not in basic sciences departments) pay the regular tuition of the Schools of Dentistry and Medicine and miscellaneous fees.

Thesis Only Extra Service Charge 56.50

Those having completed all requirements for a master's or doctor's degree except the thesis or dissertation may be registered for thesis only and must be certified by the Dean of the Graduate School and are required to pay this extra service charge and any laboratory breakage charge. ASUW fee, optional.

Degree Only Extra Service Charge 56.50

Nonthesis students registered for Degree Final Only must be certified by the Dean of the Graduate School and are required to pay this extra service charge and any laboratory breakage charge. ASUW fee, optional.

EXTRA SERVICE CHARGES

A registration service charge of \$15.00 is assessed those students: (1) eligible for Advance (mail) Registration who fail to participate; or (2) who, after the established application deadline, are granted Appointments or Permits to register

by In-Person Registration by action of the Registration Appeal Board. A late registration charge of \$15.00 is assessed students eligible for In-Person Registration who fail to register before the first day of instruction Autumn, Winter, and Spring Quarters by action of the Registration Appeal Board. A charge of \$5.00 is assessed Autumn, Winter, and Spring Quarters 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 Ticket (optional for ASUW members)	3.50-6.50
Autumn, Winter, and Spring Quarters, \$6.50; for Winter and Spring Quarters only, \$3.50; for Spring Quarter only, \$3.50.	
Language Examination	1.00
This charge is assessed for a foreign language reading examination.	
Breakage Ticket	3.00
Required in some laboratory courses; ticket is returnable for full or partial refund.	
Quarterly Grade Report	.50
One grade report will be issued each quarter without charge; the charge, payable in advance, is assessed for each additional copy.	
Transcripts	1.00
One transcript is furnished without charge; the charge, payable in advance, is assessed for each additional copy.	

FEES FOR RESIDENT STUDENTS

A resident is one who has been domiciled in Washington for at least a year immediately prior to registration.

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

Type of Registration	Tuition Fee	Incidental Fee	ASUW Fee*	Total Fees
			Autumn, Winter, and Spring Quarters	Autumn, Winter, and Spring Quarters
Full-time students** (undergraduate and graduate) except in Medical and Dental Schools	\$35.00	\$56.50	\$8.50	\$100.00
Auditors		39.00		39.00
Part-time (max. 6 credits exclusive of ROTC)§	35.00	39.00	†	74.00
Ex-service personnel of World Wars I and II† (Chapter 46, Laws of 1945)				
Full-time		56.50	8.50	65.00
Part-time (max. 6 credits)§		39.00	†	39.00
Students registered for thesis only (for credit or final)||		56.50	†	56.50
Students registered for degree final only (nonthesis)||		56.50	†	56.50

* Athletic admission ticket is optional for ASUW members. Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.

** A \$25.00 uniform rental is paid by students in Army and Air Force ROTC; refundable if uniform is returned in good condition. Limitation on refund will be explained during registration.

† 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 63) to determine eligibility.

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

|| Must be approved by Graduate School. See statement about Thesis Only Charge and Degree Final Charge on page 63.

Thesis Binding and Publication

Master's degree candidates 2.00
The charge covers the cost of binding one copy for the University Library.

Doctor's degree candidates 25.00
The charge covers the cost of binding manuscript copies for the University Library and the cost of microfilm publication.

Graduation Exercises Diploma 5.00

Removal of an Incomplete 2.00

REFUND OF FEES

All fees will be refunded in full if complete withdrawal from the University is made during the first three calendar days of the quarter; one-half the amount will be refunded if withdrawal is made during the first thirty calendar days. Fee refunds are not made to students withdrawing under discipline.

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

At least two weeks must elapse between payment and refund of fees, if payment was made by check.

FEES FOR NONRESIDENT STUDENTS

Prospective students are classified as nonresidents when their credentials come from schools outside Washington. If they believe they are residents, they may petition the Residence Classification Office, 205A Administration Building, for a change of classification.

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

Type of Registration	Tuition Fee	Incidental Fee	ASUW Fee*	Total Fees
			Autumn, Winter, and Spring Quarters	Autumn, Winter, and Spring Quarters
Full-time students** (undergraduate and graduate) except in Medical and Dental Schools	\$105.00	\$86.50	\$8.50	\$200.00
Auditors		39.00		39.00
Part-time (max. 6 credits exclusive of ROTC)§	105.00	69.00	†	174.00
Ex-service personnel of World Wars I and II† (Chapter 46, Laws of 1945)				
Full-time	52.50	86.50	8.50	147.50
Part-time (max. 6 credits)§	52.50	69.00	†	121.50
Students registered for thesis only (for credit or final)||		56.50	†	56.50
Students registered for degree final only (nonthesis)||		56.50	†	56.50

* Athletic admission ticket is optional for ASUW members. Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.

** A \$25.00 uniform rental is paid by students in Army and Air Force ROTC; refundable if uniform is returned in good condition. Limitation on refund will be explained during registration.

† 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 63) to determine eligibility.

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

|| Must be approved by Graduate School. See statement about Thesis Only Charge and Degree Final Charge on page 63.

ESTIMATE OF YEARLY EXPENSES

The figures given below are minimum estimates for an academic year, which includes Autumn, Winter, and Spring Quarters. Living costs and personal expenses vary widely with the needs of the individual student.

Tuition, Incidental, and ASUW Membership Fees

Full-time resident student	\$300.00
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Full-time nonresident student	600.00
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<i>Athletic Admission Ticket</i> (optional)	6.50
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<i>Health and Accident Insurance</i> (optional)	16.50
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<i>Books and Supplies</i>	90.00
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Board and Room

Room and meals in Men's Residence Halls	675.00
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Room and meals in Women's Residence Halls	615.00-720.00
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<i>Personal Expenses</i>	300.00
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STUDENT ACTIVITIES AND SERVICES

ASSOCIATED STUDENTS

Membership in the Associated Students of the University of Washington, the central organization which conducts all student activities, is required of all regularly enrolled students. Through the ASUW Board of Control and its various committees and boards, students assume major responsibility in the government of student life. The ASUW helps to finance the programs of athletics, debates, concerts, lectures, and many other activities and facilities, including the University of Washington *Daily* and the Student Union Building.

OFFICE OF THE DEAN OF STUDENTS

The Office of the Dean of Students is concerned with the general welfare of students and welcomes correspondence and conferences with both parents and students. This Office works closely with the advisory system of the colleges and schools of the University; it directs students to faculty advisers, the Counseling Center, and other persons and agencies offering information and assistance with personal and social problems. The Office of the Dean of Students also has current information on Selective Service regulations.

The Foreign Students Office operates through the Office of the Dean of Students. The Foreign Student Adviser and his staff offer guidance on all nonacademic problems to students from other countries. Questions about immigration regulations, housing, social relationships, personal problems, finances, minimum course requirements, and employment should be referred to this Adviser. Students who are interested in studying abroad may obtain from him information about schools in other countries and about Fulbright and other scholarships.

COUNSELING CENTER

The Counseling Center, Lewis Hall Annex, offers vocational and educational counseling to students who need help in their adjustments to college. The staff of the Center, which includes vocational counselors and psychologists, works closely with other student services and supplements the academic advisory program.

HOUSING

Information and applications for residence in University-owned housing for single persons and for childless married graduate students may be obtained by writing to the University of Washington, Manager, Men's Residence Halls, 1201 Campus Parkway, Seattle 5, or to the University of Washington, Manager, Women's Residence Halls, Seattle 5. Many men graduate students live in Rofcre

House in one of the Men's Residence Halls. Preference in assignment to vacancies in the Residence Halls is given to students under twenty-one years of age until August 1; thereafter assignments are made in the order of application. Prospective students may apply for the residence halls prior to their acceptance by the University but not before April 15.

The Office of Student Residences maintains listings of off-campus rooms, rooms with board, housekeeping rooms, apartments, and houses which are available to University students. These listings must, however, be consulted in person.

Information about fraternities or sororities may be obtained by writing to the University of Washington, Interfraternity Council, or the Panhellenic Council, Student Union Building, Seattle 5.

Teaching and research assistants and other part-time sub-faculty personnel are given first priority for assignment to University-owned housing facilities for married students. Second preference for assignment to Union Bay Village or Sand Point Homes is given to graduate, medical, dental, and law students who have children. Prospective students are eligible to apply when they have been accepted for admission. Write to the Office of Student Residences, 23 Administration Building, for further information and application forms.

A complete statement of University housing policy appears in the *Student Handbook of University Rules and Regulations* and the *Housing Bulletin*.

HEALTH SERVICES

The University maintains a health service and infirmary to help guard against infectious diseases and incipient ill health. The infirmary receives bed patients at any hour and provides nursing care, medicines, and the attendance of a staff doctor up to one week each quarter free of charge. For a period longer than one week, a charge of \$2.00 a day is made. At their own expense, infirmary patients may consult any licensed physician in good standing.

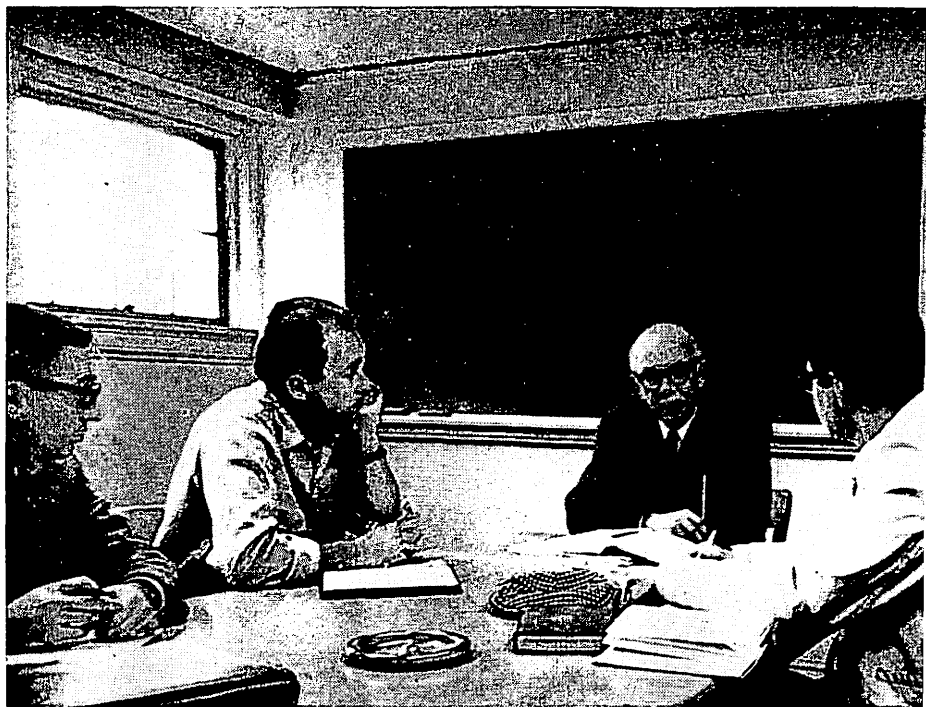
Health and Accident Insurance for students is available at the time of registration.

EMPLOYMENT

Part- and full-time work off campus may be obtained at the University Placement Office. Applications are accepted from students or graduates of the University and from the wives or husbands of University students. Application must be made in person after residence has been established in Seattle.

There are many job opportunities on the campus for graduate students. For example, dormitory counselorships are available in the Men's Residence Halls, and skilled technicians are employed in nearly every University activity. Students may apply directly to the department in which they hope to work or to the Personnel Department.

Working students must be sure to correlate their employment with Graduate School regulations governing study loads (see Registration, page 61).



THE GRADUATE PROGRAMS

THE GRADUATE PROGRAMS

THE GRADUATE SCHOOL offers programs leading to the master's degree through the following schools and colleges: *Architecture and Urban Planning*; *Arts and Sciences*: anthropology, art, botany, chemistry, classics, communications, drama, economics, English (including general and comparative literature), Far Eastern and Slavic languages and literature, genetics, geography, geology, Germanic languages and literature, history, home economics, mathematics, meteorology and climatology, music, oceanography, philosophy, physical education, physics, political science, psychology, Romance languages and literature, Scandinavian languages and literature, sociology, speech, and zoology; *Business Administration*; *Dentistry*; *Education*; *Engineering*: aeronautical, chemical, civil, electrical, mechanical, and mineral engineering; *Fisheries*; *Forestry*; *Librarianship*; *Medicine*: anatomy, biochemistry, microbiology, pharmacology, physiology and biophysics, and surgery; *Nursing*; *Pharmacy*; *Public Administration*; and *Social Work*. Interdisciplinary programs in *Linguistics* and in *Radiological Sciences* are administered by special committees of the Graduate School.

Programs leading to the Doctor of Philosophy degree are offered through the following schools and colleges: *Arts and Sciences*: anthropology, botany, chemistry, classics, economics, English (including general and comparative literature), Far Eastern and Slavic languages and literature, genetics, geography, geology, Germanic languages and literature, history, mathematics, meteorology and climatology, music, oceanography, philosophy, physics, political science, psychology, Romance languages and literature, sociology, speech, and zoology; *Education*; *Engineering*: aeronautical, chemical, civil, electrical, mechanical, and metallurgical engineering; *Fisheries*; *Forestry*; *Medicine*: anatomy, biochemistry, microbiology, pathology, pharmacology, and physiology and biophysics; and *Pharmacy*. An interdisciplinary program in *Linguistics* is administered by a special committee.

A program for the degree Doctor of Musical Arts, a professional degree primarily for students preparing for college teaching with emphasis in performance or composition, is offered through the School of Music.

A program leading to the degree of Doctor of Business Administration is offered through the College of Business Administration. This is a professional degree primarily for students preparing for teaching and research positions in business administration and for administrative and policy-making positions in business.

A program for the degree of Doctor of Education, a professional degree primarily for teachers and school administrators, is offered through the College of Education.

RESIDENCE

The residence requirement for the master's degree is one year (three quarters). The requirement for the doctor's degree is three years, two of them at the University of Washington. Since one of the two years must be spent in continuous full-time residence (three out of four consecutive quarters), the residence requirement for the doctor's degree cannot be met solely with summer study.

Although the normal load in graduate work is 12 credits, full residence credit is granted for any quarter in which at least 9 credits in graduate course, research, or thesis work are acceptably completed. Courses numbered below 300 are not applicable to residence or course credit for advanced degrees.

Residence credit for part-time students is figured on the basis of 12 credits per quarter, and students who carry less than the number required for full residence will increase proportionately the amount of time necessary to obtain a graduate degree.

All work for a master's degree must be completed within six years; for the doctor's degree, within ten years. This includes applicable work from the master's degree and work transferred from other institutions.

Students who are doing research or thesis work must register for this work in order to obtain residence credit. The number of research or thesis credits for which students register should be the proportion of the normal load which they are devoting to research or thesis. For example, if a student is on a half-time basis and is concentrating exclusively on thesis preparation, 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 (those numbered 600) must be for work other than that covered by registration for thesis.

Theses may be written *in absentia* only if all course and residence requirements have been completed. In exceptional cases, however, residence credit may be given when a thesis is prepared *in absentia* because necessary data cannot be obtained at the University. Arrangements for writing theses *in absentia* must be approved in advance by the Graduate School and the department which is supervising the work.

All students, whether *in absentia* or in residence, must be registered with the University the quarter in which they receive their degrees.

SCHOLARSHIP

If students are to make satisfactory progress toward advanced degrees, success in their courses of study must be assumed. To be eligible for a degree in the Graduate School a student must have an average of B (3.00) in ALL courses numbered 300 and above. Students whose work is not of approved quality may be asked by the Dean of the Graduate School to withdraw from the Graduate School.

MASTER'S DEGREES

To qualify for a master's degree, the candidate must meet these requirements:

1. Present at least 27 credits of course work successfully completed. Half of the work for the master's degree, including the thesis, must be in courses numbered 500 and above.
2. Present a minimum of three full-time quarters of residence credit. (Part-time quarters may be accumulated to meet this requirement.)
3. Present a certificate of proficiency in a foreign language (unless specifically excepted for a particular degree).
4. Prepare a thesis which is approved by the Supervisory Committee (unless specifically excepted in a particular program). Credit for the thesis ordinarily should be one fourth of the total credit, usually 9 credits, for the degree. Students

must register for thesis. The number of credits indicated in such registration should be the proportion of the normal load which the student is devoting to the thesis.

5. Satisfy any additional requirements the major department or the Supervisory Committee imposes.

While every candidate is expected to take some work outside his major department, the major department and the Supervisory Committee determine the requirements for supporting courses. The candidate should consult with his Supervisory Committee in planning requirements for the minor.

Students must satisfy the requirements for the degree which are in force at the time the degree is to be awarded.

Candidates are expected to attend Commencement exercises.

ADMISSION TO CANDIDACY FOR THE MASTER'S DEGREE

The student must make application for the master's degree at the Graduate School Office *within the first two weeks of the quarter in which he expects the degree to be conferred*. When the application is received, the Graduate School will review the student's record and his current registration and will notify him, his department, and his Supervisory Committee 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 student, 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 student and his departmental adviser should be thoroughly acquainted with the requirements for the particular degree.

TRANSFER AND EXTENSION CREDIT

Up to 9 graduate credits taken while a graduate student in the Graduate School of another accredited institution may be applied toward the master's degree. Six credits of extension work may be similarly applied, but only if taken at the University of Washington and only if taken after the student has been officially admitted to the Graduate School here. A combination of transfer and extension work not exceeding 9 credits may be applied to the master's degree. The minimum residence requirement of three quarters at the University of Washington may not be reduced by transfer or extension credits. Neither correspondence credit nor credit by examination is acceptable.

EXAMINATION

As soon as is appropriate, but not later than the time when the student's application for the degree has been approved, his major department appoints a Supervisory Committee consisting of not less than three members, including a member from the minor department, if any. The chairman of this committee arranges 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 the degree is to be conferred. The examination may be oral or written, and 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 an interval of further 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 forms signed by the members of the examining committee from the major department, must be deposited in the Graduate School Office at least two weeks before the degree is to 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.

NONTHESIS PROGRAMS

Some departments have arranged programs for the master's degree which do not require the preparation of a thesis. These programs normally include a more comprehensive plan of course work or more extensive examinations than thesis programs, or they may include some approved research activity in lieu of a thesis. Nonthesis programs must be approved by the department and indicated in the student's registration not later than the beginning of the second quarter of his work.

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 future promise for scholarly work.

In order to qualify for the doctor's degree, the candidate must meet the following minimum requirements:

1. Complete a program of study and research as planned by his major department or college, and his Supervisory Committee, of which half, including the thesis, must be in courses numbered 500 or above.

2. Present a minimum of three academic years of resident study, two of them at the University of Washington with at least one year in continuous full-time residence. (The continuous year may be satisfied with three out of four consecutive full-time quarters.)

3. Demonstrate a reading knowledge of two foreign languages related to the major field of study. (Language requirements for the Doctor of Business Administration and the Doctor of Education degrees are slightly different.)

4. Prepare a thesis or dissertation which is a significant contribution to knowledge and which clearly indicates training in research. Credit for the dissertation ordinarily should be one-third of the total credit, i.e. usually 36 credits, for the degree. Students must register for thesis. The number of credits indicated in such registration should be the proportion of the normal load which the student is devoting to the thesis.

5. Pass creditably a General Examination in the major field and, when a part of the program, in the minor field or supporting courses.

6. Pass creditably a Final Examination, which is usually devoted to the dissertation and the field with which it is concerned.

While every candidate is expected to take some work outside his major department, the Supervisory Committee determines the requirements for minors and supporting courses.

Students must satisfy the requirements which are in force at the time the degree is to be awarded.

Candidates are expected to attend Commencement exercises.

ADMISSION TO CANDIDACY FOR THE DOCTORAL DEGREE

As soon as is appropriate, but 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, which will include a graduate faculty representative, to assume general sponsorship of the prospective candidate. At the end of two years of graduate study, and after a successful demonstration of proficiency in two foreign languages, the chairman of the Supervisory Committee may present to the Graduate School for approval a warrant permitting the student to take the

General Examination for admission to candidacy for the doctoral degree. This is taken by the Graduate School to mean that, in the opinion of the Committee, the student's background of study and preparation is sufficient to justify his undertaking the examinations. The warrant should indicate the time, place, and manner of the examination, and must be received at least two weeks prior to the proposed examination date. The warrant is approved by the Graduate School only after the prescribed requirements of residence and study have been met. If the examination is oral, a majority of the examining committee must be present during the entire examination.

If the student's performance in his General Examination is judged by his Supervisory Committee to be satisfactory, then a warrant certifying the successful completion of his General Examination is filed in the Graduate School Office by the Chairman of his Supervisory Committee.

Thereafter, the student is identified and designated as a candidate for a doctoral degree and ordinarily devotes his time primarily to the completion of research for his thesis or dissertation and to preparation for his Final Examination.

Normally, a student must be registered at least two quarters at the University of Washington after he passes his General Examination and before a warrant is authorized for the Final Examination.

THESIS OR DISSERTATION AND FINAL EXAMINATION

The candidate must present a thesis or dissertation demonstrating original and independent investigation and achievement; it should reflect not only his mastery of research techniques but also 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.

When the Supervisory Committee believes that the doctoral candidate is prepared to take his Final Examination, the Graduate School is asked to designate a thesis-reading committee from among the members of the Supervisory Committee. Using forms provided by the Graduate School, the reading committee prepares a report briefly summarizing the distinctive achievement of the research, the methods used, and the results. If the report is favorable and is presented to the Graduate School two weeks before the Final Examination date, and if the candidate has met all other requirements, a warrant authorizing the Final Examination is issued by the Graduate School.

The thesis report is not binding upon the Supervisory Committee, but is intended to insure that, except for minor alterations, the dissertation is ready for final presentation. The Graduate School returns the thesis report to the Supervisory Committee, together with the warrant for the Final Examination, and upon approval by the Supervisory Committee at the time of the Final Examination, it is bound with the dissertation.

If the Final Examination is satisfactory, the Supervisory Committee signs the Graduate School's warrant and returns it at least two weeks before the end of the quarter in which the degree is to be conferred. If the examination is unsatisfactory, the Supervisory Committee may recommend that the Dean of the Graduate School permit a second examination after a period of further study.

PUBLICATION OF DOCTORAL DISSERTATIONS

All doctoral dissertations are published in full on microfilm. Two weeks before the end of the quarter in which the degree is to be conferred, the candidate must present two copies of his dissertation to the Graduate School. Each copy is to be accompanied by a copy of the thesis report and an abstract, not exceeding six hundred words in length, which has been approved by the Supervisory Committee at the time of the final examination. A receipt for the \$25.00 publication charge must be shown when the dissertation is presented.

Abstracts are published in full in the publication *Microfilm Abstracts*, and the manuscript copies of the dissertations are kept on file in the University Library. A positive of each microfilmed dissertation is sent to the Library of Congress to be entered in its subject and author file, and the negative is retained by University Microfilms, of Ann Arbor, Michigan, which provides additional microfilm copies on order.

The candidate signs the necessary publication agreement at the time he presents his dissertation to the Graduate School, and if he wishes he may apply for a copyright. Publication in microfilm does not preclude other forms of publication.

COURSE-NUMBERING SYSTEM

Courses numbered 500 and above are intended for and restricted to graduate students. Some courses numbered in the 300's and 400's are open both to graduates and to upper-division undergraduates. Such courses are listed in this Bulletin and, when acceptable to the Supervisory Committee, and the Graduate School, may be part of the graduate program. The Graduate School accepts credit in approved 300 courses for the minor or supporting fields only; approved 400 courses are accepted as part of the major.

Undergraduate students of senior standing who wish to register for a 500 course must obtain permission from both the instructor of the class and the Dean of the Graduate School.

Hyphens between course numbers mean that credit is not granted until the series of courses is completed. The number in parentheses following the course title indicates the amount of credit each course carries. In most lecture courses, a credit is given for each class hour a week during a quarter; laboratory courses generally carry less credit than the work time required. An asterisk in place of a credit number means that the amount of credit is variable.

Not all of these courses are offered every quarter. Final confirmation of courses to be offered, as well as a list of times and places of class meetings, is given in the *Yearly Time Schedule*.

COLLEGE OF ARCHITECTURE AND URBAN PLANNING

Dean: ARTHUR P. HERRMAN, 204 Architecture Hall

ARCHITECTURE

The program leading to the degree of Master of Architecture stresses professional consultation, with emphasis on the analysis of the forces which shape architecture, such as economics, structure, history, mechanical and electrical equipment, aesthetics, and social and psychological influences. Seminars and research focus upon a study of the interaction of these forces and their resultant effect upon architecture. The student is permitted to select his study in various areas of interest with special emphasis on civic design, planning, and building organization in education and health facilities. Such supplementary courses will be offered from those listed in the *Graduate School Bulletin* as the graduate adviser deems appropriate to an individual's program.

A student seeking admission to the graduate program in Architecture must satisfy the requirements of admission as outlined in the *Graduate School Bulletin* of the University of Washington. In registering, he must show evidence of having attained a Bachelor of Architecture degree, or the equivalent, from an accredited college or school of Architecture in the United States or any other country. In addition, he must produce scholastic evidence of his proficiency in design, planning, structures, mechanics, aesthetics, and history to his Supervisory Committee

in the faculty of the College of Architecture and Urban Planning. All deficiencies, or lack of necessary academic subject material required to secure the degree of Bachelor of Architecture from the College of Architecture and Urban Planning of the University of Washington, must be corrected before admission will be considered. If deficiencies are evident the student must satisfy any additional requirements the Graduate Committee deems necessary.

A degree of Master of Architecture will be awarded upon satisfactory completion of 36 or more credits, including 9 credits for a master's thesis. A foreign language is not required. A minimum of one school year (three quarters) in residence is required of students seeking a degree of Master of Architecture. The master's thesis may be prepared and presented during the three-quarters residence period; however, such procedure will not be encouraged in order that more time and effort can be devoted to required subject material during the academic year.

Further inquiries regarding the program should be addressed to: Prof. Robert H. Dietz, Chairman, Graduate Program in Architecture, College of Architecture and Urban Planning.

REQUIRED PROFESSIONAL COURSES

Architecture 524, 525, 526	Advanced Architectural Studies (6,6,6)	Staff
Studies to provide a comprehensive knowledge for solving problems dealing with architecture.		
Architecture 560, 561, 562	Graduate Seminar (3,3,3)	Dietz
Advanced analysis and interpretation of the forces influencing architecture.		
Architecture 700	Thesis (9)	Staff

ELECTIVES

Architecture 450	Landscape Seminar (2)	Haag
Architecture 468	Professional Practice (2)	Herrman
Urban Planning 479	The Urban Form (2)	Johnston
Urban Planning 480	Urban Planning Analysis I (3)	Wolfe
Urban Planning 482	Urban Community Facilities (2)	Staff
Urban Planning 485	Housing (2)	Wolfe
Urban Planning 490	City Planning Design (7)	Wolfe
Civil Engineering 403	Principles of Urban Planning (3)	Horwood
Economics 350	Public Finance and Taxation I (5)	Ballesteros
Political Science 375	Problems of Municipal Government and Administration (5)	Warren
Real Estate 301	Urban Land Economics and Real Estate Institutions (5)	Staff

URBAN PLANNING

Advisory Committee: EDGAR M. HORWOOD, Associate Professor of Civil Engineering; CALVIN F. SCHMID, Professor of Sociology; JOHN C. SHERMAN, Associate Professor of Geography; DONALD H. WEBSTER, Professor of Political Science; BAYARD O. WHEELER, Professor of Business Administration; MYER R. WOLFE, Professor of Urban Planning

The professional degree Master of Urban Planning is awarded for demonstrated competence in urban studies and urban planning methodology. The program is administered by the College of Architecture and Urban Planning, but also involves a number of other academic departments which are represented in the Advisory Committee listed above.

Candidates are admitted to the curriculum after meeting general admission requirements of the Graduate School and the requirements of the College of Architecture and Urban Planning and the Advisory Committee. Applicants may come from undergraduate areas in the social sciences, humanities and applied arts, and

sciences or professions. The curriculum is also oriented toward offering a minor in urban planning to graduate students in related fields.

The degree will be awarded upon satisfactory completion of specified courses, a thesis, and an oral examination. The varying background of training and experience found among candidates for this degree permits some adjustment of the student's program to meet individual needs and objectives. Courses are divided into *foundation* courses, which include urban study and background courses, and *professional* courses, the core of the program. The Urban Planning Curriculum Prospectus (available upon request) lists in detail the *foundation* course requirements, some of which may be satisfied before entrance to the graduate curriculum. The required *professional* courses are listed below. No foreign language is required.

Further inquiries regarding the program should be addressed to: Prof. M. R. Wolfe, Chairman, Graduate Program in Urban Planning, College of Architecture and Urban Planning.

REQUIRED PROFESSIONAL COURSES

Urban Planning 479	The Urban Form (2)	Johnston
Urban Planning 480, 481	Urban Planning Analysis I and II (3,3)	Wolfe, Staff
Urban Planning 482	Urban Community Facilities (2)	Staff
Urban Planning 590, 591, 592, 593	Urban Planning Problems (7,7,7,7)	Wolfe, Staff
Typical planning problems using the city as a laboratory. Emphasis on urban research, evaluation of basic data, planning proposals, and presentation techniques. Prerequisite, graduate student in urban planning.		
Civil Engineering 521	Seminar in Urban Transportation Planning (2)	Horwood
Political Science 581, 582	Seminar in Metropolitan and Urban Planning Problems (3,3)	Webster
Sociology 530	Advanced Human Ecology (3)	Schmid
or 531	Demography (3)	Schmid
Real Estate 520	Seminar in Real Estate and Urban Land Economics (3)	Seyfried
or Geography 510	Research Seminar: Settlement and Urban Geography (3, maximum 9)	Ullman
Urban Planning 600	Research (*)	Staff
Urban Planning 700	Thesis (9)	Staff

COLLEGE OF ARTS AND SCIENCES

Dean: SOLOMON KATZ, 122 Thomson Hall

ANTHROPOLOGY

Acting Executive Officer: KENNETH E. REED, 345 Savery

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

All candidates for advanced degrees must demonstrate basic proficiency in all fields of anthropology in the First Year Examination, given during the third quarter of full residence. The fields are: general ethnology, archaeology, linguistics, physical anthropology, and social anthropology. A part of the graduate work, with permission, may be devoted to a minor in a related field.

Students whose preparatory work in anthropology is inadequate will be required to take additional undergraduate courses before being admitted to graduate study.

MASTER OF ARTS. Candidates must complete an approved program of courses and pass the master's examination which will cover general ethnology and two other fields of anthropology, selected from those listed above. The thesis must be in one of the three fields.

DOCTOR OF PHILOSOPHY. Candidates must complete an approved program of courses, and pass the General Examination which will cover general ethnology and, normally, two other fields of anthropology selected from those listed above. The dissertation must be in general ethnology or one of the selected fields. In unusual cases, permission may be given for coverage of general ethnology and only one other field.

Special permission is required for the candidate to proceed directly to the doctorate without taking a master's degree. The language requirements must be satisfied at least three quarters before the General Examination. Field work is normally required of all candidates.

Requirements for a minor in anthropology for a doctor's degree are the same as for the master's degree with a minimum of 12 credits in courses numbered 500 or above.

COURSES

311 Indian Cultures of the Pacific Northwest (3)	Garfield
314J Peoples of Central and Northern Asia (3) Offered jointly with the Far Eastern and Russian Institute.	Staff
315 Peoples of the Far North (3) (Offered 1962-63.)	Garfield
317 Ethnology of Southeast Asia (3) (Offered 1962-63.)	Staff
320 Primitive Technology (5)	Greengo, Gunther
332 The Religions of Primitive Peoples (3)	Read, Staff
350 Basis of Civilization (3)	Watson
355 Introduction to Language (3)	Jacobs, Staff
370 Methods and Problems of Archaeology (5)	Greengo
371 Analysis of Archaeological Data (3) (Offered 1962-63.)	Greengo
380 Primate and Human Evolution (3)	Avis
415 The Character of Eskimo Life (3)	Ray
417 Middle American Civilization (3) (Offered 1962-63.)	Greengo
418 Ethnology of Meso-America (3)	Ray
425 Applied Anthropology (3)	Ottenberg
431 Primitive Literature (3)	Garfield
432 Magic, Religion, and Philosophy (3)	Ray
433 Primitive Art (3)	Gunther, Staff
434 Comparative Morals and Value Systems (3)	Read
435, 436 Primitive and Peasant Economic Systems (3,3)	Staff
437 Primitive Political Institutions (3)	Ray
438 The Analysis of Kinship Systems (3)	Read
441 Culture and Personality (5)	Spiro, Staff
442 Childhood and Society (3)	Spiro, Staff
451J, 452J, 453J Phonetics and Phonemics (3,3,3) Offered jointly with the curriculum of the Committee on Linguistics.	Staff
455 Areal Linguistics (3, maximum 6)	Jacobs, Staff
460 History of Anthropological Theory (3)	Jacobs, Staff
462J, 463J Morphology and Syntax (3,3) Offered jointly with the curriculum of the Committee on Linguistics.	Staff
470 Culture History of Austronesia (3)	Greengo
480 Physical Anthropology: Anatomy (3)	Avis
481 Physical Anthropology: Structure and Function	Avis
482 Physical Anthropology: Genetics (3)	Avis

- 500, 501, 502 Preceptorial Reading (3,3,3)** **Staff**
A "core" course for the beginning graduate student in which the fields and problems of contemporary anthropology are systematically surveyed.
- 505 Field Techniques in Ethnography (3)** **Ray, Staff**
The techniques of collecting, recording, ordering, and utilizing ethnographic data in the field. Problems of rapport, sample, interview, observation, and interpretation.
- 510 Seminar in Areal Ethnology (3, maximum 9)** **Staff**
An intensive analysis of the cultural problems of a selected area in their spatio-temporal context.
- 511 Cultural Problems of the Northwest Coast (3, maximum 6)** **Garfield**
The major ethnological questions of the region are examined.
- 519J Seminar on Asia (3, maximum 6)** **Staff**
The large cultural regions of the continent are studied in succession with special reference to anthropological problems. (Offered jointly in alternate years, with the Far Eastern and Russian Institute; offered 1962-63.)
- 521 Native American Culture History (4)** **Garfield, Staff**
An historical interpretation of the geographical distribution of critical aspects of North and South American Indian cultures.
- 522 Cultural Problems of Western America (3)** **Ray**
Analysis of the components of representative Indian cultures west of the Rocky Mountains and research on selected problems.
- 524 Seminar in Cultural Problems of Arctic and Sub-Arctic (3, maximum 6)** **Garfield, Staff**
Cultural relationships across the North Pacific; culture history of Arctic regions, Asiatic and American; cultural factors in cold-land adaptation and adjustment.
- 525 Seminar in Culture Processes (3, maximum 6)** **Watson**
The concept of process and its application to the study of culture.
- 527 Acculturation (3)** **Watson**
Systematic analysis of psychological, social, and cultural implications of the contact of peoples.
- 530 Structures and Functions of Oral Literature (3)** **Jacobs**
(Offered 1962-63.)
- 531 Analysis of Oral Literature (3, maximum 6)** **Garfield**
Various approaches to the study of folklore and myth.
- 537, 538, 539 Non-Western Political Systems (6,6,6)** **Staff**
Ethnic manifestations, methodological problems and theoretical implications of polity in a wide range of cultures; workshop and research.
- 541 Seminar in Psychological Aspects of Culture (3)** **Spiro, Staff**
Selected problems in the relation of culture and personality types.
- 542J Personality Patterns in Japanese Culture (3)** **Staff**
The nature and content of Japanese social life as it bears upon Japanese character. Prerequisite, permission. Offered jointly with the Far Eastern and Russian Institute.
- 553J Analysis of Linguistic Structures (3)** **Jacobs, Li**
Offered jointly with the Far Eastern and Russian Institute.
- 555J Methods in Comparative Linguistics (3)** **Staff**
Offered jointly with the curriculum of the Committee on Linguistics.
- 559 Seminar in Language and Culture (3)** **Jacobs, Staff**
Theoretical and methodological problems in language and culture.
- 561 Seminar in Methods and Theories (3, maximum 9)** **Watson, Ray**
- 563 Structural-Functional Analysis (3-9)** **Read, Spiro**
- 565-566-567 History of Anthropological Sciences (3-3-3)** **Staff**
A "core" course for beginning graduate students, in which the growth and development of anthropological science is analyzed.
- 570 Seminar in Archaeology (3)** **Greengo**
(Offered 1962-63.)
- 571 Field Course in Archaeology (5)** **Greengo**
Study of prehistoric cultures through archaeological excavation and analysis. Work will be largely in the state of Washington, but other areas may be included. (Offered Summer Quarter only.)
- 580 Anthropology in Contemporary Problems (3)** **Gunther**
(Offered 1962-63.)
- 581 Anthropological Migration and Population Study (3)** **Staff**
(Offered 1962-63.)
- 582 Seminar in Race and Genetics (3)** **Staff**
- 600 Research (*)** **Staff**
- 700 Thesis (*)** **Staff**

ART

Director: BOYER GONZALES, 102 Art Building

The School of Art offers courses leading to the degree of Master of Fine Arts. In addition to Graduate School general admission requirements (see page 57), students desiring to pursue a course of study leading to the Master of Fine Arts degree must have a grade average of B or better in the undergraduate art major and must have completed the equivalent of our undergraduate degree requirements. The applicant must also prepare a student show indicating the scope and proficiency of his undergraduate work, which will be voted upon by the faculty before his admission is fully approved.

The student's program of studies will be determined by his committee from the direction of work needed for his thesis and from the needs indicated by his background and his level of achievement in graduate study. The committee may require additional work beyond the basic minimum if it feels it is necessary for the student to make up deficiencies or inadequacies.

Students accepted for admission will be required to complete a program of a minimum of 36 credits of scheduled class work and 9 credits of thesis for a total of 45 credits for the degree. A maximum of 9 credits (if approved) may be transferred from other schools. An acquaintance with the general field of art and proficiency in performance will be expected of each recipient of the degree of Master of Fine Arts.

The thesis is in the nature of a project, such as a series of paintings, prints, sculpture, or ceramic objects, designs in metal, fabric, or other equivalent project executed with a background of research. In most cases the thesis is not finished during the one year of residence, as more time is often required for its satisfactory completion. The thesis must be in a form suitable to the committee and must be approved by the faculty of the School of Art.

A record of the thesis in approved form, consisting of photographs, color transparencies, and the like, together with research material, a written statement of goals and background of the thesis, will be kept by the School of Art and must be filed in the Art Library two weeks before the end of the quarter in which the degree is to be received.

A selection from the student's thesis may be reserved for inclusion in the annual exhibition of masters' theses of the School of Art at the Henry Art Gallery.

COURSES

307, 308, 309 Portrait Painting (3,3,3)	Brazeau, Hixson
310, 311, 312 Interior Design (5,5,5)	Foote
316, 317, 318 Design for Industry (3,3,3)	Smith
322, 323, 324 Sculpture (3,3,3)	Du Pen
332, 333, 334 Advanced Sculpture (3,3,3)	Du Pen
340 Design for Printed Fabrics (3)	Penington
341J Greek Archaeology and Art (2) Offered jointly with the Department of Classics.	Edmonson
342J Roman Archaeology and Art (2) Offered jointly with the Department of Classics.	Edmonson
343J Greek Sculpture (2) Offered jointly with the Department of Classics.	Edmonson
350 Introduction to Printmaking (3)	Alps
351 Printmaking—Etching (3)	Alps
352 Printmaking—Serigraph (3)	Alps
353, 354, 355 Advanced Ceramic Art (5,5,5)	Sperry
357 Metal Design (3)	Penington

358 Jewelry Design (3)	Penington
359 Enameling (3)	Penington
360, 361, 362 Life (3,3,3)	Staff
366, 367, 368 Commercial Design (3,3,3)	Erickson
369, 370, 371 Costume Design (2,2,2)	Staff
375, 376, 377 Advanced Painting (3,3,3)	Staff
382 Art of India (3) (Offered alternate years; offered 1961-62.)	Rogers
383 Art of China (3) (Offered alternate years; offered 1961-62.)	Rogers
384 Art of Japan and Korea (3) (Offered alternate years; offered 1961-62.)	Rogers
386 The Art of the Ancient Near East (3) (Offered alternate years; offered 1962-63.)	Rogers
387 Islamic Art (3) (Offered alternate years; offered 1962-63.)	Rogers
388 Medieval Art (3) (Offered alternate years; offered 1962-63.)	Rogers
402J Greek and Roman Pottery (3) Offered jointly with the Department of Classics.	Edmonson
404J Greek and Roman Sculpture (3) Offered jointly with the Department of Classics.	Edmonson
410 Illustration (5)	Erickson
423, 424, 425 Art History and Criticism (2,2,2)	Rogers
426 The Origins of Modern Art (2)	Rogers
427 Art Since Cezanne (2)	Rogers
428 Oriental Ceramic Art (2)	Rogers
436, 437, 438 Sculpture Composition (5,5,5)	Du Pen
445, 446, 447 Advanced Industrial Design (5,5,5)	Del Giudice
450, 451, 452 Advanced Printmaking (5,5,5)	Alps
457, 458, 459 Advanced Metal and Jewelry (3,3,3)	Penington
463, 464, 465 Composition (3,3,3)	Brazeau, Hixson
466, 467, 468 Commercial Design (5,5,5)	Welman
472, 473, 474 Advanced Interior Design (5,5,5)	Footo
479, 480, 481 Fashion Illustration (2,2,2)	Staff
485, 486, 487 Advanced Ceramic Art (5,5,5)	Sperry
490 Art Education in the Schools (3)	Staff
498 Individual Projects (3 or 5, maximum 15)	Staff
500, 501, 502 Seminar in Art Education (3-5, 3-5, 3-5) Special problems in the teaching and supervision of art in the public schools. Prerequisite, graduate standing in art education.	Staff
507, 508, 509 Advanced Portrait Painting (3,3,3)	Brazeau, Hixson
510 Advanced Illustration (3 or 5)	Staff
522, 523, 524 Advanced Sculpture (3 or 5, 3 or 5, 3 or 5)	Du Pen
530, 531, 532 Advanced Design (3 or 5, 3 or 5, 3 or 5)	Staff
550, 551, 552 Advanced Printmaking (3 or 5, 3 or 5, 3 or 5)	Alps
553, 554, 555 Advanced Ceramic Art (3 or 5, 3 or 5, 3 or 5)	Sperry
560, 561, 562 Advanced Life Painting (3 or 5, 3 or 5, 3 or 5)	Staff
563, 564, 565 Composition (3 or 5, 3 or 5, 3 or 5)	Staff
600 Research (*)	Staff
700 Thesis (*)	Staff

BOTANY

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

The Department of Botany offers programs leading to the degrees of Master of Science and Doctor of Philosophy. Fields for specialization are algology, anatomy and morphology, physiology, mycology, and taxonomy; and students may also choose genetics, in cooperation with the staff of the Department of Genetics. Students are encouraged to work out modern experimental approaches to problems. Facilities include a herbarium, well known for its collections of plants of the Pacific Northwest, adequate greenhouse and outplanting space, controlled-environment chambers, adequately equipped laboratories, good library facilities, a special peat-bog study area, and the Friday Harbor Marine Laboratories. Candidates for degrees take an examination on the general fields of botany shortly after beginning their studies. Certain parts of this examination may be deferred for students with deficiencies in undergraduate course work. Foreign language requirements are usually met with French, German, or Russian, but Latin may be accepted in the case of students in taxonomy. Training in organic chemistry is required for all candidates who lack this preparation.

MASTER OF SCIENCE. Students pursue a course of study designed to enhance their general and specialized training in botany and related sciences; take an examination in their field of specialization and in the other fields of botany; and submit a thesis describing their research.

DOCTOR OF PHILOSOPHY. Students pursue a program of formal and informal study in botany and related fields leading to a broader and more intensive training than is possible in the Master of Science studies. In preparation for the oral General Examination prescribed by the Graduate School, the candidate is required to pass detailed written departmental examinations in his field of specialty and usually also in a second field related to his field of specialty, and examinations in less detail in the remaining fields of botany. In the thesis study and in the writing of the thesis, the candidate is expected to develop and display originality and high potential as an independent investigator.

COURSES

BIOLOGY

- | | |
|-----------------------------------------------------------------------------------------|-----------------------|
| 401 Cytology (3) | Hsu |
| 401L Cytology Laboratory (2) | Hsu |
| Must be accompanied by 401. | |
| 451 Genetics (3) | Roman |
| 451L Genetics Laboratory (2) | Staff |
| Must be accompanied by 451. | |
| 452 Cytogenetics (3) | Roman |
| 452L Cytogenetics Laboratory (2) | Hawthorne |
| Must be accompanied by 452. | |
| 453 Topics in Genetics (2, maximum 6) | Roman, Stadler |
| 454 Evolutionary Mechanisms (3) | Kruckeberg |
| (Offered alternate years; offered 1962-63.) | |
| 472 Principles of Ecology (3) | Edmondson |
| 472L Ecology Laboratory (2) | Edmondson |
| Must be accompanied by 472. | |
| 473 Limnology (5) | Edmondson |
| 501 Advanced Cytology (5) | Hsu |
| (Offered alternate years; offered 1962-63.) | |
| 508 Cellular Physiology (3) | Whiteley |
| Functional aspects of protoplasmic structures. Prerequisite, Zoology 400 or permission. | |
| 508L Cellular Physiology Laboratory (2) | Whiteley |
| Must be accompanied by 508. Prerequisite, permission. | |

- 509 Cellular Physiology (3)** **Whitoley**
Chemistry and physiology of the interkinetic and dividing nucleus, nucleocytoplasmic interactions, physiology of differentiated cells. (Offered alternate years; offered 1961-62.) Prerequisite, Zoology 400 or permission of instructor. (Biology 508 and 509 may be elected separately or in either sequence).

- 573 Topics in Limnology (2)** **Edmondson**
May be repeated for credit.

BOTANY

- 331 Ornamental Plants (3)** **Kruckeberg**
332 Taxonomy Field Trip (*, maximum 12) **Staff**
(Offering to be announced.)
- 361 Forest Pathology (5)** **Stuntz**
371 Elementary Plant Physiology (5) **Meeuse, Walker**
431, 432 Taxonomy (5,5) **Hitchcock**
(Offered alternate years; offered 1961-62.)
- 441, 442, 443 Morphology (5,5,5)** **Blaser, Neushul**
(Offered alternate years; offered 1962-63.)
- 444 Plant Anatomy (5)** **Blaser**
(Offered alternate years; offered 1961-62.)
- 445 Marine Algology (6)** **Neushul**
(Offered at Friday Harbor Summer Quarter only.) Prerequisites, 112 and permission.
- 446 Algology (5)** **Neushul**
Classification, recognition, and cultivation of marine and freshwater algae. Prerequisites, 112, or 20 credits in biology. (Offered alternate years; offered 1961-62.)
- 461 Yeasts and Molds (5)** **Stuntz**
462, 463 Mycology (5,5) **Stuntz**
471 Mineral Nutrition (5) **Walker**
(Offered alternate years; offered 1962-63.)
- 472 Plant Physiology (5)** **Meeuse, Walker**
473 Plant Physiology (3) **Meeuse**
(Offered alternate years; offered 1962-63.)
- 473L Plant Physiology Laboratory (2)** **Meeuse**
Must be accompanied by 473.
- 474 Plant Physiology (3)** **Walker**
(Offered alternate years; offered 1961-62.)
- 474L Plant Physiology Laboratory (2)** **Walker**
Must be accompanied by 474.
- 475 Problems in Algal Physiology (6)** **Meeuse**
(Offered at Friday Harbor, Summer Quarter only.)
- 498 Special Problems in Botany (1-15)** **Staff**
Prerequisite, permission.
- 520 Seminar (1)** **Staff**
Prerequisite, permission.
- 521 Topics in Plant Physiology (2, maximum 10)** **Meeuse, Walker**
Modern trends and methods in plant physiology. Prerequisite, 371 or 472, or permission.
- 522 Seminar in Morphology and Taxonomy (*, maximum 5)** **Staff**
Current research and trends in morphology and taxonomy of higher plants. Comparison of classical with modern approaches and concepts. Prerequisite, permission.
- 600 Research (*)** **Staff**
Original investigations of special problems in genetics, morphology, mycology, taxonomy, or plant physiology.
- 700 Thesis (*)** **Staff**

CHEMISTRY

Executive Officer: GEORGE H. CADY, 101 Bagley Hall

The Department of Chemistry offers courses leading to the degrees of Master of Science and Doctor of Philosophy. Candidates for advanced degrees are expected to take the qualifying and cumulative examinations. The qualifying, or entrance, examinations 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 Monday and Tuesday preceding

the opening of Autumn Quarter and may be repeated during the first week of Winter Quarter and toward the end of Spring Quarter. All parts of this examination should be passed within a year. The cumulative examinations, given six times during each academic year, 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, literature, and the student's ability to apply this knowledge to diverse problems.

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

DOCTOR OF PHILOSOPHY. The cumulative examination requirement for this degree is satisfied when six examinations have been passed. The language requirement may be satisfied by passing examinations in German and in either Russian or French.

COURSES

335, 336, 337	Organic Chemistry (3,3,3)	Staff
345, 346, 347	Organic Chemistry Laboratory (1,1,2)	Staff
350	Elementary Physical Chemistry (5)	Staff
355, 356, 357	Physical Chemistry (4,3,3)	Staff
358	Physical Chemistry Laboratory (4)	Staff
395	Radiochemical Techniques and Radioactivity Measurements (3)	Staff
401	Principles of Chemistry (3) (Offered Summer Quarter only.)	Lingafelter
402	Techniques of Chemistry (3) (Offered Summer Quarter only.)	Crittenden
415	The Chemical Bond (3)	Staff
416	Inorganic Chemistry (3)	Staff
418	Radiochemistry (3)	Fairhall
419	Radiochemistry Laboratory (2)	Fairhall
425	Quantitative Analysis (3)	Robinson
426	Instrumental Analysis (3)	Crittenden
427	Advanced Quantitative Theory (3)	Crittenden
428	Chemical Microscopy (3)	Robinson
429	Microquantitative Analysis (3)	Robinson
445	Qualitative Organic Analysis (3)	Staff
446	Advanced Organic Analysis (3)	Staff
447	Organic Synthesis (3)	Staff
511	Advanced Inorganic Chemistry (2) Halogens; less familiar metals; chelate, clathrate, interstitial and non-stoichiometric compounds; other selected topics. Prerequisite, 416 or permission.	Cady
512	Advanced Inorganic Chemistry (2) Acid-base theory; mechanism of certain reactions; compounds of nonmetals of groups 3, 4, and 5. Prerequisite, 416 or permission.	Ritter
513	Advanced Nuclear Chemistry (2) Nuclear reactions, fission, complex radioactive decay, absolute counting techniques, radiochemical separations, low-level techniques, geochemistry, cosmochemistry, chemistry of the synthetic elements. Prerequisite, 418 or permission.	Fairhall
526	Advanced Instrumental Analysis (3) Absorption and emission spectroscopy, polarography, potentiometry, and dielectric properties as applied to problems in analytical chemistry. Prerequisite, 426 or permission.	Crittenden
530, 531, 532	Advanced Organic Chemistry (3,3,3) Consideration of synthetic methods, structure determinations, and reaction mechanisms for acyclic, alicyclic, and aromatic compounds of synthetic and natural origin, with emphasis on modern theory and practice. Prerequisites, 337 and 445, or permission.	Staff
543	Natural Organic Products (3) Structure determination, properties and synthesis of steroids and other natural organic products of current importance. Prerequisite, 532 or permission.	Anderson

- 544 Theoretical Organic Chemistry (3)** **Staff**
Application of the theories of chemical bonding and equilibria to the structures and reactions of organic compounds. Prerequisite, 532 or permission.
- 545 Organic Synthetic Methods (3)** **Dauben**
Consideration of carbon skeleton synthetic methods, with emphasis on Diels-Alder, organo-metallic and basecatalyzed condensation reactions. Prerequisite, 532 or permission.
- 546 Organic Radical Reactions (3)** **Dauben**
Survey of reactions in solution involving radical intermediates. Prerequisite, 532 or permission.
- 547 Organic Heterocycles (3)** **Stout**
Synthesis and reactions of organic heterocycles, with emphasis on those of natural origin. Prerequisite, 532 or permission.
- 548 Physical Organic Chemistry (3)** **Schubert**
Interpretation and application of data obtained by combined methods of organic and physical chemistry to the problems of structures of organic compounds and mechanisms of organic reactions. Prerequisite, 532 or permission.
- 550, 551, 552 Advanced Physical Chemistry (3,3,3)** **Staff**
Thermodynamics and statistical mechanics, atomic and molecular structure, kinetic theory, and chemical kinetics. Prerequisite, 357 or permission.
- 555 Quantum Chemistry (3)** **Staff**
Calculation of energy levels for simple systems, approximation methods. Prerequisite, 551 or permission.
- 560 Chemical Kinetics (3)** **Rabinovitch**
Consideration of reaction rate theory and applications including specialized aspects of topical interest. Prerequisite, 552 or permission.
- 561 Thermodynamics of Solutions (3)** **Gregory**
The chemical potential and related partial molar thermodynamic properties, activity, thermodynamics of ions, electrochemical phenomena, theories of solutions. Prerequisite, 550 or permission.
- 562 Chemical Crystallography (3)** **Lingafelter**
Crystal structure of diffraction of X rays, electrons, neutrons; crystal chemistry; spectra of crystals; theory of metals. Prerequisite, 551 or permission.
- 563 Electron Dynamics (3)** **Simpson**
Chemical binding, dispersion forces, spectroscopy. Prerequisite, 555 or permission.
- 564 Molecular Dynamics (3)** **Eggers**
Molecular dynamics, force constants, symmetry, selection rules, and polar properties. Prerequisite, 555 or permission.
- 565 Statistical Mechanics (3)** **Halsøy**
Phase integral, quantum statistics, cooperative phenomena. Prerequisite, 555 or permission.
- 581 Topics in Inorganic Chemistry (3, maximum 18)** **Staff**
Open only to students accepted for doctoral work in chemistry.
- 582 Topics in Analytical Chemistry (3, maximum 18)** **Staff**
Open only to students accepted for doctoral work in chemistry.
- 583 Topics in Organic Chemistry (3, maximum 18)** **Staff**
Open only to students accepted for doctoral work in chemistry.
- 585 Topics in Physical Chemistry (3, maximum 18)** **Staff**
Open only to students accepted for doctoral work in chemistry.
- 590 Seminar in General Chemistry (1, maximum 18)** **Staff**
- 591 Seminar in Inorganic Chemistry (1, maximum 18)** **Staff**
- 592 Seminar in Analytical Chemistry (1, maximum 18)** **Staff**
- 593 Seminar in Organic Chemistry (1, maximum 18)** **Staff**
- 595 Seminar in Physical Chemistry (1, maximum 18)** **Staff**
- 600 Research (*)** **Staff**
- 700 Thesis (*)** **Staff**

CLASSICS

Executive Officer: JOHN B. McDIARMID, 218 Denny Hall

The Department of Classics offers programs leading to the degrees of Master of Arts and Doctor of Philosophy. Specific departmental requirements are described briefly below. More complete information may be obtained from the Department.

MASTER OF ARTS. Requirements are: a minimum of 27 credits in courses or seminars in Greek, Latin, and related subjects approved by the Department; either

an acceptable thesis or 9 additional credits in Greek or Latin 599, Graduate Reading; a minimum of three full-time quarters of residence; a reading knowledge of either French or German.

DOCTOR OF PHILOSOPHY. Requirements are: a minimum of 72 credits in courses or seminars in Greek, Latin, and related subjects approved by the Department; an acceptable dissertation; a minimum of three academic years of resident study, two of them at the University of Washington, one of which must be spent in continuous full-time residence; a reading knowledge of French and German. Candidates must pass a General Examination, both written and oral, before beginning work on the thesis, and a Final Examination upon completion of the thesis.

COURSES

GREEK

300	Greek Language, Accelerated (3)	Wyatt
309	Advanced Grammar and Composition (1, maximum 4)	Staff
N391	Sight Reading (0)	Staff
413	The Pre-Socratic Philosophers (3) (Offered alternate years; offered 1962-63.)	McDiarmid
414	Plato (3) (Offered alternate years; offered 1962-63.)	Rosenmeyer
415	Aristotle (3) (Offered alternate years; offered 1962-63.)	McDiarmid
420	Greek Epic (3) (Offered alternate years; offered 1961-62.)	Edmonson
422	Herodotus and the Persian Wars (3) (Offered alternate years; offered 1961-62.)	Edmonson
424	Thucydides and the Peloponnesian War (3) (Offered alternate years; offered 1961-62.)	Edmonson
442, 443, 444	Greek Drama (3,3,3) (Offered alternate years; offered 1961-62.)	McDiarmid
451	Lyric Poetry (3) (Offered alternate years; offered 1962-63.)	Rosenmeyer
453	Pindar: The Epinician Odes (3) (Offered alternate years; offered 1962-63.)	McDiarmid
455	Hellenistic Poetry (3) (Offered alternate years; offered 1962-63.)	Rosenmeyer
490	Supervised Study (3-6, maximum 18)	Staff
520	Seminar (3, maximum 27)	Staff
599	Graduate Reading (*, maximum 18) Supervised reading in selected fields.	Staff
600	Research (3-5, maximum 15)	Staff
700	Thesis (*)	Staff
702	Degree Final (0) Limited to students completing a nonthesis degree program.	Staff

LATIN

300	Latin Language, Accelerated (3)	Wyatt
309	Advanced Grammar and Composition (1, maximum 4)	Staff
N391	Sight Reading (0)	Staff
401	Medieval Latin (3)	Pascal
412	Lucretius (3) (Offered alternate years; offered 1961-62.)	Grummel
413	Cicero's Philosophical Works (3) (Offered alternate years; offered 1961-62.)	Grummel
414	Seneca (3) (Offered alternate years; offered 1961-62.)	Grummel
422	Livy (3) (Offered alternate years; offered 1962-63.)	Edmonson
423	Cicero's Orations (3) (Offered alternate years; offered 1962-63.)	Edmonson
424	Tacitus (3) (Offered alternate years; offered 1962-63.)	Edmonson

- 430 **Latin Novel (3)** Fredricksmeyer
(Offered alternate years; offered 1961-62.)
- 442 **Roman Drama (3)** Pascal
(Offered alternate years; offered 1962-63.)
- 451 **Roman Satire (3)** Pascal
(Offered alternate years; offered 1961-62.)
- 455 **Catullus (3)** Grummel
(Offered alternate years; offered 1962-63.)
- 456 **Horace (3)** Fredricksmeyer
(Offered alternate years; offered 1962-63.)
- 458 **Roman Epic (3)** Grummel
(Offered alternate years; offered 1961-62.)
- 475LJ **Improvement of Teaching: Latin (5)** Grummel, Pascal
Offered jointly with the College of Education. (Offered Summer Quarter only.)
- 475XJ **Caesar for High School Teachers (2½)** Grummel
Offered jointly with the College of Education. (Offered Summer Quarter only.)
- 490 **Supervised Study (3-6, maximum 18)** Staff
- 520 **Seminar (3, maximum 27)** Staff
- 599 **Graduate Reading (*, maximum 18)** Staff
Supervised reading in selected fields.
- 600 **Research (3-5, maximum 15)** Staff
- 700 **Thesis (*)** Staff
- 702 **Degree Final (0)** Staff
Limited to students completing a nonthesis degree program.

CLASSICS COURSES IN ENGLISH

- 422 **Greek Historians and Philosophers in English (3)** Rosenmeyer
- 426 **Greek and Roman Epic in English (3)** Rosenmeyer
- 427 **Greek and Roman Drama in English (3)** McDiarmid
- 430 **Greek and Roman Mythology (3)** Grummel
- 440 **Greek and Roman Critics in English (3)** Grummel

CLASSICAL ARCHAEOLOGY

- 341J **Greek Archaeology and Art (2)** Edmonson
Offered jointly with the School of Art.
- 342J **Roman Archaeology and Art (2)** Edmonson
Offered jointly with the School of Art.
- 343J **Greek Sculpture (2)** Edmonson
Offered jointly with the School of Art.
- 402J **Greek and Roman Pottery (3)** Edmonson
Offered jointly with the School of Art. (Offered alternate years; offered 1962-63.)
- 404J **Greek and Roman Sculpture (3)** Edmonson
Offered jointly with the School of Art. (Offered alternate years; offered 1962-63.)
- 406 **Greek Architecture (3)** Edmonson
(Offered alternate years; offered 1962-63.)
- 511 **Mycenaean Archaeology (3)** Edmonson
The art, architecture, and culture of Greece in the late Bronze Age, with emphasis on recent archaeological and linguistic discoveries. (Offered alternate years; offered 1961-62.)
- 513 **Athenian Topography (3)** Edmonson
Detailed consideration of the topography and monuments of ancient Athens from the beginning through the Roman period. (Offered alternate years; offered 1961-62.)
- 515 **Attic Epigraphy (3)** Edmonson
Study of Athenian inscriptions with emphasis on their historical value. The classification and editing of inscriptions, epigraphical techniques, and special problems are treated in detail. (Offered alternate years; offered 1961-62.)

CLASSICAL LINGUISTICS

- 501 **Comparative Phonology of Greek and Latin (3)** Wyatt
The phonological developments of Greek and Latin from Indo-European to the classical periods of both languages. (Offered alternate years; offered 1961-62.)
- 503 **History of the Greek Language (3)** Wyatt
The morphological and syntactical development of the Greek language from Homer through the New Testament; the development of prose and poetic style. (Offered alternate years; offered 1961-62.)
- 505 **History of the Latin Language (3)** Wyatt
The morphological and syntactical development of the Latin language; the development of Latin as a literary language. (Offered alternate years; offered 1961-62.)

- 506 Italic Dialects (3)** **Wyatt**
The principal remains of the non-Latin languages and dialects of ancient Italy. (Offered alternate years; offered 1962-63.)
- 508 Greek Dialects (3)** **Wyatt**
The non-Attic dialects of ancient Greek, based on a study of inscriptions and the literary remains. (Offered alternate years; offered 1962-63.)
- 510 Mycenaean Greek (3)** **Wyatt**
A study of the Linear-B tablets found in Crete and the Greek mainland. (Offered alternate years; offered 1962-63.)

COMMUNICATIONS

Acting Director: WILLIAM E. AMES, 129 Communications Building

The School of Communications offers courses leading to the degree of Master of Arts in Communications. Graduate students elect up to three fields of study and research, including society and mass communications, history and communications, communications and law, propaganda, theory and research in mass communications, advertising, and radio-television.

Students who wish to utilize courses in the School of Communications as a minor in graduate study leading to the degree of Doctor of Philosophy in another department should consult the Director of the School.

COURSES

Although other courses may be substituted on approval, those for which credit customarily is given toward the degree of Master of Arts in Communications include the following from the Communications sequence: 402, 406, 411, 414, 415, 480, 498, 502, 506, 511, 514, 580, 598, and 600.

Students taking courses in Communications toward an advanced degree in some other division or department may earn credit in any of the following courses in the School of Communications:

ADVERTISING

- 340 Advertising Procedures (5)** **Denis**
440 Advertising Campaigns (3) **Warner**

COMMUNICATIONS

- 316 Contemporary Affairs (3)** **Staff**
402 Freedom of the Press and Communications Law (3) **Benson**
403 Problems in Public Relations (3) **Christian**
406 Press and Society (3) **Ames**
411 Introduction to Mass Communications Research (3) **Edelstein**
414 History of Journalism (3) **Smith**
415 Comparative Communications (3) **Staff**
416 Press and World Affairs (3) **Staff**
470 Theory and Criticism of Broadcasting (3) **Niven**
480 Propaganda (3) **Edelstein**
498 Problems of Communications (1-5, maximum 10) **Staff**
502 Government and Mass Communications Seminar (3) **Benson**
506 Press and Society Seminar (3) **Ames**
511 Mass Communications Research Seminar (3) **Edelstein**
514 Journalism and History Seminar (3) **Smith**
570 Seminar in Theory and Criticism of Broadcasting (3) **Niven**
Prerequisite, 470.
580 Seminar in Propaganda (3) **Edelstein**
598 Selected Readings (1-5, maximum 5) **Staff**
600 Research (3-5) **Staff**
700 Thesis (*) **Staff**

JOURNALISM

- | | | |
|------------|------------------------------------------------------|---------------|
| 320 | Legal Aspects of Journalism (3) | Benson |
| 413 | Editorial Writing, Policies, and Research (3) | Benson |

RADIO-TELEVISION

- | | | |
|-------------|----------------------------------------------------------------|-----------------|
| 360 | Advanced Radio Production (2) | Cranston |
| 372 | Radio Dramatic Writing (3) | Adams |
| 373 | Television Writing (3) | Cranston |
| 450 | Television Programming (3) | Ryan |
| 451 | Television Performance (2) | Mally |
| 455 | Television Film Techniques (2 or 3) | Staff |
| 456 | Television Staging and Graphics (2 or 3) | Staff |
| 459J | Television in the Schools (2½) | Adams |
| | Offered jointly with the College of Education. (Formerly 460.) | |
| 461 | Television Production (3) | Ryan |
| 465 | Television Workshop Laboratory (2-4, maximum 8) | Ryan |
| 475 | Station Organization (3) | Adams |
| | Prerequisite, permission. | |
| 476 | Advanced Radio News Laboratory (2, maximum 6) | Cranston |

DRAMA

Director: GREGORY FALLS, 113 Drama-TV Building

The School of Drama offers courses leading to the degree of Master of Arts. Normally, although not necessarily, a major in drama is supported by a minor in English, speech, radio-TV, or comparative literature.

For the Master of Arts degree the requirement is a minimum of 36 credits, 9 of which are earned by the thesis. In addition to the thesis credits, 9 credits must be earned in courses numbered 500 or above. All candidates are required to take 501.

Three major areas of concentration are available: acting-directing, technical, and children's drama. The course of study for the master's degree will vary individually. A program leading to a degree is developed by the candidate and a faculty graduate Supervisory Committee, taking into account preparation, professional objectives, and professional interests. A student's general course of study must be approved in conference before he begins his work. A student transferring from another institution must make up any courses required for the Bachelor of Arts degree in drama in his respective area of emphasis, if he has not had the equivalent course work or practical experience. Required courses numbered in the 400 series may be applied toward the Master of Arts degree.

Each candidate is required to pass a comprehensive examination administered by his committee over the whole field of drama upon completion of his graduate program of study. In addition, he must pass an examination in a foreign language of his choice.

For students who qualify in the field of direction or children's drama, a thesis production may be permitted in partial fulfillment of the thesis requirement. Creative theses in the technical fields of drama and playwriting are also permitted. Such theses must be in a form suitable to the Committee and, in addition to involving research where applicable, must be presented in written form.

Although the required minimum of work in residence for the master's degree is three quarters, it is advisable to project for four quarters, and in the case of transfer students from institutions with a limited curriculum in drama, even five quarters.

The requirements for students from other departments to earn a minor in drama for the Master of Arts degree is 12 credits of work in approved courses acceptable for graduate credit in drama.

COURSES

300 Fundamentals of Stagecraft (5) Not open to students having credit in 403, 404, or 409.	Conway, Lounsbury
307 Fundamentals of Puppetry (2)	Valentinetti
335 Children's Theater (3)	Carr
338 Creative Dramatics (3)	Haaga, Siks
403 Scene Construction (3)	Lounsbury
404 Scene Design (3)	Conway, Davis
405 Historic Costume and Movement (3)	Crider
406 Theatrical Make-up (2)	Davis
407 History of Theatrical Costume (2)	Crider
408 Stage Costume Construction (2)	Crider
409 Stage Lighting (3)	Conway, Lounsbury
413 Advanced Scene Construction (2, maximum 4)	Lounsbury
414 Applied Scene Design (2, maximum 4)	Conway
415 Costume Projects (2, maximum 4)	Crider
416 History of Masks and Mask Making (2)	Davis
417 History of Wigs and Wigmaking (2)	Crider
418 Scene Painting (2, maximum 4)	Davis
419 Advanced Stage Lighting (2)	Lounsbury
421, 422 Advanced Acting (3,3)	Harrington
423 Acting Projects (2)	Staff
426 High School Play Direction (3)	Gray, Harrington
431 Advanced Puppetry (2)	Valentinetti
432 Applied Puppetry (2, maximum 6)	Valentinetti
434 Children's Theater (3) For nonmajors only.	Carr
435 Children's Theater Directing (2)	Carr
435L Children's Theater Directing Laboratory (1)	Carr
436 Children's Theater Production (3)	Carr
437 Creative Dramatics With Children (3) For nonmajors only.	Haaga, Siks
438 Creative Dramatics (2)	Haaga, Siks
438L Creative Dramatics Laboratory (1)	Haaga, Siks
439 Workshop in Creative Dramatics (3)	Haaga, Siks
440 History and Aesthetics of the Motion Picture (3)	Galstaun
441 History of World Theater and Drama: Classic and Oriental (5)	Conway, Hughes
442 History of World Theater and Drama: Medieval and Renaissance (5)	Conway, Hughes
443 History of World Theater and Drama: Modern (5)	Conway, Hughes
445 Playwrighting (3, maximum 9)	Hughes
461 Theory and Fundamentals of Musical Comedy (2)	Staff
462 Musical Comedy Direction (3)	Staff
479 Special Studies (1-5, maximum 5)	Staff
481 Theory and Fundamentals of Directing (2)	Harrington
481L Directing Laboratory (1)	Harrington
482 Projects in Directing (2)	Harrington
497 Theater Organization and Management (2)	Hughes
500 Seminar in Production (3) Critical discussion of the problems and interrelationship of direction, design, costume, staging, and lighting from preliminary through post-production stages of recent productions. Prerequisite, permission.	Conway, Crider, Davis, Harrington, Lounsbury
501 Nature of Graduate Study in Drama (2) Bibliographical resources for dramatic literature; the evaluation and organization of primary and secondary sources; the sources and philosophies of historical and contemporary criticisms.	Harrington

- 504 Advanced Stage Design (3)** **Conway**
Designing for modern and classic plays which offer special production problems. Adaptation of plays, operas, and musicals to small theatres. Analysis of play structure in relation to design requirements. Prerequisites, 404, 414, and permission of instructor.
- 505 Advanced Stage Costume Construction and Design (3)** **Crider**
Practical production experience in the design and construction of costumes and work with costume "stock." Required reading and research using the historic clothing museum collection as an integral part of the course. Prerequisites, 405, 407, 408, and permission of instructor.
- 509 Scenic Projection (3)** **Conway**
Theories and laboratory work with various methods of scenic projection; opportunity for experiment in production. Prerequisite, 409 or permission of instructor.
- 513 Technical Direction (3, maximum 9)** **Lounsbury**
Practical experience for the technician. Student assumes responsibility of technical director for at least one major production. Prerequisites, 403, 413, and permission of instructor. 300 acceptable only by special permission.
- 519 Lighting Research and Development (3, maximum 9)** **Lounsbury**
A practical course in the actual development of new types of spotlights, projectors, or other theatrical lighting equipment. Prerequisites, 409, 419, and permission of instructor.
- 530 Seminar in Children's Drama (5)** **Carr, Haaga, Siks**
Reading, critical discussion and analysis of literature, and scholarly research on formal and informal drama for and with children.
- 551-552-553 Teaching of Acting (2-2-2)** **Harrington**
Theory and practice of teaching acting at the college level. Observation and practice teaching, seminar, required reading, and analysis of theories. Prerequisites, 421, 422, and permission of instructor.
- 581 Advanced Directing (3)** **Harrington**
Preparation and production of a play which presents problems of an advanced nature in its directorial requirements. Rehearsals and seminar integral part of course. Prerequisites, 482 and permission of instructor.
- 600 Research (*)** **Staff**
Prerequisites, permission of adviser and instructor.
- 700 Thesis (*)** **Staff**

ECONOMICS

Executive Officer, J. B. GILLINGHAM, 331 Savery Hall

The Department of Economics offers courses leading to the degrees of Master of Arts and Doctor of Philosophy. Requirements for both advanced degrees include work in the Graduate Core Program of the Department and in some of these fields of specialization: economic theory and the history of economic thought; money, banking, and cycles; government regulation and public utilities; labor economics; public finance; economic history; international trade; economic systems and development; and statistics and econometrics.

A beginning graduate student with a four-year degree, B.A. B.S., etc., and no prior economics or economic theory should expect to take Economics 300 and 301, and such other preliminary work in each field selected as is necessary for him prior to graduate work in that field.

MASTER OF ARTS. Candidates must complete a portion of the Graduate Core Program (to include Economics 501, 502, and one course from among Economics 503, 504, or 481), and two fields, one of which must be in economics. Those who choose two fields in economics will be expected to complete a minimum of 14 credits in 500-level courses in economics (8 in the Graduate Core Program). Those who take a field in a related subject will be expected to take a minimum of 11 credits in 500-level courses in economics (8 in the Graduate Core Program). All candidates must meet the Graduate School's general requirements of 27 credits in graduate course work, in addition to the thesis and language requirements.

Requirements for a minor in economics for a master's degree include a minimum of 8 credits in advanced economics courses (400- and 500-level).

DOCTOR OF PHILOSOPHY. Candidates must complete the Graduate Core Program and three fields, two of which must be in economics. One of the three fields may be economic theory and the history of economic thought, which includes work in economic theory and doctrine not covered in the Graduate Core Program. A

candidate may offer a minor in another department related to his field of major interest, or, with permission of his Supervisory Committee, he may offer a program of selected courses outside of economics as the third field.

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 work offered will include the Graduate Core Program and one field in economics, 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 a portion of the Graduate Core Program (which shall include Economics 501 and 502 and one course from among Economics 503, 504, and 481), and one field in economics. While normally 25 credits in 400- or 500-level courses will be required, candidates with an adequate background may offer less. In any case, a minimum of 11 credits in 500-level courses (8 in the Graduate Core Program) must be offered. Normally one 500-level course will be required in the field of economics.

GRADUATE CORE PROGRAM

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 411 Introduction to the Use of Mathematics in Economy Theory (5) | Staff |
| 481 Economic Statistical Analysis (5) | Staff |
| 501 Micro-Economic Analysis I (4) | Staff |
| Techniques of economic theory; maximizing behavior of individual economic units; analysis of production and demand functions and the resulting pricing of products and productive services; the allocation of resources under partial equilibrium. Relies on formal abstract theorizing and model building. Prerequisites, 300 and 301, or permission. | |
| 502 Macro-Economic Analysis I (4) | Staff |
| Analysis of theories of income, employment, and output under static conditions; quantity theory of money; relation of monetary and "real" theories; stability and instability of income over time; growth of the economy. Prerequisites, 300 and 301, or permission. | |
| 503 Development of Modern Economic Theory (3) | Staff |
| Origins and development of currently received economic theory; neo-classical economics and its critics. | |
| 504 Economic History and Economic Development (3) | Staff |
| Analysis of determinants of long-run economic development; theoretical issues in the long-run supply and efficiency of productive factors; consideration of case studies from economic history in relation to theoretical issues. | |
| 511 Micro-Economic Analysis II (3) | Staff |
| Advanced economics of the firm and of demand theory; linear programming; game theory; aspects of welfare economics; and consideration of current literature and research in micro-economics. Prerequisite, 501. | |
| 512 Macro-Economic Analysis II (3) | Staff |
| Dynamic income theory; consideration of current literature and research in macro-economics. Prerequisite, 502. | |

COURSES

ECONOMIC THEORY AND HISTORY OF ECONOMIC THOUGHT

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|------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 306 Development of Economic Thought (5) | Gordon |
| 404 Advanced Price Analysis (5) | Crutchfield |
| 411 Introduction to the Use of Mathematics in Economic Theory (5) | Staff |
| 503 Development of Modern Economic Theory (3)
(See Graduate Core Program) | Staff |
| 505 Value and Distribution Theory (3) | Mund |
| Systematic review of the theories of value, price, costs, and supply. The capital concept. Income and its functional distribution. | |
| 515 History of Economic Thought (3) | Gordon |
| Marxian, classical, and earlier economic thought. | |

MONEY, BANKING, AND CYCLES

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|-----------------------------------------------|--------------------|
| 320 Money and Banking (5) | Crutchfield |
| 421 Money, Credit, and the Economy (5) | Crutchfield |

- 422 Economic Cycles (5)** Staff
521 Monetary Theory (3) Crutchfield
 Recent developments in monetary theory. Prerequisite, permission.
522 Cycle Theory (3) Staff
 Leading theories of economic cycles, with emphasis upon recent developments. Prerequisite, permission.

GOVERNMENT REGULATION AND PUBLIC UTILITIES

- 330 Government and Business (5)** Mund
432, 433 Economics of Public Utilities (5,5) Hall
530 Public Control of Industry (3) 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 (3) 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.

LABOR ECONOMICS

- 340 Labor in the Economy (5)** Staff
441 Union-Management Relations (5) Gillingham, Hopkins, McCaffree
442 American Labor History (5) Gillingham
443 Labor Market Analysis (5) McCaffree
445 Social Security (5) Hopkins
541 Theory of Trade-Unionism (3) Gillingham
 Prerequisite, permission.
542 Labor Economics (3) Hopkins
 Prerequisite, permission.

PUBLIC FINANCE AND TAXATION

- 350 Public Finance and Taxation I (5)** Ballesteros, Hall
451 Public Finance and Taxation II (5) Hall
550 Public Finance (3) Ballesteros
 Fiscal policy instrumentalities and comparative effects on income and employment; limitations of fiscal policy; review of current literature. Prerequisite, permission.
551 Public Finance (3) Hall
 Special problems in the fields of taxation and public debt; review of current literature. Prerequisite, permission.

ECONOMIC HISTORY

- 460J Economic History of Europe (5)** Morris
 Offered jointly with the Department of History.
462 Development of American Commercial Capitalism (5) North
463 Development of American Industrial Capitalism (5) North
504 Economic History and Economic Development (3) Staff
561 European Economic History (3) Morris
 Emphasis on the period since 1750. Prerequisite, permission.
562 American Economic History (3) North
 Emphasis on the theoretical issues involved in American economic development.

INTERNATIONAL TRADE

- 370 Economic Principles of Foreign Trade (5)** Huber
471 International Economics (5) Staff
472 International Economic Problems (5) Huber
571 International Trade Theory (3) Huber
 Modern developments in national income theory and welfare economics with relation to international trade. Prerequisite, permission.
572 International Economic Theory (3) Staff
 Problems of foreign trade and exchange controls, and international monetary policies. Prerequisite, permission.

ECONOMIC SYSTEMS AND DEVELOPMENT

- 390 Comparative Economic Systems (5)** Worcester
391 Economic Development (5) Staff

495 The Economy of Soviet Russia (5) **Staff**

595 Soviet Economics (3) **Staff**
Analysis of problems of economic measurement, economic development, optimum resource allocation, national income, and planning in the Soviet Union. Prerequisite, permission.

STATISTICS AND ECONOMETRICS

481 Economic Statistical Analysis (5) **Staff**

580 Econometrics (3) **Staff**
Study of empirical significance of economic theory and related methodological problems.

GENERAL

600 Research (*) **Staff**
Prerequisite, permission.

700 Thesis (*) **Staff**

ENGLISH

Executive Officer: ROBERT B. HEILMAN, 115 Parrington Hall

The purpose of graduate work in English is the acquisition of a body of learning and the development of critical skills and standards of judgment. Though having central objectives identical to all, the graduate English program can provide a background for different professional pursuits: some students may look forward to careers as scholars and college teachers; others to positions in the secondary school system; and still others to work in the fields of professional writing, editing, and publishing. The Department of English has sought, therefore, to keep its general requirements for advanced degrees sufficiently broad and flexible to permit the following emphases in courses and dissertations: classification and analysis of literary works in their historical context; theories of criticism, and the analysis and evaluation of literary works; theory and analysis of discourse, with special emphasis on types, structure, and style, and with incidental emphasis on the teaching of composition; linguistic analysis and language processes in Old and Middle English and American English with related work in other languages; projects in imaginative writing, supported by courses in criticism and literary periods and types (for the Master of Arts only).

Programs leading to the degrees of Master of Arts in general literature and Doctor of Philosophy in comparative literature are also offered in this Department.

Each student's program will be planned in consultation with a graduate adviser in the Department and will emphasize his particular interests and abilities.

Candidates for advanced degrees in English must present an undergraduate English major equivalent to that at the University of Washington, which requires 50 quarter credits. All candidates for advanced degrees must complete English 505 in their first quarter of residence.

MASTER OF ARTS. A minimum of 35 credits is required, of which 25 must be in courses numbered 500 or above. Ten credits may be in courses in other departments. A maximum of 5 quarter credits may be transferred from an accredited institution.

The candidate must show a reading knowledge of one foreign language by the time he has fulfilled his course requirements and before he takes the written M.A. examination.

He must pass a written examination on three fields chosen by him in consultation with the Chairman of Graduate Programs.

In the advanced crediting program the candidate must complete 25 credits, not more than 5 of which must be in advanced writing courses, and present, in addition, a piece of original imaginative writing (thesis, 10 credits).

DOCTOR OF PHILOSOPHY. The candidate for the Ph.D. must complete a minimum of 70 credits in course work (of which 55 must be at the 500- or 600-level) before taking his qualifying examination. Fifteen credits may be in approved courses in other departments. English 530 and English 531 are required. The credits that

may be transferred from another institution (not more than 35) are subject to review by the Graduate Studies Committee.

The candidate must show a reading knowledge of two foreign languages (usually Latin or French, and German—though upon approval of the Graduate Studies Committee and the Graduate School he may offer appropriate substitutes).

A General Examination (not given during the Summer Quarter) is based on the assumption that the candidate's reading and study have prepared him for the following: A critical essay of about 5,000 words in a field chosen by the candidate and approved by the Graduate Studies Committee, written during the first three weeks of the quarter in which the candidate takes his examination; a one-day written examination testing the candidate's command of the facts of literary history and the content of English and American literary works; an oral examination which will emphasize two fields other than that of the critical essay.

As soon as possible after he has passed his General Examination, the candidate must submit for the approval of the Graduate Studies Committee a statement of the subject of his dissertation. On the basis of this statement, the Graduate Studies Committee will recommend a dissertation committee to the Dean of the Graduate School. The candidate must pass a Final oral Examination devoted to the dissertation and to the field with which it is concerned.

MINORS IN ENGLISH. The requirement for a minor in English for a master's degree is 20 credits in undergraduate and graduate work combined, plus 10 credits in graduate courses earned in residence.

The requirement for a minor in English for the doctor's degree is 20 credits in undergraduate and graduate work combined, plus 20 credits in graduate courses. At least half the credits must be in courses numbered 500 or above and at least 10 must be earned in residence.

COURSES

361, 362, 363	American Literature (5,5,5)	Staff
367, 368, 369	Seventeenth-Century Literature (5,5,5)	Staff
370, 371, 372	Shakespeare (5,5,5)	Staff
374, 375, 376	Late Nineteenth-Century Literature (5,5,5)	Staff
377, 378, 379	Early Nineteenth-Century Literature (5,5,5)	Staff
380, 381, 382	Old English Language (5,5,5)	Staff
387	English Grammar (3)	Staff
388	Current English Usage (3)	Staff
401	The Popular Ballad (5)	Staff
404	Modern European Literature (5)	Staff
406	Modern English Literature (5)	Staff
410, 411, 412	Advanced Verse Writing (5,5,5)	Staff
413, 414, 415	Types of Contemporary Poetry (5,5,5)	Staff
417	History of the English Language (5)	Staff
424, 425	Types of Dramatic Literature (5,5) (Offered alternate years; offered 1962-63.)	Staff
431, 432	Advanced Factual Writing (5,5)	Staff
437, 438	Advanced Short Story Writing (5,5)	Staff
440, 441	Social Ideas in Literature (5,5) (Offered alternate years; offered 1961-62.)	Staff
447, 448, 449	The English Novel (5,5,5)	Staff
456, 457, 458	Novel Writing (5,5,5)	Staff
466	Modern American Literature (5)	Staff
484, 485	Advanced Writing Conference (3-5, 3-5)	Staff
489	English Prose Style (5)	Staff
505	Graduate English Studies (5)	Stirling, Taylor
507, 508	Literary Criticism (5,5)	Brown, H. Burns, Jones, Winther

509	Methods of Contemporary Criticism (5)	Bostetter, Hall, Jones, A. Stein
510, 511, 512	The Renaissance and Spenser (5,5,5)	Adams, Hamilton, Stirling
513	Shakespeare's Dramatic Contemporaries (5)	Adams
515, 516	Chaucer (5,5)	Fowler
	515: poems; 516: <i>Canterbury Tales</i> .	
517, 518, 519	Shakespeare (5,5,5)	Hamilton, Matchett, Stirling
	517: comedies; 518: tragedies; 519: histories.	
521, 522, 523	Seventeenth-Century Literature (5,5,5)	A. Stein
	521: studies in poetry or prose; 522: Donne; 523: Milton.	
524, 525, 526	American Literature (5, maximum 10) (5, maximum 10) (5, maximum 10)	Eby, Hilen, Phillips
527, 528	Studies in Medieval Literature (5,5)	Fowler
	527: poetry; 528: Arthurian romance.	
530	The English Language (5)	Person, Reed
	An historical and descriptive survey.	
531	Introductory Reading in Old English (5)	Person
532	Advanced Reading in Old English (5)	Person
533	Foundations of American English (3)	Reed
	History and present state of American English.	
534	American English Dialectology (3)	Reed
	Research methods, history, and analysis.	
538, 539, 540	Early Nineteenth-Century Literature (5,5,5)	Bostetter, Zillman
541, 542, 543	Victorian Literature (5, maximum 10) (5, maximum 10) (5, maximum 10)	Brown, W. Burns, Korg, Winther
544, 545, 546	Eighteenth-Century Literature (5,5,5)	Cornu, Hoover, Taylor
547	Rhetoric (5)	Perrin
548	Twentieth-Century Literature (5)	Hall
553	Current Rhetorical Theory (5)	Perrin
586	Graduate Writing Conference (5)	Harris, Redford, Wagoner
599	Special Studies in Literature (5, maximum 15)	Staff
600	Research (*)	Staff
700	Thesis (*)	Staff

FAR EASTERN AND RUSSIAN INSTITUTE

Director: GEORGE E. TAYLOR, 406 Thomson Hall

The Far Eastern and Russian Institute administers programs of undergraduate and graduate studies and research on Russia, China, Japan, Inner Asia, and the Far East in general. It is closely associated with the Department of Far Eastern and Slavic Languages and Literature, through which Far Eastern and Slavic studies in the humanities are organized (see page 100).

The Institute itself does not grant degrees. It arranges the programs in Far Eastern and Russian studies for the Bachelor of Arts and Master of Arts degrees given through the Department of Far Eastern and Slavic Languages and Literature. That Department has programs of study leading to the Doctor of Philosophy degree in Far Eastern and Slavic Languages and Literature. Graduate degrees in the social sciences (with Far Eastern and Russian emphasis) are sponsored by the Institute in cooperation with the Departments of Anthropology, Economics, Geography, History, Political Science, and others. In the joint programs leading to the advanced degree in these departments, graduate students receive training in their respective disciplines which they apply to their study of the Far East or Russia. These joint programs are described in the curricular announcements of the respective departments.

The Institute sponsors research projects in the following fields: Modern China, Inner Asia (Tibet, Mongolia, Turkestan), Modern Japan, Russia, and Eastern Europe. Each of these projects has its own research colloquium, composed of faculty from various disciplines.

543	Seminar on Russia in Asia (3)	Staff
	Selected topics on relations of Russia and the Soviet Union with Asia. (Offered alternate years; offered 1962-63.) Prerequisite, permission.	
545J	Seminar on Japanese Government and Diplomacy (3, maximum 6)	Maki
	Offered jointly with the Department of Political Science.	
549J	Japanese History (3-6)	Butow
	Field course in Japanese history. Offered jointly with the Department of History. Prerequisite, permission.	

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 number of research fellowships which are given to especially qualified graduate students.

- 550J-551J-552J Seminar in Japanese History (3-6)-(3-6)-(3-6)** Butow
Offered jointly with the Department of History. Prerequisite, permission.
- 553J Analysis of Linguistic Structures (3)** Jacobs, Li
Offered jointly with the Department of Anthropology.
- 598 Inner Asia Research Colloquium (5, maximum 15)** Chang, Hurvitz, Li, Poppe, Wylio, Staff
- 599 Modern China Research Colloquium (5, maximum 15)** Hsiao, Lo, Michael, Shih, Taylor, Wilhelm, Staff
- A research seminar dealing with various aspects of Chinese society, modern and contemporary. Prerequisite, permission.
- 600 Research (*)** Staff
Prerequisite, permission.
- 700 Thesis (*)** Staff

The following courses may be used for credit toward a Far Eastern major or minor.

- Anthropology 317 Ethnology of Southeast Asia (3)**
- Art 382 Art of India (3)**
- Art 383 Art of China (3)**
- Art 384 Art of Japan and Korea (3)**
- Art 428 Oriental Ceramic Art (2)**
- Economics 495 The Economy of Soviet Russia (5)**
- Economics 595 Soviet Economics (3)**
- Philosophy 428 Chinese Philosophy (5)**
- Philosophy 429 Neo-Confucianism (5)**
Prerequisite, 428 or permission.
- Political Science 344 Chinese Government (5)**
- Political Science 414 Oriental Political Thought (5)**
- Political Science 420 Foreign Relations of the Soviet Union (5)**
- Political Science 429 International Relations in the Far East (5)**
- Political Science 432 American Foreign Policy in the Far East (5)**
- Political Science 441 Political Institutions of the Soviet Union (5)**

FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE

Executive Officer: GEORGE E. TAYLOR, 406 Thomson Hall

The Department of Far Eastern and Slavic Languages and Literature offers courses leading to the degrees of Master of Arts and Doctor of Philosophy. In addition, the Department faculty cooperates in the arrangements for joint degrees (see the Far Eastern and Russian Institute).

Faculty advisers draw up student programs on the basis of individual requirements. Entering graduate students without a substantial amount of undergraduate work on Russia or the Far East are normally expected, in their first year, to take senior level courses (including Far Eastern 310) in the area of their interest. Entering graduate students planning to specialize in language and literature normally devote a major part of their first year to language work.

MASTER OF ARTS. The Department offers courses leading to the Master of Arts degree in the fields of language and literature and in regional studies.

The Master of Arts degree in the fields of language and literature is offered in any language and literature for which the Department is responsible and for which there are staff, curriculum, and library holdings necessary for research on the master's level. A prerequisite for this degree is the ability to do research in the language appropriate to the student's field of interest. In some cases a knowledge of French or German may also be required. In addition to course work and seminars in the appropriate language and literature, students are also expected to take work relating to the history and culture of the area and in the fields of linguistics or comparative literature. General requirements are 45 credits (including a minimum of 12 in seminar work) and a thesis.

- 441 **Tibetan Cultural History: Hegemonic Period (3)** **Wylie**
- 442 **Tibetan Cultural History: Theocratic Period (3)** **Wylie**
- 443 **Chinese Social Institutions (5)** **Hsiao**
(Offered alternate years; offered 1961-62.)
- 444 **Chinese History: Earliest Times to 221 B.C. (5)** **Wilhelm**
(Offered alternate years; offered 1962-63.)
- 445 **Chinese History: 221 B.C. to 906 A.D. (5)** **Wilhelm**
(Offered alternate years; offered 1962-63.)
- 446 **Chinese History: 906 A.D. to 1840 A.D. (5)** **Wilhelm**
(Offered alternate years; offered 1962-63.)
- 447 **Modern Chinese History (5)** **Michael**
- 450 **Survey of Turkic Culture of Central Asia (3)** **Staff**
- 452J **Early Japanese History (5)** **Butow**
Offered jointly with the Department of History.
- 453J **Modern Japanese History (5)** **Butow**
Offered jointly with the Department of History.
- 456J **Diplomatic History of the Far East (5)** **Butow**
Offered jointly with the Department of History.
- 482J **History of India: Earliest Times to 647 A.D. (5)** **Staff**
Offered jointly with the Department of History.
- 483J **History of India: 647 to 1525 (5)** **Staff**
Offered jointly with the Department of History.
- 484J **History of India: 1525 to the Present (5)** **Staff**
Offered jointly with the Department of History.
- 504J **Research Seminar: Japan (3, maximum 6)** **Kakiuchi**
Geography. Offered jointly with the Department of Geography.
- 505J **Research Seminar: China and Northeast Asia (3, maximum 6)** **Murphey**
Geography. Offered jointly with the Department of Geography.
- 506J **Research Seminar: Southeast Asia (3, maximum 6)** **Earle**
Geography. Offered jointly with the Department of Geography.
- 507J **Research Seminar: Soviet Union (3, maximum 6)** **Jackson**
Geography. Offered jointly with the Department of Geography.
- 519J **Seminar on Asia (3, maximum 6)** **Staff**
The large cultural regions of the continent are studied in succession, with special reference to anthropological problems. (Offered jointly, in alternate years, with the Department of Anthropology; offered 1962-63.)
- 520J **Seminar on the Foreign Policy of the Soviet Union (3)** **Reshetar**
Offered jointly with the Department of Political Science. Prerequisite, permission.
- 521, 522, 523 **Seminar on Modern Asian History (3,3,3)** **Staff**
- 525, 526 **Seminar on Far Eastern Diplomacy (3,3)** **Williston**
- 530, 531 **Seminar on China (3,3)** **Hsiao, Wilhelm**
- 533 **Seminar on Chinese Society (4)** **Staff**
Institutional analysis of representative periods and key aspects of Chinese society. (Offered when demand is sufficient.)
- 534J **Modern European History: Russia (3-6)** **Treadgold**
Offered jointly with the Department of History.
- 535J-536J-537J **Seminar in Russian History (3-6)-(3-6)-(3-6)** **Treadgold**
Seminar in modern Russian history. Offered jointly with the Department of History. Prerequisites, reading knowledge of Russian and permission.
- 538 **Seminar on Modern China (3)** **Michael**
Studies of problems in Chinese government, politics, ideology, and social and economic issues from 1911 to the present.
- 541J **The Soviet Political System (4)** **Reshetar**
Critical appraisal of the principal research methods, theories, and types of literature dealing with the government and politics of the Soviet Union. Offered jointly with the Department of Political Science. Prerequisite, permission.
- 542J **Personality Patterns in Japanese Culture (3)** **Staff**
The nature and content of Japanese social life as it bears upon Japanese character. Offered jointly with the Department of Anthropology. Prerequisite, permission.
- 543 **Seminar on Russia in Asia (3)** **Staff**
Selected topics on relations of Russia and the Soviet Union with Asia. (Offered alternate years; offered 1962-63.) Prerequisite, permission.
- 545J **Seminar on Japanese Government and Diplomacy (3, maximum 6)** **Maki**
Offered jointly with the Department of Political Science.
- 549J **Japanese History (3-6)** **Butow**
Field course in Japanese history. Offered jointly with the Department of History. Prerequisite, permission.

- 550J-551J-552J Seminar in Japanese History (3-6)-(3-6)-(3-6)** Butow
Offered jointly with the Department of History. Prerequisite, permission.
- 553J Analysis of Linguistic Structures (3)** Jacobs, Li
Offered jointly with the Department of Anthropology.
- 598 Inner Asia Research Colloquium (5, maximum 15)** Chang, Hurvitz, Li, Poppe, Wylie, Staff
- 599 Modern China Research Colloquium (5, maximum 15)** Hsiao, Lo, Michael, Shih, Taylor, Wilhelm, Staff
A research seminar dealing with various aspects of Chinese society, modern and contemporary. Prerequisite, permission.
- 600 Research (*)** Staff
Prerequisite, permission.
- 700 Thesis (*)** Staff

The following courses may be used for credit toward a Far Eastern major or minor.

- Anthropology 317 Ethnology of Southeast Asia (3)**
- Art 382 Art of India (3)**
- Art 383 Art of China (3)**
- Art 384 Art of Japan and Korea (3)**
- Art 428 Oriental Ceramic Art (2)**
- Economics 495 The Economy of Soviet Russia (5)**
- Economics 595 Soviet Economics (3)**
- Philosophy 428 Chinese Philosophy (5)**
- Philosophy 429 Neo-Confucianism (5)**
Prerequisite, 428 or permission.
- Political Science 344 Chinese Government (5)**
- Political Science 414 Oriental Political Thought (5)**
- Political Science 420 Foreign Relations of the Soviet Union (5)**
- Political Science 429 International Relations in the Far East (5)**
- Political Science 432 American Foreign Policy in the Far East (5)**
- Political Science 441 Political Institutions of the Soviet Union (5)**

FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE

Executive Officer: GEORGE E. TAYLOR, 406 Thomson Hall

The Department of Far Eastern and Slavic Languages and Literature offers courses leading to the degrees of Master of Arts and Doctor of Philosophy. In addition, the Department faculty cooperates in the arrangements for joint degrees (see the Far Eastern and Russian Institute).

Faculty advisers draw up student programs on the basis of individual requirements. Entering graduate students without a substantial amount of undergraduate work on Russia or the Far East are normally expected, in their first year, to take senior level courses (including Far Eastern 310) in the area of their interest. Entering graduate students planning to specialize in language and literature normally devote a major part of their first year to language work.

MASTER OF ARTS. The Department offers courses leading to the Master of Arts degree in the fields of language and literature and in regional studies.

The Master of Arts degree in the fields of language and literature is offered in any language and literature for which the Department is responsible and for which there are staff, curriculum, and library holdings necessary for research on the master's level. A prerequisite for this degree is the ability to do research in the language appropriate to the student's field of interest. In some cases a knowledge of French or German may also be required. In addition to course work and seminars in the appropriate language and literature, students are also expected to take work relating to the history and culture of the area and in the fields of linguistics or comparative literature. General requirements are 45 credits (including a minimum of 12 in seminar work) and a thesis.

The Master of Arts degree in the area of regional studies is offered with the support of the Far Eastern and Russian Institute and the various cooperating Departments. Students taking this degree concentrate on the area of their choice (either in the Far East or Russia) and on one discipline, but their programs are normally arranged with supporting course work in other disciplines as they deal with this area. Disciplines in which such course work is available are anthropology, economics, geography, history, linguistics, philosophy, literature, and political science. For regional studies, a working knowledge of the appropriate language is required. General requirements are a minimum of 45 credits (including at least 12 in seminar work) and a thesis.

In some cases, e.g. high school teachers, it is possible to arrange a Master of Arts degree in Far Eastern regional studies for students without a working knowledge of a Far Eastern language. Strong discipline training is required.

DOCTOR OF PHILOSOPHY. The Department of Far Eastern and Slavic Languages and Literature offers a program leading to the Doctor of Philosophy degree with a specialization in any of the languages or literatures for which the Department is responsible and for which there are available the staff, curriculum, and library holdings necessary for research on the doctoral level.

Students interested in working for this degree must have, as a minimum requirement for beginning their programs, the equivalent of a strong undergraduate major in any language or literature or in Far Eastern or Russian area studies.

Each candidate must present a program covering four fields of study. The fields may be in a single language and literature for which the Department is responsible, or in a combination of such languages and literatures, or in a combination of three fields within the Department plus a field in either linguistics or comparative literature.

The Department recommends that all students have some familiarity with a second Far Eastern or Slavic language and culture as well as work in linguistics or general and comparative literature.

All candidates are expected to be familiar with the history, society, and culture of the country in whose language or literature they are specializing. In cases where it would be appropriate, a field may be approved in another discipline dealing with the area involved.

COURSES

CHINESE

300 Chinese, Non-Intensive F (5)	Hung
301 Chinese Language, Intensive EF (10)	Li, Hung
302, 303, 304 Intermediate Modern Chinese (5,5,5)	Yen
405, 406, 407 Classical and Documentary Chinese (5,5,5)	Reifler
408 Chinese Reference Works and Bibliography (3) (Offered alternate years; offered 1962-63.)	Wilhelm
430 Readings in Chinese Philosophical Texts (5) Prerequisite, permission.	Shih
455, 456, 457 Chinese Literature (5,5,5) (Offered alternate years; offered 1961-62.)	Shih
460 Advanced Modern Chinese (5, maximum 15) Prerequisite, 304.	Yen
522, 523, 524 Readings in Classical Chinese (5,5,5)	Reifler
525 Structure of Chinese Characters (5)	Reifler
526, 527, 528 Studies in Chinese Literature (5,5,5) 526: literature of the Chou and Han periods. 527: literature from Wei to T'ang times. 528: literature since the end of T'ang. (Offered alternate years; offered 1961-62.)	Cheng
529 Chinese Phonology (3)	Li
530 Studies in Chinese Prose (5) (Offered alternate years; offered 1961-62.)	Cheng
531 Studies in Chinese Poetry (5) (Offered alternate years; offered 1962-63.)	Shih

- 532 Studies in Chinese Drama and Novel (5)** Shih
(Offered alternate years; offered 1962-63.)
- 535 Chinese Epigraphy (3, maximum 6)** Reifler
Introduction to texts in ancient character forms; selected readings of inscriptions on bronzes and oracle bones.
- 536, 537, 538 Readings in Chinese Political Thought and Institutions (5,5,5)** Hsiao
For students wishing to develop proficiency in using Chinese source material. Different texts each quarter, selected primarily on basis of students' needs. (Offered alternate years; offered 1962-63.) Prerequisite, permission.
- 550 Seminar on Chinese Literature (4, maximum 8)** Shih
- 555 Seminar on Chinese Linguistics (3, maximum 9)** 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.
- 560 Modern Chinese Readings (5, maximum 15)** Chang
Selections from learned journals in intermingled style. (Colloquial and literary Chinese.) Prerequisite, 304.
- 600 Research (*)** Staff
Prerequisite, permission.
- 700 Thesis (*)** Staff

JAPANESE

- 301, 302, 303 Second-year Reading Japanese (5,5,5)** Hurvitz
- 401, 402, 403 Advanced Reading Japanese (5,5,5)** Hurvitz
- 460 Readings in Modern Japanese Literature (3-5, maximum 15)** McKinnon
(Offered alternate years; offered 1962-63.)
- 522, 523, 524 Readings in Documentary Japanese (5,5,5)** McKinnon
(Offered when demand is sufficient.) Prerequisite, permission.
- 550 Readings in Classical Japanese Literature (3-5, maximum 15)** McKinnon
Readings in prose, poetry, and drama, antiquity to nineteenth century. (Offered alternate years, offered 1961-62.) Prerequisite, permission.
- 570 Seminar in Japanese Literature (3-5, maximum 15)** McKinnon
Close examination of selected periods, writers or genres, including problems of literary criticism in Japanese literature. (Offered alternate years; offered 1962-63.) Prerequisite, 15 credits in 460, or 550.
- 600 Research (*)** Hurvitz, McKinnon
Prerequisite, permission.
- 700 Thesis (*)**

KOREAN

- 302-303 Elementary Spoken Korean Language (5-5)** Suh
- 304 Intermediate Korean (5)** Suh
- 405 Korean Grammar (5)** Suh
- 406, 407 Advanced Korean Reading (5,5)** Suh
- 501, 502, 503 Seminar in Korean (3-5, 3-5, 3-5)** Suh

MONGOLIAN

- 302 Introduction to Mongolian (5)** Poppe
(Offered alternate years; offered 1962-63.)
- 303 Modern Mongolian Literary Language (5)** Poppe
(Offered alternate years; offered 1962-63.)
- 304 Colloquial Mongolian (5)** Poppe
(Offered alternate years; offered 1962-63.)
- 305 Classical Mongolian (5)** Poppe
(Offered alternate years; offered 1962-63.)
- 521 Ancient Mongol: hPhagspa Script (3)** Poppe
Script and grammar of hPhagspa texts; reading and translation. (Offered alternate years; offered 1961-62.) Prerequisite, 304.
- 522 Mongol: Ancient Texts (3)** Poppe
Grammar and reading of Mongol texts of the fourteenth to seventeenth centuries. Historical texts are emphasized. (Offered alternate years; offered 1961-62.)
- 580 Comparative Grammar of the Altaic Languages (3)** Poppe
Comparative phonology and morphology of Mongol and Turkic and other related languages. (Offered alternate years; offered 1961-62.)
- 600 Research (*)** Poppe
Prerequisite, permission.

POLISH

- 401, 402 Phonetics, Grammar, and Vocabulary (5,5) **Staff**
 411 Readings in Polish (5) **Staff**

RUSSIAN

- 311, 312, 313 Intermediate Russian A, B, C (5,5,5) **Novikow, Staff**
 330 Scientific Russian Readings (5, maximum 10) **Gorshevsky**
 341 Social Science Russian (5) **Pahn**
 342 Social Science Russian Readings (5) **Pahn**
 345 Social Science Russian, Intensive (10) **Staff**
 (Offered Summer Quarter only.)
 361, 362, 363 Russian Readings A, B, C (3,3,3) **Gribanovsky**
 451, 452 Advanced Russian Grammar and Composition (5,5) **Erlich, Staff**
 455 History of Russian Standard Spoken Language (5) **Staff**
 465 Modern Russian Poetry (3) **Erlich**
 (Offered alternate years; offered 1961-62.)
 468 Contemporary Russian Literary Criticism (3) **Erlich**
 (Offered alternate years; offered 1962-63.)
 475 Russian Literature and Area (3) **Staff**
 (Offered Summer Quarter only.)
 551 Advanced Russian Syntax (3) **Poppe**
 A detailed structural analysis of the sentence types in the Russian literary language with emphasis on grammatical categories and word classes. (Offered alternate years; offered 1962-63.)
 557 Seminar in Russian Language (3) **Staff**
 Examination and discussion of Russian masterpieces.
 560 Studies in Early Russian Literature (3) **Staff**
 (Offered alternate years; offered 1961-62.)
 565 Russian Eighteenth-Century Literature (5) **Staff**
 A discussion of representative works of Russian poetry, prose, fiction, and criticism in the formative period in the history of Russian letters. Prerequisite, 320 or permission.
 566 Pushkin (4) **Erlich**
 Analysis of the works of Alexander Pushkin. (Offered alternate years; offered 1962-63.)
 567 Studies in Russian Prose (4) **Erlich, Staff**
 Close analysis of representative works of the nineteenth-century Russian prose fiction in original texts. (Offered alternate years; offered 1961-62.)
 569 Russian Oral Epic Tradition (3) **Erlich**
 Introduction to Russian folklore. (Offered every three years; offered 1962-63.)
 590 Seminar in Russian Literary History (4) **Erlich**
 Close examination of selected periods or figures in Russian literature. (Offered alternate years; offered 1961-62.) Prerequisite, 10 graduate credits in Russian literature.
 600 Research (*) **Staff**
 Prerequisite, permission.
 700 Thesis (*) **Staff**

SERBO-CROATIAN

- 401-402 Phonetics, Grammar, and Vocabulary (5-5) **Staff**
 411 Reading in Serbo-Croatian (5) **Staff**

SLAVIC

- 450 Introduction to Slavic Philology (3) **Staff**
 552 Phonetic Structure of Slavic Languages (3) **Staff**
 A detailed analysis of the phonological evolution of the various Slavic languages from the earliest period of the Common Slavic language. (Offered alternate years; offered 1961-62.)
 553 Morphological Features of Slavic Languages (3) **Poppe, Staff**
 A survey of the development of the various grammatical forms of the Slavic languages from the Common Slavic period. (Offered alternate years; offered 1961-62.)
 555 Old Church Slavonic (3) **Staff**
 The rise and development of the earliest Slavic literary language and a descriptive study of its orthography, phonology, morphology, and syntax. (Offered alternate years; offered 1962-63.)
 556 Readings in Old Church Slavonic (3) **Staff**
 Reading and grammatical interpretation of a selected group of Old Church Slavonic texts. (Offered alternate years; offered 1962-63.)

TIBETAN

- 401-402-403 Colloquial Tibetan (3-3-3)** **Wylie**
404-405-406 Literary Tibetan (3-3-3) **Wylie**
414 Readings in Modern Tibetan (3, maximum 9) **Wylie**
500 Advanced Literary Tibetan (3, maximum 9) **Wylie**
 Reading of Tibetan manuscripts and xylographs with emphasis on biographical, historical, and geographic material. Prerequisites, 406 and permission.
502, 503, 504 Comparative Study of Chinese, Mongolian, Tibetan, and Sanskrit Texts (5,5,5) **Staff**
534 Buddhistic Tibetan (2, maximum 6) **Chang**
 Reading of Tibetan translations of Buddhist literature. Knowledge of Sanskrit desirable but not required. Prerequisites, 406 and permission.
544 Ancient Tibetan Documents (2, maximum 6) **Chang**
 Reading of selections from ancient documents, treaties, edicts, and annals. Knowledge of Chinese desirable but not required. Prerequisites, 406 and permission.
600 Research (*) **Staff**
 Prerequisite, permission.

TURKIC

- 301, 302, 303 Introduction to Central Asian Turkic (3,3,3)** **Staff**
501, 502 Comparative Grammar of Central Asian Turkic (3,3) **Staff**
 Comparative phonology, morphology, and syntax of the Turkic languages (Uighur, Kazakh, Tartar, Kirghiz, Uzbek, Eastern Turki). History of the Turkic languages. Prerequisites, Turkic 303, German, and Russian.
503 Seminar on Central Asian Turkic Literature (3) **Staff**
 Prerequisites, Turkic 502, German, and Russian.

LITERATURE COURSES IN ENGLISH

- Chinese 320 Chinese Literature in English (5)** **Shih**
 (Offered alternate years, offered 1962-63.)
Japanese 420 Japanese Literary Tradition (5) **McKinnon**
Japanese 421 Modern Japanese Literature in English (5) **McKinnon**
Japanese 422 Studies in Japanese Poetry in English (5) **McKinnon**
 (Offered alternate years, offered 1962-63.)
Japanese 423 Studies in Japanese Drama in English (5) **McKinnon**
 (Offered alternate years; offered 1961-62.)
Korean 320 Korean Literature in English (5) **Suh**
Mongolian 320 Mongolian Literature in English (5) **Poppe**
 (Offered alternate years; offered 1961-62.)
Russian 320 Russian Literature in English (5) **Staff**
Russian 421 Contemporary Russian Literature in English (5) **Erlich**
Russian 422 Russian Plays in English (5) **Staff**
Russian 426 The Russian Novel in English (5) **Erlich**
 Gogol, Goncharov, Turgeniev
Russian 427 The Russian Novel in English (5) **Erlich**
 Dostoevski and Tolstoy
Slavic 320 Polish Literature in English (5) **Erlich**
 (Offered alternate years; offered 1962-63.)

GENERAL AND COMPARATIVE LITERATURE

Chairman: FRANK W. JONES, 119A Parrington Hall

MASTER OF ARTS. Candidates for the degree of Master of Arts with a major in General Literature should ordinarily present a Bachelor of Arts in English, in a foreign language, or in General Literature.

Course requirements are 35 credits (of which 25 must be in courses numbered 500 or above): 10 credits in General or Comparative Literature (including Comparative Literature 510 or 511) and 25 credits in two or more literatures or related fields. With the permission of the Chairman of the Program and the departments concerned, a thesis may be presented for 10 of the 35 credits.

By the time the candidate has fulfilled the course requirements, and before he takes the M.A. examination, he must pass the graduate reading tests in at least two of the languages included in the program: Chinese, Danish, French, German, Greek, Italian, Japanese, Korean, Latin, Norwegian, Russian, Spanish, and Swedish. The candidate's native language may not be one of those by which he meets this requirement.

The candidate must pass a written examination consisting of questions on two or more literatures and on the relations between them.

DOCTOR OF PHILOSOPHY. The degree of Doctor of Philosophy with a major in Comparative Literature is awarded through the candidate's major department and his Supervisory Committee. The following departments are authorized to sponsor candidates: English, Classics, Far Eastern and Slavic Languages and Literature, Germanic Languages and Literature, and Romance Languages and Literature.

Before taking his qualifying examination, the candidate must complete a minimum of 70 credits in graduate course work. These must include Comparative Literature 510 and 511; 35 credits in the candidate's major literature (including English 505 if the major literature is English); and 25 credits in his minor field or fields. The major literature must be Chinese, English, French, German, Greek, Italian, Latin, Japanese, Russian, or Spanish. The minor field may be in any of the languages listed under the M.A. requirements.

The candidate must know at least two languages in the program sufficiently well for graduate study of their literatures. The languages are those listed under the M.A. requirements.

The qualifying examination is to be taken within three quarters (Summer Quarter excepted) after completing course work. It is based on the assumption that the reading and study of the candidate have prepared him for the following: a critical essay of about 5,000 words on a comparative topic; a written examination testing the candidate's knowledge of a genre as represented in the major and minor literatures; an oral examination in the major and minor fields.

The candidate's major department will recommend a dissertation committee to the Dean of the Graduate School. The candidate may request any member of the graduate faculty in his major or minor field to supervise his dissertation. The supervisor will not be a member of the dissertation committee.

A final oral examination on the dissertation, and on the field or fields with which it is concerned, must be completed at least two weeks before the end of the quarter in which the degree is to be granted.

COURSES

450, 451 Romanticism and the Nineteenth Century in Europe (5,5)	Staff
480 The Symbolist Movement (5)	Staff
510, 511 Studies in General and Comparative Literature (5, maximum 10) (5, maximum 10)	Staff
700 Thesis (*)	Staff

LITERATURE COURSES IN OTHER DEPARTMENTS

CLASSICS

- 426 Greek and Roman Epic in English (3)
- 427 Greek and Roman Drama in English (3)
- 440 Greek and Roman Critics in English (3)

FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE

- Russian 421 Contemporary Russian Literature in English (5)
- Russian 422 Russian Plays in English (5)
- Russian 423 The Russian Novel in English (5)

Russian 424 The Russian Symbolists in English (3)

Russian 425 Dostoevski in English (5)

GERMANIC LANGUAGES AND LITERATURE

462 Goethe in English (3)

464 Thomas Mann in English (3)

ROMANCE LANGUAGES AND LITERATURE

French 418 Literature of the Enlightenment in English (3)

Italian 481, 482 Dante in English (2,2)

Romance 460 The Literature of the Renaissance in English (5)

SCANDINAVIAN LANGUAGES AND LITERATURE

480 Ibsen and His Major Plays in English (2)

481 Strindberg and His Major Plays in English (2)

GENETICS

Executive Officer: HERSCHEL L. ROMAN, 340 Johnson Hall

The Department of Genetics offers a graduate program leading to the degrees of Master of Science and Doctor of Philosophy. In addition to the courses given by the Department, the program includes a selection of courses in other areas, particularly in biochemistry, microbiology, botany, zoology, and statistics. Candidates for the degrees may specialize in microbial genetics or in human genetics. Clinical facilities for the study of human genetics are made available by the Department's affiliation with the Division of Medical Genetics in the Department of Medicine.

COURSES

BIOLOGY

351 Human Genetics (3) Gartler

451 Genetics (3) Roman

451L Genetics Laboratory (2) Staff
Must be accompanied by 451.

452 Cytogenetics (3) Roman

452L Cytogenetics Laboratory (2) Hawthorne
Must be accompanied by 452.

453 Topics in Genetics (2, maximum 6) Staff

GENETICS

520 Seminar (1) Staff
Prerequisite, permission.

551 Genetics of Microorganisms (3) Stadler
The contributions of research with microorganisms are discussed in relation to basic genetic concepts. Prerequisite, Biology 451 or permission.

552 Genetics of Microorganisms Laboratory (3) Stadler
The student learns how to use a variety of microorganisms as research tools for problems in genetics. Prerequisite, 551 or permission.

600 Research (*) Staff

700 Thesis (*) Staff

GEOGRAPHY

Executive Officer: G. DONALD HUDSON, 406 Smith Hall

Programs of study leading to the degrees of Master of Arts and Doctor of Philosophy in geography are developed by the Department and the student, taking into account the student's preparation, professional objectives, and professional interests. These programs are largely restricted to four fields selected by the Department for special emphasis: economic geography, the Far East, the Soviet Union, and cartography. The student considering the Department for professional training should be certain, or at least be able to predict, that his interests will center on one of these fields. If he enters the Department, he must be prepared to work within the framework of the specialist or be ready to equip himself to do so. This may mean, for example, additional preparatory work in geography, a working knowledge of Russian or a Far Eastern language, competence in statistical methodology, or special studies in allied social sciences.

The departmental library serves as a reference-research collection of selected recent and basic sources in geography and allied fields. It contains approximately 4,000 titles, subscribes to the leading American and foreign journals, and has such standard source materials as publications of the United States Bureau of the Census. The map library, containing approximately 125,000 sheets, follows a plan of development similar to that of the departmental library.

Courses and seminars pertinent to graduate study in the Department are offered in other departments of the College of Arts and Sciences and such professional schools as the Colleges of Business Administration and Engineering. With regard to the Far East and the Soviet Union, opportunities for studies supplementary to geography are unique. The Far Eastern and Russian Institute, primarily a research organization, offers specialized studies largely in fields of history and government and provides excellent specialized library sources. Faculty research projects and seminars include the participation of faculty and graduates in the Department of Geography. Languages taught in the Department of Far Eastern and Slavic Languages and Literature include: Chinese, Japanese, Korean, Mongolian, Polish, Tibetan, Turkic, and Russian. Interdepartmental relationships are also maintained with three additional departments that offer advanced studies in the Far East and Soviet field. These are the Departments of Economics, History, and Political Science.

COURSES

SYSTEMATIC GEOGRAPHY

325 Historical Geography of America (3)	Martin
370 Conservation of Natural Resources (5)	Thomas
375 Political Geography (5)	Jackson
440J Manufacturing (3 or 5) Lectures (3 credits); independent study (2 additional credits), optional with permission of instructor. Offered jointly with the Department of Economics.	Thomas
442 Regional Specialization (3 or 5) Lectures (3 credits); independent study (2 additional credits), optional with permission of instructor. Prerequisite, 441.	Morrill
444 Geography of Water Resources (3 or 5) Lectures (3 credits); independent study (2 additional credits), optional with permission of instructor.	Marts
448 Geography of Transportation (5)	Ullman
477 Urban Geography (5)	Ullman
510 Research Seminar: Settlement and Urban Geography (3, maximum 9)	Ullman
530 Research Seminar: The Economic Geographer and Lesser-Developed Areas (3, maximum 6)	Thomas
537 Research Seminar: Quantitative Methods in Economic Geography (3, maximum 6)	Morrill
538 Research Seminar: Geography of Transportation (3, maximum 6)	Ullman

539	Research Seminar: Utilization of Water Resources (3, maximum 6)	Marts
540	Research Seminar: Geography of Manufacturing (3, maximum 6)	Thomas
575	Research Seminar: Political Geography (3, maximum 6)	Jackson

REGIONAL GEOGRAPHY

301	Anglo-America (5)	Staff
302	The Pacific Northwest (3)	Staff
303J	Monsoon Asia (5) Offered jointly with the Far Eastern and Russian Institute.	Earle, Kakiuchi
304	Europe (5)	Martin
305	Latin America (5)	Heath
306	Africa (5)	Staff
307	Australia and New Zealand (5)	Earle
332J	Islands of the Pacific (3) Offered jointly with the Far Eastern and Russian Institute.	Earle
333J	The Soviet Union (5) Offered jointly with the Far Eastern and Russian Institute.	Jackson
402	United States (5)	Martin
412J	South Asia (5) Offered jointly with the Far Eastern and Russian Institute.	Murphey
413J	East Asia (5) Offered jointly with the Far Eastern and Russian Institute.	Staff
433J	Problems in the Geography of the Soviet Union (3 or 5) Lectures (3 credits); independent study (2 additional credits), optional with permission of instructor. Offered jointly with the Far Eastern and Russian Institute. Prerequisite, 333J or permission.	Jackson
434J	Problems in the Geography of Southeast Asia (5) Offered jointly with the Far Eastern and Russian Institute.	Earle
435J	Problems in the Geography of China (5) Offered jointly with the Far Eastern and Russian Institute.	Murphey
437J	Problems in the Geography of Japan (5) Offered jointly with the Far Eastern and Russian Institute.	Kakiuchi
504J	Research Seminar: Japan (3, maximum 6) Offered jointly with the Far Eastern and Russian Institute.	Kakiuchi
505J	Research Seminar: China and Northeast Asia (3, maximum 6) Offered jointly with the Far Eastern and Russian Institute.	Murphey
506J	Research Seminar: Southeast Asia (3, maximum 6) Offered jointly with the Far Eastern and Russian Institute.	Earle
507J	Research Seminar: Soviet Union (3, maximum 6) Offered jointly with the Far Eastern and Russian Institute.	Jackson
508	Research Seminar: Anglo-America (3, maximum 6)	Hudson, Marts

CARTOGRAPHY

360	Principles of Cartography (5)	Heath, Sherman
361	Experimental Cartography (5) Prerequisite, 360.	Heath, Sherman
363	Aerial Photographs as Source Materials (2) Prerequisite, 360.	Heath, Sherman
425J	Graphic Techniques in the Social Sciences (5) Offered jointly with the Department of Sociology. Prerequisite, Sociology 223 or permission.	Schmid
458	Map Intelligence (3)	Sherman
462	Problems in Map Compilation and Design (5) Prerequisite, 360.	Heath, Sherman
464	Problems in Map Reproduction (3) Prerequisite, 360.	Heath
520	Research Seminar: Cartography (3, maximum 6)	Heath, Sherman

INTRODUCTORY RESEARCH TECHNIQUES

426	Statistical Measurement and Inference (5) Prerequisite, an introductory course in statistics or permission.	Morrill
490	Field Research (6, maximum 12)	Staff

INTRODUCTION TO PROFESSIONAL TRAINING

500 Contemporary Geographic Thought (3)	Staff
501 Geographic Analysis (3)	Morrill
502 Professional Writing in Geography (*, maximum 6)	Staff
503 Source Materials in Geographic Research (3)	Staff

NONTHESIS AND THESIS RESEARCH

600 Research (*)	Staff
700 Thesis (*)	Staff

GEOLOGY

Executive Officer: HOWARD A. COOMBS, 42 Johnson Hall

The Department of Geology offers courses leading to the degrees of Master of Science and Doctor of Philosophy. All candidates for advanced degrees in geology must have completed essentially the same academic work as outlined in the undergraduate curriculum. Examinations for both the master's and doctor's degree will include subjects from the whole field of geology. All candidates must have an approved field course such as 401, or other field experience which is approved by the department.

MASTER OF SCIENCE. For the M.S. degree 45 credits are required, with a minimum of 36 credits in work other than field geology. Either a thesis or a research paper (Geology 600—5 credits) is required. The language requirement for this degree must be met with either French, German, or Russian.

DOCTOR OF PHILOSOPHY. Candidates must present any two of the following languages, French, German, or Russian, for the language requirement. All Ph.D. candidates must have either an M.S. or an M.A. degree.

COURSES

308 Structural Geology (5)	McKee
310 Geology For Engineers (5)	McKee
320 Sedimentary Petrology (5)	Barksdale
330 General Paleontology (5)	Mallory
344 Field Methods (5)	Barksdale
361 Stratigraphy (5)	Wheeler
401 Field Course (15) (Offered Spring Quarter only.)	Staff
412 Physiography of the United States (5)	Mackin
414 Map Interpretation (5)	Mackin
423 Optical Mineralogy (5)	Vance
424 Petrography and Petrology of Igneous Rocks (5)	Vance
425 Petrography and Petrology of Metamorphic Rocks (5)	Vance
427 Ore Deposits (5)	Ellis
436 Micropaleontology (5) (Offered odd years only.)	Mallory
443 Advanced Structural Geology (5)	Misch
450 Elements of Seismology (5)	Neumann
480 History of Geology (3)	Barksdale
481 Preparation of Geologic Reports and Publications (3)	Coombs
503 Advanced Petrography and Petrology of Sedimentary Rocks (3) Thin section study of sedimentary rocks. (Offered even years only.)	Barksdale
510 Advanced Studies in Physiography (*, maximum 10) Research projects in physiography and glacial geology.	Mackin
515 Fluvial Morphology (*, maximum 5) Advanced study of landforms in humid and arid regions.	Mackin

- 516 Glacial Geology (5)** **Mackin**
Systematic study of glacial landforms and deposits.
- 520 Seminar (*)** **Staff**
- 521 Metamorphic Minerals (5)** **Misch**
Nature and paragenesis of metamorphic minerals; physical, chemical, and geological interpretation of paragenesis. (Offered odd years only.)
- 522 Regional Metamorphism and Granitization (5)** **Misch**
Deformation and crystallization, migmatization, and mobilization. (Offered even years only.)
- 524 Advanced Igneous Petrography and Petrology (3 or 5)** **Vance**
The origin of the igneous rocks with emphasis on the interpretation of textures. (Offered odd years only.)
- 530 Advanced Studies in Paleontology (*)** **Mallory, Wheeler**
Selected work in paleontology. (Offered odd years only.)
- 531 Biostratigraphy (5)** **Mallory**
The data and principles of stratigraphic paleontology and of chronologic biostratigraphy. (Offered even years only.)
- 540 Advanced Studies in Structural Geology (*)** **Misch, McKee**
Selected readings and individual conferences on fundamental problems in structural geology.
- 545 Structure of Europe (5)** **Misch**
Structural evolution and tectonic forms of Europe. (Offered even years only.)
- 546 Structure of Asia and West Pacific Rim (5)** **Misch**
Structural evolution from Central Asia to West Pacific; geotectonic principles. (Offered odd years only.)
- 547 Literature on Structural Geology (3 or 5)** **Misch**
Selected readings and seminars on Cordilleran structures.
- 550 Advanced Studies in Geophysics (*, maximum 9)** **Neumann**
Individual research on specific problems in seismometry and seismic data analysis.
- 560 Advanced Studies in Stratigraphy (*)** **Mallory, Wheeler**
Selected work in biostratigraphy or physical stratigraphy.
- 563 West Coast Cenozoic Stratigraphy (4)** **Mallory**
Lithologic and faunal studies of the West Coast Cenozoic. (Offered even years only.)
- 565 Paleozoic Stratigraphy (4)** **Wheeler**
North American Paleozoic stratigraphy as a basis for interpretation of regional and inter-regional geologic episodes. (Offered even years only.)
- 568 Mesozoic Stratigraphy (4)** **Wheeler**
North American Mesozoic stratigraphy as a basis for interpretation of regional and inter-regional geologic episodes. (Offered odd years only.)
- 570 Advanced Studies in Mineralogy, Petrography, and Petrology (*)** **Coombs, Misch**
Selected readings and individual conferences on fundamental problems regarding the origin and development of minerals and rocks.
- 571 Engineering Geology (3)** **Coombs**
Geologic principles as applied to large engineering projects. Emphasis is on the physical properties of rocks and their relation to contemplated engineering structures.
- 572 Geochemistry (3)** **McKee**
The chemistry of geologic processes and the study of the distribution and migration of elements in minerals and rocks. Prerequisite, graduate standing in geology.
- 580 Advanced Studies in Economic Geology (*)** **Coombs**
Selected readings and individual conferences on the application of geology to deposits of economic significance.
- 600 Research (*)** **Staff**
- 700 Thesis (*)** **Staff**
- 702 Degree Final (0)** **Staff**
Limited to students completing a nonthesis degree program.

GERMANIC LANGUAGES AND LITERATURE

Executive Officer: WILLIAM H. REY, 340 Denny Hall

The Department of Germanic Languages and Literature offers courses leading to the degrees of Master of Arts and Doctor of Philosophy. To register for any graduate course in German, students must receive permission from the Executive Officer of the Department.

MASTER OF ARTS. Candidates must, in addition to fulfilling general requirements of the Graduate School, complete a program of 36 credits. If the student minors in some other department, he may take a minimum of 24 credits in Germanics.

If his entire program lies within the field of Germanics, he must elect 24 credits in modern literature and 12 credits in philology and medieval literature or vice versa.

The M.A. program is designed for three quarters and consists of a compact schedule of courses, which are repeated every year. The courses in the modern field are devoted to Lessing (431), Schiller (438), Goethe (434, 435), Romanticism (515), Nineteenth-Century Drama (416), Nineteenth-Century Prose (417), and Twentieth-Century Literature (518). They are complemented by courses in Middle High German, and Middle High German Literature in the Original (556, 557), Bibliography (501), and Linguistic Analysis of German (405). The candidate must pass a comprehensive written examination covering his main fields of study. In addition, the candidate must submit an acceptable thesis, giving evidence of the mastery of scholarly procedure. For the thesis he will obtain at least 9 credits.

A minor in Germanics for the M.A. degree must consist of a minimum of 12 credits in acceptable courses beyond an undergraduate minor in the field. In no instance, however, may a minor in Germanics for the master's degree be less than a major for the bachelor's degree at the University of Washington.

DOCTOR OF PHILOSOPHY. For a major in Germanics, the student must complete all of the stated requirements of the Graduate School, pursue his studies for at least three graduate years, pass General Examinations on the field, and submit a satisfactory dissertation which demonstrates a mastery of scholarly procedure and is an acceptable contribution to knowledge. The candidate must complete a minimum of 81 credits in course work after admission to the Graduate School (45 credits beyond the M.A.) before taking his General Examinations. If he minors in another department, he may elect a minimum of 30 credits in Germanics. If his entire program lies within the field of Germanics, he must elect 30 credits in modern literature (since 1500), and 15 credits in philology and the older literature, or vice versa. Furthermore, he is expected to earn at least 9 credits in supervised research (600). The General Examinations, which are both written and oral, will not be confined to courses taken at the University or elsewhere, but will endeavor to demonstrate the student's breadth of knowledge, which he has acquired by independent reading and study. His intensive training in areas of special interest and his abilities in critical evaluation will also be tested.

For a minor in Germanics, a minimum of 15 credits is required. In no instance, however, may a minor in Germanics for the doctor's degree be less than the course requirements stated for the master's degree.

COURSES

401, 402, 403	Grammar and Composition (2,2,2)	Staff
404	History of the German Language (5) (Offered 1961-62.)	Meyer
405	Linguistic Analysis of German (3)	Reed
410, 411, 412	Survey of Modern German Literature and Culture (3,3,3)	Staff
416	Nineteenth-Century Drama (3)	Sauerlander
417	Nineteenth-Century Prose (3)	Roy
431	Lessing (3)	Buck
434	Goethe I (3)	Loeb
435	Goethe II (3)	Loeb
438	Schiller (3)	Kahn
497	Studies in German Literature (1-5, maximum 15)	Staff
498	Studies in German Language (1-5, maximum 15)	Staff
500	Methodology (3) (Offered 1961-62.)	Sommerfeld
501	Bibliography (3)	Sommerfeld
502	History of German Criticism (3) (Offered 1962-63.)	Roy

503 Modern Poetry (3) (Offered 1961-62.)	Sommerfeld
515 Romanticism (3)	Immerwahr
518 Twentieth-Century Literature (3)	Rey
520 Seminar in Medieval Literature (3) (Offered 1962-63.)	Hruby
521 Seminar in the Literature of the Reformation and Renaissance (3) (Offered 1961-62.)	Wilkie
522 Seminar in Baroque (3) (Offered 1962-63.)	Sommerfeld
524 Seminar in Eighteenth-Century Literature (3) (Offered 1961-62.)	Staff
525 Seminar in Romanticism (3) (Offered 1961-62.)	Immerwahr
526 Seminar in Nineteenth-Century Drama (3) (Offered 1962-63.)	Sauerlander
527 Seminar in Nineteenth-Century Prose (3) (Offered 1961-62.)	Rey
528 Seminar in Twentieth-Century Literature (3) (Offered 1962-63.)	Rey
544 Seminar in Goethe (3) (Offered 1962-63.)	Loeb
550 Gothic (3) (Offered 1961-62.)	Meyer
552 Old High German (3) (Offered 1961-62.)	Reed
555 Old Saxon (3) (Offered 1962-63.)	Reed
556 Middle High German (3)	Meyer
557 Middle High German Literature in the Original (3)	Hruby
558 Studies in Medieval German Literature (3) (Offered 1961-62.)	Hruby
560 Modern German Dialects (3) (Offered 1962-63.)	Reed
590, 591, 592 Seminar in Literary History (1-5, 1-5, 1-5)	Staff
595, 596, 597 Seminar in Germanic Philology (1-5, 1-5, 1-5)	Staff
600 Research (*)	Staff
700 Thesis (*)	Staff
702 Degree Final (0) Limited to students completing a nonthesis degree program.	Staff

COURSES IN ENGLISH

350 Masterpieces of German Literature in English (3)	Staff
464 Thomas Mann in English (3)	Rey

HISTORY

Acting Executive Officer: W. STULL HOLT, 308 Smith Hall

The Department of History offers courses leading to the degrees of Master of Arts and Doctor of Philosophy. 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 the 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, United Kingdom, British Empire, and Commonwealth history; American history is the third division; subjects within

the fourth division are the history of science, historiography, and the philosophy of history; subjects within a fifth division, Far Eastern history, may be selected by arrangement with the Department of History and the Far Eastern and Russian Institute.

The Department wishes to call attention to its policy of expecting every graduate student to pass one foreign language requirement within the first year of residence; and in the case of a candidate for the Ph.D. degree, the second foreign language examination within the second year of residence. If one or both of the languages are Oriental or similarly subject to unusual conditions, the student will be permitted a longer period.

Students wishing to enter graduate study in history are expected to submit their applications and supporting documents prior to March 1. All applications will then be considered by the Department as well as by the Graduate School of the University and the resulting decisions will be announced by April 1. Later applications and applications for admission to other than the Autumn Quarter will be considered, but the applicants must recognize that all available space may be taken.

In addition to the information requested on the application for admission to the Graduate School, each applicant is expected to secure letters of recommendation from three of the professors under whom he has worked. These letters are to be mailed directly to the University of Washington, Department of History. Each applicant must also submit with his application an essay of from 500 to 1,000 words on the subject, "Why Study History?"

MASTER OF ARTS. In history there are two programs leading to the degree of Master of Arts. The professional program is planned as the first year of a scholar's career, and the assumption is that the student expects to continue working for the degree of Doctor of Philosophy. The second or general program is designed to meet the interests and purposes of secondary school teachers and other students who think of the M.A. as a terminal degree. The major emphasis is placed upon reading and lecture courses which will enrich and broaden the student's knowledge of history rather than upon technical problems of research and original scholarship.

The candidate in the professional program must complete 500, 501, and 502, one seminar, and graduate courses in three fields selected for special study. The subjects from which the candidate selects the fields should be in different divisions of history. In addition, he must have a reading knowledge of one foreign language and must submit an acceptable thesis, the writing of which should involve original research and the fundamentals of historical method.

The candidate in the general program must complete 500, 501, and 502, four courses numbered in the 400's (two in each of two divisions of history), and one graduate course in a field selected for special study. In addition, he must have a reading knowledge of a foreign language and must submit an acceptable thesis, the emphasis of which may be on interpretation rather than on research.

Students majoring in Far Eastern history must meet the requirements for the professional program, except that they may take either 500, 501, or 502. One field 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 in courses numbered 400 and 500, subject to the approval of the Department.

DOCTOR OF PHILOSOPHY. Candidates must complete 500, 501, 502, and at least two years of seminar work, participate in the work of the advanced seminar, and prepare at least four fields from subjects in the five divisions of history described above. (Only in a single division may candidates choose two fields.) In addition, they must have a reading knowledge of two foreign languages related to their major fields of study and they are expected to complete a minor in another department.

Students majoring in Far Eastern history are expected to satisfy the same

requirements except that only one year of seminar work in the Department of History is required. Two fields are arranged in cooperation with the Far Eastern and Russian Institute.

Students majoring in ancient history are expected to satisfy the same requirements as other students, except that only one year of seminar work in the History Department may be required. They will take two fields of ancient history, and one of the remaining fields will be arranged in cooperation with the Classics Department. Additional work in other ancient history may be prescribed in lieu of a minor. Before advanced scholarly work in ancient history can be seriously undertaken, a working knowledge of Latin and Greek is essential.

A history minor for the doctor's degree requires 500, 501, 502, and 25 credits in courses numbered 400 and 500, subject to the approval of the Department.

COURSES

ANCIENT HISTORY

- | | | |
|-----|-------------------------------------------------|----------------|
| 401 | Greece in the Age of Pericles (3) | Edmonson, Katz |
| 402 | Alexander the Great and the Hellenistic Age (5) | Edmonson, Katz |
| 403 | The Roman Republic (3) | Edmonson, Katz |
| 404 | The Roman Empire (3) | Edmonson, Katz |

EUROPEAN HISTORY

Medieval Period

- | | | |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 408 | Church and State in the Middle Ages (5)
(Not offered 1962-63.) | Kaminsky |
| 410 | The Byzantine Empire (5) | Katz |
| 411 | Medieval History, 500-1100 (5)
(Not offered 1961-62.) | Kaminsky |
| 412 | Medieval History, 1100-1300 (5)
(Not offered 1961-62.) | Kaminsky |
| 413 | Medieval History, 1300-1500 (5)
(Not offered 1962-63.) | Kaminsky |
| 421J | Kievan and Muscovite Russia, 850-1700 (5)
Offered jointly with the Far Eastern and Russian Institute. Prerequisite, 306 or Social Science 103, or permission. | Szeftel, Treadgold |
| 426 | Central Europe in the Middle Ages (5)
(Not offered 1961-62.) | Kaminsky |

Early Modern Period

- | | | |
|-----|--------------------------------|-----------|
| 414 | Culture of the Renaissance (5) | Griffiths |
| 415 | The Reformation (5) | Griffiths |
| 429 | France, 1429-1789 (5) | Lytle |

Modern Period

- | | | |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| 422J | Imperial Russia, 1700-1905 (5)
Offered jointly with the Far Eastern and Russian Institute. Prerequisite, 306 or Social Science 103, or permission. | Treadgold |
| 423J | Twentieth-Century Russia (5)
Offered jointly with the Far Eastern and Russian Institute. Prerequisite, 306 or Social Science 103, or permission. | Treadgold |
| 424J | Modern Russian Intellectual History (5)
Offered jointly with the Far Eastern and Russian Institute. | Treadgold |
| 425J | History of Eastern Orthodoxy (5)
Offered jointly with the Far Eastern and Russian Institute. (Offered Summer Quarter only.) | Treadgold |
| 427- | History of Eastern Europe, 1772-1918 (5-)
(Not offered 1962-63.) | Sugar |
| 428 | History of Eastern Europe, 1918-58 (-5)
(Not offered 1962-63.) | Sugar |
| 430 | The French Revolution and Napoleonic Era, 1789-1815 (5) | Lytle |
| 431 | Europe, 1814-70 (5) | Emerson, Lytle, Sugar |
| 432 | Europe, 1870-1914 (5) | Emerson, Sugar |

433 Europe, 1914-45 (5)	Emerson
434 Europe Since 1945 (5)	Willis
436 Germany, 1648-1914 (5) (Offered alternate years; offered 1962-63.)	Emerson
437 Germany, 1914-45 (5) (Offered alternate years; offered 1962-63.)	Emerson
438- History of the Near East, 622-1789 (5-) (Not offered 1961-62.)	Sugar
439 History of the Near East, 1789-1959 (-5) (Not offered 1961-62.)	Sugar
444 France Since 1815 (5)	Willis
460J Economic History of Europe (5) Offered jointly with the Department of Economics.	Morris

UNITED KINGDOM, BRITISH EMPIRE, AND COMMONWEALTH

469 England in the Sixteenth Century (5)	Levy
470 England in the Seventeenth Century (5)	Levy
471 England in the Eighteenth Century (5)	Costigan
472 England in the Nineteenth Century (5)	Costigan
473 England in the Twentieth Century (5)	Costigan
474 Modern Irish History (5)	Costigan
475 History of Canada (5)	Staff
477 History of Australia and New Zealand (5)	Staff
478 History of Southern Africa (5)	Staff
480 History of the British Empire Since 1783 (5)	Staff
481 History of the Commonwealth of Nations (5)	Staff
482J History of India: Earliest Times to 647 A.D. (5) Offered jointly with the Far Eastern and Russian Institute.	Staff
483J History of India: 647 to 1525 (5) Offered jointly with the Far Eastern and Russian Institute.	Staff
484J History of India: 1525 to the Present (5) Offered jointly with the Far Eastern and Russian Institute.	Staff

AMERICAN HISTORY

441 American Revolution and Confederation (5) (Offered every four years; offered 1962-63.)	Savelle
442 The Colonial Mind (5) (Not offered 1961-62.)	Savelle
443 The Intellectual History of the United States (5)	Savelle
447 History of the Civil War and Reconstruction (5)	Pressly
450 Twentieth Century America (5) Not open to students who have taken 343.	Pressly
458 The United States in World Affairs, 1776-1865 (5)	Holt
459 The United States in World Affairs, 1865 to the Present (5)	Holt
461 History of American Liberalism Since 1789 (5)	Burke
463 The Westward Movement (5)	Burke, Gates
464 History of Washington and the Pacific Northwest (5)	Burke, Gates
486 The History of Mexico, 1517 to the Present (5)	Alden

HISTORY OF SCIENCE

420 Science and the Enlightenment (5)	Staff
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JAPANESE HISTORY

452J Early Japanese History (5) Offered jointly with the Far Eastern and Russian Institute.	Butow
453J Modern Japanese History Offered jointly with the Far Eastern and Russian Institute.	Butow
456J Diplomatic History of the Far East (5) Offered jointly with the Far Eastern and Russian Institute.	Butow

HISTORIOGRAPHY

500	Historiography: Ancient and Medieval European (3)	Staff
501	Historiography: Early Modern European (3)	Staff
502	Historiography: Modern European and American (3)	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 examinations in the fields selected.

510	Greek, Roman or Byzantine History (3-6)	Edmonson, Katz
514	Medieval History (3-6)	Kaminsky
515	Renaissance and Reformation History (3-6)	Griffiths
520	History of Science (3-6)	Staff
525-526-527	Seminar in the History of Science (3-6)-(3-6)-(3-6)	Staff
532	Modern European History: Germany (3-6)	Emerson
533	Modern European History: France (3-6)	Lytle
534J	Modern European History: Russia (3-6) Offered jointly with the Far Eastern and Russian Institute.	Treadgold
541	American History: Early (3-6)	Savelle
542	American History: Western (3-6)	Burke, Gates
543	American History: Civil War (3-6)	Pressly
544	American History: National Period (3-6)	Gates, Holt
545	American History: Twentieth Century (3-6)	Burke, Pressly
549J	Japanese History (3-6) Offered jointly with the Far Eastern and Russian Institute. Prerequisite, permission.	Butow
575	English History (3-6)	Costigan, Levy
576	British Empire History (3-6)	Staff

SEMINARS

503-504	Seminar in Philosophy of History (3-6)-(3-6) (Offered alternate years; offered 1961-62.)	Costigan
517-518-519	Seminar in Ancient or Medieval History (3-6)-(3-6)-(3-6)	Kaminsky, Katz
521-522-523	Seminar in Modern European History (3-6)-(3-6)-(3-6)	Emerson, Lytle
535J-536J-537J	Seminar in Russian History (3-6)-(3-6)-(3-6) Offered jointly with the Far Eastern and Russian Institute. Prerequisites, reading knowledge of Russian and permission.	Treadgold
550J-551J-552J	Seminar in Japanese History (3-6)-(3-6)-(3-6) Offered jointly with the Far Eastern and Russian Institute. Prerequisite, permission.	Butow
553-554-555	Seminar in American History: Early (3-6)-(3-6)-(3-6)	Savelle
563-564-565	Seminar in American History: Western (3-6)-(3-6)-(3-6)	Burke, Gates
590-591-592	Seminar in American History: National Period (3-6)-(3-6)-(3-6)	Holt
593-594-595	Advanced Seminar (3-6)-(3-6)-(3-6)	Holt
600	Research (*)	Staff
700	Thesis (*)	Staff

HOME ECONOMICS

Director: MARY LOUISE JOHNSON, 201 Raitt Hall

The School of Home Economics offers courses leading to the degrees of Master of Arts, Master of Science, Master of Arts in Home Economics, and Master of Science in Home Economics. The master's degree programs require a minimum of 45 credits. Half of the work, including the thesis, must be in courses numbered 500 or above.

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 15 credits in related fields, such as art, economics, education, public health, or the biological, physical, or social sciences. Candidates must present acceptable undergraduate preparation in home economics and basic fields.

DIETETIC INTERNSHIPS. 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 lunchrooms, 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.

COURSES

307 Nutrition (3 or 5)	Johnson
315 Advanced Food Selection and Preparation (2 or 5)	Nielsen
316 Demonstration Techniques (3)	Nielsen
321 Applied Design (2)	Payne
322 Applied Design (2)	Payne
329 Hand Weaving (2)	Brockway
334 Costume Design (3)	Payne
338 Clothing for the Family (3)	Payne
354 Family Economics and Finances (5)	Hall
407 Advanced Nutrition (3)	Johnson
408 Diet Therapy (3)	Johnson
415 Experimental Foods (3)	Nielsen
425 Advanced Textiles (3)	Brockway
429 Advanced Weaving (3)	Brockway
432, 433 History of Costume and Textiles (4,4)	Payne
434 Costume Design (3)	Shigaya
435 Advanced Costume Design (5)	Payne
436 Advanced Costume Design (5)	Payne
447 Advanced Home Furnishing (3)	Hosmer
454 Advanced Family Economics and Finances (2)	Hall
457 Child Nutrition and Care (3)	Johnson
472 Institution Food Purchasing (3)	Terrell
473 Institution Management (5)	Terrell
474 Institution Management (5)	Sandstrom
475 Institution Equipment (3)	Terrell
495 Special Problems in Home Economics (*, maximum 10)	Staff
507 Readings in Nutrition (*) Library research. Prerequisite, 407 or equivalent.	Johnson
515 Readings in Food Selection and Preparation (*) Professional literature on recent developments. Prerequisite, 315 or equivalent, or permission.	Nielsen
525 Seminar in Textiles (3) Readings and discussion of factors affecting economic utilization and technical development of textile products. Trends in current research and methods of investigation. For graduate students in textiles and clothing. Prerequisites, 125, 425 or equivalent.	Brockway
554 Social and Economic Problems of the Consumer (3-5) Selected topics in the family economics field. Prerequisites, 454 or equivalent, or permission.	Hall
562 Home Economics Education (*) Study of achievements, trends, functions, methods, and teaching materials.	McAdams
576, 577, 578 Supervised Field Work (4,4,4) Three quarters of practice and organized classwork for graduates in institution management and dietetics. An administrative dietetics internship approved by the American Dietetic Association.	Terrell, Staff

600 Research (*)

- A. Costume design
- B. Institution administration
- C. Nutrition
- D. Textiles
- E. Family economics

- F. Foods
- G. Home economics education
- H. Family relations
- I. Home management
- K. Home furnishing

Staff**700 Thesis (*)****Staff****LINGUISTICS**

Committee: K. CHANG, Far Eastern; D. FOWLER, English; M. JACOBS, Anthropology; F.-K. LI, Far Eastern; N. POPPE, Far Eastern; C. REED, Germanics; E. REIFLER, Far Eastern; T. ROSENMEYER, Classics; L. THOMPSON, Far Eastern; S. SAPORTA, Romance Languages, Chairman.

The Graduate School offers a program of studies for graduate students leading to master's and doctoral degrees in Linguistics. The program is administered by the Interdepartmental Committee on Linguistics in cooperation with various departments. Queries regarding the program in Linguistics may be addressed to the University of Washington, Chairman, Committee on Linguistics, 229C Denny Hall, Seattle 5.

Normal requirements of the Graduate School for admission to candidacy for an advanced degree in linguistics include the equivalent of 45 quarter hours (30 semester hours) of undergraduate college credits in language study. This requirement implies the attainment of proficiency in one language other than English, or, in the instance of a non-native speaker of English, a course of study and proficiency in a language other than his native speech. The Graduate School may be consulted when there is need for special determination regarding meeting the requirements for admission to candidacy. To register for courses, candidates should consult with the Chairman of the Linguistics Committee.

MASTER OF ARTS. Requirements are as follows (subject to readjustment by the candidate's committee):

1. A reading knowledge of German and French, to be demonstrated before the end of one year of graduate study.
2. The following courses or equivalents: 404, 405, 406, 501, 502, 503 (plus 400, 451J, 452J, 453J, 462J, 463J, if the candidate has not previously taken courses equivalent to these in phonetics, phonemics, morphology, and syntax).
3. Additional credits in linguistics or supporting areas, as approved by the Committee.
4. Completion of a thesis acceptable to the Committee on Linguistics and successful performance in a comprehensive examination.

DOCTOR OF PHILOSOPHY. A student may plan to proceed directly for the doctoral degree without an M.A., but the committee reserves the right to require any individual student to present himself as a candidate for the M.A. before accepting him as a candidate for the Ph.D. Requirements include items one, two, and three for the M.A., plus the following (subject to readjustment by the student's committee):

1. A structural knowledge of Latin and Greek, to be demonstrated as early as possible. This requirement may be fulfilled either by examination or by enrolling for Latin 300 and Greek 300, offered by the Classics Department.
2. Linguistics 504, 505, 506, 514, 515, 516, 530, and 599.
3. Nine additional credits in linguistics or supporting areas, as approved by the Committee.
4. The General Examination, usually conducted at the conclusion of course work, in (1) descriptive linguistics, (2) historical-comparative linguistics, and (3) a specialty of the candidate's choice, e.g., Germanics, Romance, Slavic, Chinese, Altaic, American Indian linguistics, etc.

5. Independent research in the analysis of a language utilizing a native speaker or speakers and/or manuscripts in the language.
6. A Final Examination and a thesis suitable for publication.

COURSES

- 400 Survey of Linguistic Method and Theory (3)** Saporta
404, 405, 406 Indic and Indo-European (3,3,3) Chang
 Prerequisite, permission.
- 451J, 452J, 453J Phonetics and Phonemics (3,3,3)** Thompson
 Offered jointly with the Department of Anthropology. Prerequisite, permission.
- 462J, 463J Morphology and Syntax (3,3)** Saporta
 Offered jointly with the Department of Anthropology. Prerequisite, 400 or permission.
- 501, 502, 503 Linguistic Analysis Laboratory (3,3,3)** Thompson
 Guided analysis of a language unfamiliar to all students of the class; construction of a grammar based on material elicited from native informant. Prerequisites, 453J, 463J, or permission.
- 504 Indo-European Comparative Phonology (2)** Reed
 Sound systems of the principal families of Indo-European and the relation of these to a hypothetical parent tongue. (Offered 1962-63.) Prerequisite, 406.
- 505, 506 Indo-European Comparative Grammar (2,2)** Reed
 Systematic treatment of Indo-European grammar, with extensive surveys of individual language groups. (Offered 1962-63.) Prerequisite, 504.
- 514, 515, 516 Seminar in Comparative Linguistics for Students of Indo-European (2,2,2)** Li
 Advanced problems in comparative linguistics; special attention to work with languages having few or no written records. Prerequisite, 506 or permission.
- 530 Dialectology (3)** Reed
 The principles of dialect deviation as related to linguistic structure and usage. Prerequisite, 452J or permission.
- 555J Methods in Comparative Linguistics (3)** Staff
 Offered jointly with the Department of Anthropology. Method and theory of comparative linguistics in relation to anthropological research. Prerequisite, permission.
- 580 Problems in Linguistics (2, maximum 6)** Reed
 A course for advanced students of linguistics, dealing with significant movements, techniques, skills, and theories in the field. Prerequisite, permission.
- 599 Linguistics Colloquium (1)** Staff
 Biweekly seminar attended by faculty and graduate students to discuss research in progress and topics of general interest. Attendance is required for a minimum of three quarters during the student's residence. Prerequisite, permission.
- 600 Research (1-5)** Staff
- 700 Thesis (*)** Staff

Specialized course work is available in various cooperating departments. Each student is expected to elect an area of specialization and work out with the Chairman of his Supervisory Committee an appropriate program of courses supporting his required work. The fields of specialization regularly available at this institution are the following (cooperating departments in parentheses):

- Altaic (Far Eastern and Slavic Languages and Literature)
- American Indian linguistics (Anthropology)
- Anthropological linguistics (Anthropology)
- Chinese (Far Eastern and Slavic Languages and Literature)
- Classical linguistics (Classics)
- English (English, Germanic Languages and Literature)
- Germanic (Germanic Languages and Literatures)
- Japanese and Korean (Far Eastern and Slavic Languages and Literature)
- Oral Literature (Anthropology, Comparative Literature)
- Romance (Romance Languages and Literature)
- Scandinavian (Germanic Languages and Literature, Scandinavian Languages and Literature)
- Slavic (Far Eastern and Slavic Languages and Literature)
- Southeast Asian linguistics (Far Eastern and Slavic Languages and Literature)
- Speech and Phonetics (Speech)
- Tibetan (Far Eastern and Slavic Languages and Literature)

For a listing of course work in these fields consult the section of this bulletin pertaining to the department indicated.

In certain cases arrangements may be made for students to specialize in fields not listed above. Students interested in such a possibility should consult with the chairman of the committee stating their specific interests and objectives.

MATHEMATICS

Executive Officer: C. B. ALLENDOERFER, 239 Physics Hall

The Department of Mathematics offers courses leading to the degrees of Master of Arts, Master of Arts in Teaching Mathematics, Master of Science, Master of Science in Mathematical Statistics, and Doctor of Philosophy.

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. Candidates presenting only the minimum amount of undergraduate mathematics cannot expect to earn a master's degree in less than two years.

Since one foreign language is required for all the above masters' degrees except the Master of Arts in Teaching Mathematics and two languages are required for the doctor's degree, candidates for admission are advised to elect languages as undergraduates. French, German, and Russian are the only languages acceptable toward these degrees.

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.

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.

MASTER OF ARTS. A minimum of 27 approved credits in courses numbered 400 or above, with at least 9 credits in courses numbered 500 or above, is prescribed. These courses must include at least 6 credits in each of algebra, analysis, and one other field. The thesis for this degree, while demonstrating ability and aptitude, may be largely expository.

MASTER OF ARTS IN TEACHING MATHEMATICS. This degree is intended for present or prospective high school teachers of mathematics to provide them with the background in this subject which is essential for effective teaching of their students in high school. It is assumed that candidates for the degree are eligible to teach in the secondary school of their choice and, consequently, the program for the degree is devoted primarily to courses in mathematics.

A minimum of 30 approved credits in courses numbered 400 or above, with at least 5 credits in courses numbered 500 or above, is prescribed. These credits must all be in mathematics except that Education 475A, Improvement of Teaching: Secondary Mathematics, may be included. The thesis for this degree should be an exposition of a mathematical subject closely related to the content of secondary school mathematics. There is no language requirement for this degree.

MASTER OF SCIENCE. A minimum of 27 approved credits in courses numbered 400 or above, with at least 18 credits in courses numbered 500 or above, is prescribed. These courses must include at least 6 credits in each of algebra, analysis, and one other field. The thesis should demonstrate the student's ability to engage in independent research.

Under certain circumstances, this degree may also be awarded to a student who has passed the General Examinations for the Ph.D. degree. In such cases, no thesis is required.

MASTER OF SCIENCE IN MATHEMATICAL STATISTICS. The undergraduate preparation should consist of courses in probability and statistical inference equivalent to

Mathematics 481 and 482. The candidate must present a minimum of 27 approved credits in mathematics courses numbered 400 or above. This work may include, on approval, some courses in mathematical statistics needed to make up deficiencies in undergraduate preparation and must include 15 credits in mathematical statistics courses numbered 500 or above. The thesis should demonstrate the student's ability to engage in independent research.

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, and two other fields chosen by the candidate and approved by his Supervisory Committee; and (2) additional material related to the candidate's field of special interest, such as that included in second-year graduate courses.

COURSES

301 Elementary Number Theory (3)	Staff
322 Principles of Differential Equations (3)	Staff
324, 325 Advanced Calculus I, II (3,3)	Staff
374 Principles of Digital Computers and Coding (5)	Staff
382, 383 Statistical Inference in Applied Research (5,5)	Staff
391 Elementary Probability (3)	Staff
392 Elements of Statistics (3)	Staff
401 Matrices (3)	Staff
402, 403 Introduction to Modern Algebra (3,3)	Staff
404 Linear Algebra (3)	Staff
407 Game Theory and Linear Programming (3)	Staff
411, 412, 413 Linear and Modern Algebra (3,3,3)	Staff
424, 425, 426 Fundamental Concepts of Analysis (3,3,3)	Staff
427, 428, 429 Topics in Applied Analysis (3,3,3)	Staff
441, 442, 443 Advanced Geometry (3,3,3)	Staff
444, 445 Foundations of Geometry (3,3)	Staff
464, 465, 466 Numerical Analysis I, II, III (3,5,5)	Staff
481 Calculus of Probabilities (5)	Staff
482 Statistical Inference (3)	Staff
483 Theory of Correlation (3)	Staff
484 Distribution Free Inference (3)	Staff
485 Analysis of Variance (3)	Staff
497J Special Topics in Mathematics for Teachers (2-5, maximum 15) Offered jointly with the College of Education.	Staff
498 Special Topics in Mathematics (2-5, maximum 15)	Staff
501, 502 Foundations of Mathematics (3,3) Fundamental concepts and methods of mathematics; the axiomatic method; the logical foundations of mathematics.	Staff
504, 505, 506 Modern Algebra (3,3,3) Theory of groups, rings, integral domains, and fields; polynomials; vector spaces, Galois Theory, and theory of ideals. Prerequisites, 403 or equivalent for 504; 504 for 505; 505 for 506.	Staff
510 Seminar in Algebra (*, maximum 5) Prerequisite, permission.	Staff
511, 512, 513 Special Topics in Algebra (2-3, 2-3, 2-3) Each may be repeated twice for credit. In recent years the following subjects have been covered: Abelian Groups, Algebraic Function Fields, Algebraic Number Theory, Classical Groups, Game Theory, Group Extensions, Lattice Theory, Lie Algebras, Number Theory, and Structure of Rings.	Staff

- 524, 525, 526 Real Variable (3,3,3) Staff**
Metric spaces; general measures and integration; differentiation of set functions; real valued functions on the line; Banach spaces. Prerequisites, 426 or equivalent for 524; 524 for 525; 525 for 526.
- 527 Elements of Real Variables for Scientists (3) Staff**
Compactness theorems, Lebesgue integration and limit theorems, Fubini theorem, L_p spaces, L_2 Fourier transform theory. Prerequisites, 427, 428, 429, or permission.
- 528, 529 Hilbert Space Operators and Applications (3,3) Staff**
Spectral theorem for bounded Hermitian operators, statement for unbounded operators, application to ordinary and partial differential operators with Fourier transforms, construction of Green functions, Schrödinger equation, eigenvalue distributions, perturbation theory; contour integral representation, special functions. Prerequisites, 527 for 528; 528 for 529.
- 530 Seminar in Analysis (*, maximum 5) Staff**
Prerequisite, permission.
- 531, 532, 533 Special Topics in Analysis (2-3, 2-3, 2-3) Staff**
Each may be repeated twice for credit. In recent years the following subjects have been covered: Functional Analysis, Abstract Harmonic Analysis, Linear Operations in Hilbert Space, Group Representations, Fourier Series and Integrals, Topological Linear Spaces, Potential Theory, and Numerical Analysis.
- 534, 535, 536 Complex Variable (3,3,3) Staff**
Complex numbers; analytic functions; contour integration; power series; analytic continuation; sequences of analytic functions; conformal mapping of simply connected regions. Prerequisites, 426 for 534; 534 for 535; 535 for 536.
- 538, 539 Non-Linear Ordinary Differential Equations (3,3) Staff**
Phase plane; analysis of critical points (nodes saddle points, foci); theory of oscillations, limit cycles, Poincaré-Bendixon theory; topological methods, fixed point theorem. Prerequisites, 322 and 324 (or 236) for 538; 538 for 539.
- 544, 545, 546 Differential Geometry (3,3,3) Staff**
Differential geometry of curves and surfaces in ordinary space and in n -space. Differential forms and the Cartan calculus. Differential geometry in the large. Prerequisites, 401 and 426 for 544; 544 for 545; 545 for 546.
- 550 Seminar in Geometry (*, maximum 5) Staff**
Prerequisite, permission.
- 551, 552, 553 Special Topics in Geometry (2-3, 2-3, 2-3) Staff**
Each may be repeated twice for credit. In recent years the following subjects have been covered: Riemannian Geometry, Differentiable Manifolds, Complex Manifolds, Geometry of Convex Bodies.
- 561, 562, 563 General Topology (3,3,3) Staff**
Theory of sets; metric spaces; topological spaces; compactness and other covering properties, function spaces; polyhedra; dimension theory. Prerequisites, 426 for 561; 561 for 562; 562 for 563.
- 564, 565, 566 Algebraic Topology (3,3,3) Staff**
Classical and modern approaches to algebraic topology; complexes and their homology theory; applications: fixed points, primary obstruction; products and Poincaré duality; axiomatic approach; covering spaces. Prerequisites, 506 for 564; 564 for 565; 565 for 566.
- 569J Partial Differential Equations (3) Staff**
Classification of second order partial differential equations; solution by separation of variables and reduction to a boundary value problem; theory of characteristics and solutions by means of Green's functions. Examples from classical mechanics of continua. Prerequisite, 428 or Aeronautical Engineering 568. Offered jointly with the Department of Aeronautical Engineering.
- 570 Seminar in Topology (*, maximum 5) Staff**
Prerequisite, permission.
- 571, 572, 573 Special Topics in Topology (2-3, 2-3, 2-3) Staff**
Each may be repeated twice for credit; special topics from general and algebraic topology.
- 581, 582, 583 Advanced Theory of Statistical Inference (3,3,3) Staff**
Elements of decision theory; Neyman-Pearson theory; randomized tests; maximum likelihood statistics; confidence regions; distribution-free statistics; linear hypotheses; analysis of variance; block design. Prerequisites, 484 and 485, or permission for 581; 581 for 582; 582 for 583.
- 590 Seminar in Probability and Statistics (*, maximum 5) Staff**
Prerequisite, permission.
- 591, 592, 593 Special Topics in Statistics (3,3,3) Staff**
Each may be repeated twice for credit. In recent years the following subjects have been covered: Advanced Probability Theory, Stochastic Processes, Distribution-Free Inference, Game and Decision Theory, Advanced Theory of Estimation (including Sequential Estimation).
- 600 Research (*) Staff**
Prerequisite, permission.
- 700 Thesis (*) Staff**
- 702 Degree Final Staff**
Limited to students completing a nonthesis degree program.

METEOROLOGY AND CLIMATOLOGY

Executive Officer: PHIL E. CHURCH, 201F Meteorology Building

The Department offers programs of graduate study leading to the degrees of Master of Science and Doctor of Philosophy. These programs are open to qualified students who have earned a bachelor's degree in a physical science or mathematics. The distinction between candidates for the M.S. and Ph.D. degrees is made on the basis of a qualifying examination taken after two quarters of graduate study. This examination covers fundamental aspects of meteorology and the relevant mathematics and physics.

Courses in the following subjects are normally considered as prerequisites to study toward an advanced degree, mathematics through ordinary differential equations (Mathematics 221) and advanced calculus (Mathematics 234), modern physics (Physics 320), and thermodynamics (Meteorology 340 or Physics 371), and atmospheric analysis (Meteorology 350).

Each student working toward an advanced degree is expected to attend Department colloquia and to attend and participate in the Graduate Student Forum which meets weekly for critical discussion of a published paper of current interest.

MASTER OF SCIENCE. The program of study and research is intended to enable the student throughout his scientific career to grow with his field, to recognize and understand new concepts, and to master new procedures as they emerge.

The minimum course requirements are 27 graduate credits exclusive of research or thesis, of which 3 must be in applied mathematics or mathematical physics and 15 must be in meteorology courses numbered above 500.

A thesis is required. It must demonstrate the student's ability to use research methods in a limited area and to discuss critically his own and other investigators' work.

DOCTOR OF PHILOSOPHY. The degree of Doctor of Philosophy signifies understanding and knowledge normally attained only through the original solution of a problem of substantial scientific importance.

A student who passes the qualifying examination with distinction may embark on the Ph.D. program under the sponsorship of a faculty Supervisory Committee. The General Examination, taken at the end of the second year of residence, is composed of a written examination which tests mastery of general and theoretical meteorology and of relevant mathematical methods; and an oral examination which tests depth of understanding of a topic within the student's area of special interest, selected in advance.

At least half of the credits earned prior to the General Examination should be in courses numbered above 500, and at least 21 credits should be earned in approved mathematics and physics courses numbered above 400. The thesis is an important part of the candidate's program; it must represent an original contribution of substantial scientific importance.

COURSES

301 Introduction to Atmospheric Science (5)	Staff
321 Physical Climatology (5)	Church
322 Regional Climatology (5)	Church
329 Microclimatology (3)	Buettner
340 Introduction to Atmospheric Physics (5)	Businger, Fleagle
350 Introduction to Atmospheric Analysis (5)	Reed
360 Meteorological Instruments and Observations (5)	Badgley
431, 432 Atmospheric Physics (5,3)	Businger, Fleagle
441, 442 Introduction to Atmospheric Motions (5,5)	Fleagle, Reed

- 451 Atmospheric Analysis (5)** **Danielson**
- 452 Forecasting Laboratory (5)** **Danielson, Reed**
Prerequisite, 451.
- 462 Sea-Air Transfer Processes (6)** **Fleagle**
(Offered at Friday Harbor Summer Quarter only.)
- 492 Readings in Meteorology or Climatology (*)** **Staff**
- 493 Special Problems in Meteorology or Climatology (*)** **Staff**
- 494 Meteorological Statistics (*)** **Staff**
- 522 Advanced Regional Climatology (3)** **Church**
Intensive study of the characteristics of climatic elements for a selected region or climatic type and a statistical analysis of the elements studied. Prerequisite, 322 or permission.
- 528 Applied Meteorology and Bioclimatology (3)** **Buettner**
Interrelationship of meteorology and climatology to: human health and heat balance, aviation and space medicine, air pollution, agriculture, forestry, transportation, etc. Prerequisites, 322 and 341 or permission.
- 531 The Upper Atmosphere (3)** **Buettner**
Structure, composition, and dominant physical and photochemical processes. Sound propagation, aurora, air glow, ionosphere, and Van Allen belts. Role of the sun. Exosphere and planetary atmospheres. Prerequisites, Mathematics 322 and Physics 320, or permission.
- 532 Atmospheric Electricity (3)** **Buettner**
Formation and disappearance of atmospheric ions. Normal air electrical field. Lightning and its causes. Earth magnetic field. Prerequisite, 531 or permission.
- 533 Atmospheric Radiation (3)** **Buettner**
Solar spectrum. Atmospheric scattering, spectra of water vapor and other gases. Albedo of earth and atmosphere. Radiative heat balance. Prerequisites, Physics 320 and Mathematics 322.
- 541, 542 Dynamic Meteorology (3,3)** **Fleagle**
541: basic equations of dynamic meteorology, circulation and potential vorticity theorems, barotropic and baroclinic atmospheres, large and small scale approximations. Prerequisite, Mathematics 325 or Aeronautical Engineering 567 or equivalent. 542: particle dynamics applied to large scale motions and to stability criteria, linearized barotropic wave, numerical forecasting equations, baroclinic, diabatic and topographic effects. Prerequisites, 541 and Mathematics 221.
- 543, 544 Atmospheric Wave Theory (3,3)** **Fleagle**
543: perturbation equations in Eulerian and Lagrangian form, wave motions in incompressible and compressible fluids, wave theory of cyclones; flow over mountains. Prerequisites, 442, Mathematics 322, or permission. 544: structure of baroclinic wave, baroclinic instability, general circulation, dispersion of waves, associated Legendre equation, wave motion on spheres, atmospheric tides. Prerequisite, 543.
- 546, 547, 548 Atmospheric Turbulence (3,3,3)** **Bagley, Businger**
546: laminar and turbulent flow; analogy between kinetic theory of gases and turbulence theory; Reynolds averaging; dissipation of energy; statistical descriptions of turbulent flow. Prerequisite, 442 or permission. 547: diffusion of matter in the atmosphere; application of Fickian and statistical theories of diffusion; use of Lagrangian and Eulerian correlation functions. Prerequisite, 546. 548: turbulent flux of heat, momentum, and moisture in the layer of the atmosphere next to the earth; Richardson's stability criterion; free convection. Prerequisite, 546.
- 551 Advanced Atmospheric Analysis (5, maximum 10)** **Danielson, Reed**
Selected advanced nonroutine types of analysis. Exercises in objective map analysis and numerical weather prediction. Prerequisite, 442 or permission.
- 560 Theory of Meteorological Instruments (3)** **Badgley**
The physical theory of the operation of meteorological instruments. Emphasis on new and specialized research instruments and on more difficult problems involving standard instruments. Prerequisites, one year of calculus and permission.
- 570 Seminar on Cloud Physics (2)** **Staff**
The physical processes in the formation and modification of clouds and the formation of precipitation in the atmosphere are examined. Prerequisite, permission.
- 572 Seminar on Polar Meteorology (3)** **Staff**
Critical examination of source materials and original papers on selected topics applicable to polar meteorology. Prerequisite, permission.
- 593 Laboratory in Experimental Meteorology (3, maximum 6)** **Badgley**
The role of controlled-model experiments in meteorology. Laboratory study of cloud formation and modification; convection cells, turbulent air motion; thermally-induced air drainage; flow over obstacles; wave motion; surface of discontinuity; atmospheric circulation. Prerequisite, 542.
- 600 Research (*)** **Staff**
- 700 Thesis (*)** **Staff**

MUSIC

Director: STANLEY CHAPPLE, 104 Music Building

The School of Music offers courses leading to the degrees of Master of Arts in Music, Doctor of Philosophy, and Doctor of Musical Arts. All candidates for advanced degrees are expected to be proficient in general musicianship, including piano, and must show a satisfactory knowledge of music theory and music literature. The School of Music issues information leaflets, "Graduate Studies," as a guide to the standards expected for each of the various degrees and majors.

MASTER OF ARTS IN MUSIC. The minimum requirements are: for a major in composition, music education, musicology, or opera, 36 credits and a 9-credit thesis; for a major in music performance (piano, violin, voice, organ, conducting), 39 credits and a 6-credit thesis. The candidate's committee may require additional work beyond the basic minimum, depending upon the student's previous preparation, level of accomplishment in graduate studies, and educational objectives. Musicology is the only major which requires a reading knowledge of either French or German.

DOCTOR OF PHILOSOPHY. This degree is offered with a major in music, and with opportunity for specialization in musicology or music theory. Candidates must have a reading knowledge of French and German. Three years of graduate study are required, of which two must be spent in residence at the University of Washington. A minimum of 80 credits is required, of which 36 credits must be in music courses numbered 500 or above, and 20 to 30 credits will normally represent supporting courses in other departments. In addition, the candidate must present an acceptable thesis representing original and independent investigation.

DOCTOR OF MUSICAL ARTS. This degree is intended as a recognition of high professional attainment in some major branch of performance, or in original composition, or in the field of music teaching. Since only experienced and technically competent musicians will be admitted to the program, it is expected that the doctoral studies will be devoted largely to the broadening and deepening of professional preparation for teaching at the college level.

Three years of graduate study are required, of which two must be spent in residence at the University of Washington. A minimum of 80 credits of course work must be completed, of these half must represent music courses numbered 500 or above. Individual programs may be flexible, but should include broadening experience in various musical disciplines, and in departments other than music, along with intensive study of a specialty. In lieu of a single longer dissertation, candidates will submit three theses. One of the theses must be a research paper; the other two may be additional research papers, or musical compositions, or essays of a critical or methodological nature.

A reading knowledge of two foreign languages is required.

COURSES

301 Contemporary Idioms (3)	McKay
303 Keyboard Harmony (3)	Staff
304 Choral Literature (1)	Terry
307, 308 Music Before 1750 (2,2)	Babb, Terry, Woodcock
317 Chamber Music (2)	Ferrin
321 Modal Counterpoint (3)	Babb
322 Tonal Counterpoint (3)	Verrall
330 Vocal or Instrumental Instruction (2-3, maximum 18)	Staff
331, 332, 333 Keyboard Transposition and Improvisation (2,2,2)	Beale
334, 335, 336 Accompanying (2,2,2)	Hokanson
337, 338, 339 Repertoire (2,2,2)	Staff

340	University Concert Band (1, maximum 6)	Welke
344	Elementary School Music (4)	Normann
345	The General Music Class (2)	Normann
346J	Teachers' Course in Secondary School Music (4) Count 2 credits as education and 2 as music. Offered jointly with the College of Education.	Normann
347	Music in the United States (2)	Clarke
348	Twentieth-Century Music in the Americas (2)	Clarke
350	Vocal or Instrumental Instruction (2-3, maximum 18)	Staff
352	Musical Form (3)	Woodcock
353	Orchestration (3)	McKay, Verrall
354	Band Arranging (2)	Welke
355	Music Calligraphy (1)	Verrall
357	Church Music (3)	Woodcock
360	University Symphony Orchestra (1, maximum 6)	Chapple
367	History of Chamber Music (3)	Irvine
377, 378, 379	Score Reading (1,1,1)	Irvine
380	Advanced Chamber Music (1, maximum 6)	Staff
384	Instrumental Conducting (1)	Welke
385	Choral Conducting (2)	Munro
401	Contemporary Idioms (3)	McKay
407	Renaissance Music (2)	Irvine
408	Baroque Music (3)	Terry
409	Contemporary Music (3)	McKay
414, 415	School Choral Materials (1,1)	Staff
417	Medieval Music (2)	Irvine
421	Modal Counterpoint (3)	Babb
422	Tonal Counterpoint (3)	Verrall
424, 425	School Instrumental Materials (1,1)	Cole, Normann
427	Haydn and Mozart (3)	Terry
428	Beethoven (3)	Woodcock
430	Vocal or Instrumental Instruction (2-3, maximum 18)	Staff
434, 435, 436	Piano Teaching (2,2,2)	Moore
437	Rococo and Preclassic Music (3)	Terry
440	Wind Sinfonietta (2, maximum 6) (Offered Summer Quarter only.)	Welke
447	Schumann and Brahms (3)	Woodcock
449	Late Nineteenth-Century Music (3)	Irvine
450	Vocal or Instrumental Instruction (2-3, maximum 18)	Staff
452	Musical Form (3)	Woodcock
453	Orchestration (3)	Beale
460	Sinfonietta (1, maximum 9)	Chapple
464, 465	Opera Direction and Production (4,4)	Rosinbum
467	History of Keyboard Music (3)	Woodcock
474	The Curriculum in Music Education (3)	Normann
480	Opera Theatre (2, maximum 6)	Chapple, Rosinbum
481	Harmonic Analysis (3)	Beale
484	Instrumental Conducting (1)	Cole
485	Choral Conducting (2)	Munro
486	Instrumental Conducting (1)	Chapple
487, 488	History of Opera (3,3)	Clarke, Munro
490	Collegium Musicum (1-2, maximum 6)	Bostwick, Heinitz, Terry
491	Composer's Laboratory (3, maximum 18)	McKay, Verrall
495	Advanced Choral Conducting (3)	Munro

- 497, 498 History of Choral Music (3,3)** **Munro, Terry**
- 500 Methods of Musical Research (3)** **Irvine**
Bibliography and research techniques. Designed to prepare students for their work in seminars, individual research, and the writing of theses.
- 507 Seminar in Renaissance and Baroque Music (3, maximum 6)** **Munro**
Prerequisite, one or more undergraduate courses in the same field.
- 508 Seminar in Classic and Romantic Music (3, maximum 6)** **Woodcock**
Prerequisite, one or more undergraduate courses in the same field.
- 509 Seminar in Modern Music (3, maximum 6)** **Verrall**
Prerequisite, one or more undergraduate courses in the same field.
- 514 Psychological Foundations of Music (3)** **Normann**
The nature of musical effects; growth and development of musical powers; factors influencing musical taste; applications of music to therapy and industry.
- 524, 525, 526 Seminar in Music Education (3,3,3)** **Normann**
Special problems in the teaching and supervision of music in the elementary grades, junior and senior high school, and junior college; the role of music in society. Prerequisite, one year of teaching experience.
- 547 Seminar in American Music (3, maximum 6)** **Clarke**
History and literature of music in the United States from 1600 to the present.
- 550 Vocal or Instrumental Instruction (3, maximum 12)** **Staff**
Prerequisite, 30 credits in the same branch of performance.
- 561 Problems in Choral and Orchestral Scoring (2-5)** **Verrall**
Special techniques of choral, orchestral, and dramatic composition. Original composition and research with emphasis on the evolution of ensemble types and forms.
- 566 Opera Direction and Production (4 or 6, maximum 12)** **Rosinbum**
Practical experience with problems of the opera theatre.
- 568, 569 Historiography and Criticism (3,3)** **Irvine**
An approach to critical scholarship through the review and evaluation of the writings of music historiographers and music critics with main emphasis on the period since 1770.
- 577, 578 Early Notation (2,2)** **Irvine**
577: Gregorian notation; ars antiqua; ars nova. 578: white mensural notation; lute and organ tablatures. Prerequisites, 417 for 577, 407 for 578, or permission.
- 579 Seminar in Musicology (3, maximum 6)** **Irvine**
Selected topics in music history, literature, and theory. Prerequisite, permission.
- 584, 585, 586 Advanced Conducting (1-3, 1-3, 1-3)** **Chapple**
Analysis of scores leading to rehearsal and preparation of musical groups.
- 590 Recital (2, maximum 6)** **Staff**
Public performance in one solo recital and in chamber music, cantata, concerto, opera, or oratorio.
- 591 Graduate Composition (*)** **McKay, Verrall**
- 600 Research (*)** **Staff**
Prerequisite, permission.
- 700 Thesis (*)** **Staff**

OCEANOGRAPHY

Executive Officer: RICHARD H. FLEMING, 202 Oceanography Building

The Department of Oceanography offers courses leading to the degrees of Master of Science and Doctor of Philosophy. The graduate programs are built upon a broad background in the basic sciences and in oceanography. Therefore, to be accepted a student must have an undergraduate major in oceanography or in one of the supporting sciences. The student specializes in either biological, chemical, geological, or physical oceanography after having met the basic science and upper-division oceanography requirements.

Russian, German, French, and Japanese are the most valuable foreign languages in the advanced study of oceanography.

In many courses, work at sea is performed on board the M. V. "Brown Bear" and other vessels which are attached to the Department. Summer Quarter instruction is offered both on the University campus and at the Friday Harbor Laboratories in the San Juan Islands.

COURSES

- 390 General Oceanography (5)** Barnes, Richards
- 401 General Physical Oceanography (5)** Barnes
- 403 Biological Oceanography (5)** Banse, English
- 405 Geological Oceanography (5)** Creager
- 410 Physical Oceanography (3)** Barnes
- 411 Ocean Tides and Waves (3)** Rattray
- 412 Ocean Currents (3)** Barnes
- 415 Fundamentals of Underwater Acoustics (3)** Murphy
- 416 Applications of Underwater Acoustics (2)** Murphy
- 421-422 Chemical Oceanography (2-2)** Richards
- 423, 424 Chemical Oceanography Laboratory (2,2)** Richards
- 452 Sedimentary Processes (3)** Creager
- 453 Sedimentary Techniques (2)** Creager
- 460 Field Experience in Oceanography (6)** Staff
(Offered Summer Quarter only.)
- 461 Applications of Oceanography (3)** Fleming
- 511, 512, 513 Marine Hydrodynamics (3,3,3)** Rattray
Methods for solving problems in physical oceanography. Prerequisite, a major in a physical science.
- 514 Field Work in Marine Hydrodynamics (6)** Rattray
Application of marine hydrodynamics principles to field measurements. (Offered Summer Quarter when demand is sufficient.) Prerequisite, a major in a physical science.
- 515 Waves (2)** Rattray
Application of marine hydrodynamics principles to the wave motion in the oceans. Prerequisite, 513.
- 516 Ocean Circulation (2)** Rattray
Hydrodynamic theories concerning the origin and characteristics of the major ocean currents. Prerequisite, 513.
- 517 Oceanography of Inshore Waters (5)** Barnes, Rattray
Theories and techniques of investigation and interpretation of conditions existing in inshore waters with particular reference to mixing and flushing and to areas adjacent to the state of Washington; use of dynamic models. Prerequisite, 512.
- 518 Seminar in Physical Oceanography (*, maximum 9)** Staff
Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisite, permission.
- 519 Interaction of the Sea and Atmosphere (5)** Staff
The interchange of heat, water, and energy; study of budgets and of the mechanisms of exchange. Prerequisites, 410 and Meteorology 462.
- 520 Seminar (*, maximum 6)** Staff
- 521 Seminar in Chemical Oceanography (*, maximum 9)** Richards
Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisite, permission.
- 523 Advanced Problems in Chemical Oceanography (1-4, maximum 18)** Richards
Field and laboratory work on selected problems of current interest. Prerequisites, 424 and permission.
- 531 Seminar in Biological Oceanography (*, maximum 9)** Banse
Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisite, permission.
- 532 Marine Microbiology (1-4)** Ordal
Ecology and biochemistry of marine bacteria. Prerequisites, Microbiology 300 and permission.
- 533 Zooplankton Ecology (6)** Staff
Adaptations, modifications, and life histories of animals in the plankton. Evaluation of methods and techniques used in field and laboratory studies. (Offered Summer Quarter only in alternate years, beginning 1962, at Friday Harbor Laboratories.) Prerequisite, permission.
- 534 Phytoplankton Ecology (6)** Staff
Contemporary problems in marine phytoplankton investigations. Evaluation of methods used in field and laboratory studies. (Offered Summer Quarter only in alternate years, beginning 1962, at Friday Harbor Laboratories.) Prerequisite, permission.
- 535 Advanced Plankton Ecology (3)** Banse
Factors controlling the distribution, abundance, and production of plankton organisms, with a consideration of recent methods of sampling and analysis. Prerequisite, permission.

536 Benthos Ecology (3)	Banse
Quantitative consideration of the population of the sea-bed. Discussion of modern methods of sampling and analysis. Factors affecting production. Prerequisite, permission.	
551 Seminar in Geological Oceanography (*, maximum 9)	Creager
Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisite, permission.	
553 Research Techniques in Marine Geology (3)	Creager
Planning field programs; selection of equipment and survey procedures; collection, analysis, compilation, and presentation of bathymetric and sediment data; evaluation of techniques and results. Prerequisites, 405 and 453.	
555, 556 Advanced Marine Geology (3,3)	Creager
Contemporary problems in marine geology; concepts supporting or at variance with the accepted hypotheses; discussion of recent advances. Prerequisite, 553.	
600 Research (*)	Staff
700 Thesis (*)	Staff

PHILOSOPHY

Executive Officer: ARTHUR F. SMULLYAN, 264 Savery Hall

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

MASTER OF ARTS. The Department requires the candidate to take a written general qualifying examination, of three hours' duration, to test the student's fitness for candidacy for the M.A. degree. This examination should be taken as early as possible and no later than the first quarter of the second year of graduate study.

Only after qualifying for candidacy by passing the General Examination may the student register for thesis credit and thus formally undertake work on his dissertation as a candidate for the M.A. degree.

Residence and credit requirements include a full year of residence, 9 credits per quarter plus 9 thesis credits (36 credits). In addition to the 9 thesis credits, 9 others must be in 500-level courses.

The candidate is required to write a thesis acceptable to his committee, and must pass a final oral examination on his thesis.

DOCTOR OF PHILOSOPHY. Candidates are required by the Department to pass four General Examinations covering the fields of logic, history of philosophy, metaphysics and epistemology, and ethics. The candidate is expected to have taken courses and seminars in these fields and his program must be approved by his Supervisory Committee. In addition, he must prepare an acceptable dissertation and pass the oral Final Examination on it.

COURSES

320 History of Ancient Philosophy (5)	Keyt
321 History of Medieval Philosophy (5)	Boler
322 History of Modern Philosophy (5)	Staff
325 History of Nineteenth-Century Philosophy (5) (Not offered 1961-62.)	Staff
326 History of Recent Philosophy (5)	Staff
347 Philosophy in Literature (5)	Staff
410 Social Philosophy (5)	Rader
424 Recent American Philosophy (3)	Staff
428 Chinese Philosophy (5)	Shih
429 Neo-Confucianism (5)	Shih
431 Philosophy of Plato (3) (Not offered 1961-62.)	Keyt
433 Philosophy of Aristotle (3)	Keyt
436 British Empiricism (3) (Not offered 1961-62.)	Melden

437	Philosophy of Hume (3) (Not offered 1961-62.)	Melden
438	Philosophy of Kant (3) (Not offered 1961-62.)	Dietrichson, Smullyan
440	Advanced Ethics (3)	Melden
445	Philosophy of Art (5)	Rader
448	Philosophy in Nineteenth-Century Literature (5)	Rader
450	Epistemology (3)	Smullyan
453	Semantics (5)	Staff
456	Metaphysics (5)	Dietrichson, Smullyan
460	Introduction to the Philosophy of Science (5) (Not offered 1961-62.)	Staff
463	Philosophy of Mind (3) (Not offered 1961-62.)	Melden
465	Philosophy of History (5)	Rader
467	Philosophy of Religion (5) (Not offered 1961-62.)	Dietrichson
469	Existentialist Philosophy (3) (Not offered 1961-62.)	Dietrichson
470	Advanced Logic (5)	Keyt, Smullyan
480	Philosophical Studies (2, maximum 4) (Selected honors students only.)	Staff
484	Reading in Philosophy (1-4, maximum 12) Prerequisite, permission of Executive Officer.	Staff
490	Philosophy of Leibniz (3) (Not offered 1961-62.)	Melden
491	Philosophy of Spinoza (3)	Staff
520	Seminar in Ancient Philosophy (2, maximum 8) (Not offered 1961-62.)	Keyt
522	Seminar in Modern Philosophy (2, maximum 8)	Staff
526	Seminar in Recent Philosophy (2, maximum 8)	Staff
540	Seminar in Ethics (2, maximum 8)	Melden
545	Seminar in Philosophy of Art (2, maximum 8)	Rader
550	Seminar in Epistemology (2, maximum 8)	Smullyan
556	Seminar in Metaphysics (2, maximum 8)	Dietrichson
565	Seminar in Philosophy of History (2, maximum 8) (Not offered 1961-62.)	Rader
567	Seminar in Philosophy of Religion (2, maximum 8) (Not offered 1961-62.)	Dietrichson
570	Seminar in Logic (2, maximum 8)	Keyt, Smullyan
584	Reading in Philosophy (1-4, maximum 12) Intensive reading in philosophical literature. Prerequisite, permission of Executive Officer.	Staff
587	Contemporary Analytic Philosophy (3, maximum 12)	Melden
600	Research (1-6) Prerequisite, permission.	Staff
700	Thesis (*)	Staff

PHYSICAL AND HEALTH EDUCATION

Executive Officer for Women: RUTH M. WILSON, 105 Hutchinson Hall

Executive Officer for Men: R. K. CUTLER, 210 Edmundson Pavilion

The School of Physical and Health Education offers courses leading to the degrees of Master of Science and Master of Science in Physical Education. Candidates for the degree of Doctor of Philosophy in other departments may obtain a minor in physical education.

The master's degree programs aim to prepare personnel who will contribute to the further growth of their profession through development and refinement of concepts and philosophy, participation in research, leadership of colleagues, and

stimulation of their future teacher-education and recreational-leadership students. These programs aim to inspire students to question objectively and to search for basic answers through scientific processes. Specifically, the objectives are to provide situations and experiences which stimulate the development of an inquiring mind, critical thinking, increased skill in effective oral and written expression; to provide a background for clear interpretation and intelligent application of research literature; to promote increased understanding of basic concepts, current philosophies, and major issues and trends in the fields of physical education, health education, and recreation.

There is no foreign language requirement for the Master of Science in Physical Education.

Candidates for the master's degrees or a doctor's degree with a minor in physical education must have completed essentially the same program of study as outlined in one of the undergraduate curricula.

All candidates must meet the Graduate School's general requirement for course work and a thesis. Additional requirements will be determined in conference with the Departmental adviser. At least 22 credits, including the thesis, must be in courses numbered 500 and above.

A total of not less than 41 credits for men, including thesis, must be presented. A minimum of 6 credits for women, 5 for men, must be in Physical Education 600.

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

PROFESSIONAL AREAS

HEALTH EDUCATION

429	Methods in Teaching First Aid and Safety (Men and Women) (3)	Reeves
451	Workshop in Health Education for the Classroom Teacher (Men and Women) (2½)	Staff
	(Offered Summer Quarter only.)	
453	Methods and Materials in Health Teaching (Men and Women) (3)	Staff
465	School Environmental Health Programs (Men and Women) (3)	Mills, Reeves
503	Seminar in Health Education (Men and Women) (3)	Staff
	Prerequisites, 453, 465, and Physical Education 345.	
508	Administration of the School Health Program (Men) (3)	Reeves
	Prerequisites, 291, 465, Preventive Medicine 461 or equivalent, or permission.	
600	Research (Men and Women) (2-5)	Staff
700	Thesis (Men and Women) (*)	Staff

PHYSICAL EDUCATION

322	Kinesiology (Men and Women) (3)	Cutler
340	Administration of Intramural Sports (Men) (3)	Stevens, Staff
345	Principles of Physical Education (Men and Women) (3)	Torney
351	Theatre Dance (Men and Women) (2)	de Vries
355	Modern Dance Workshop (Men and Women) (2, maximum 6)	de Vries
435	Adapted Physical Education (Men) (3)	Cutler
435	Adapted Activities (Women) (3)	Kidwell
447	Tests and Measurements (Men and Women) (3)	Cutler
450	The School Physical Education Program (Men and Women) (men, 3; women, 2)	Peek, Wilson
459-460	Dance Production (Women) (2-2)	de Vries
N466	Coaching (Women) (0)	Kidwell, Staff
478	Workshop in Elementary School Physical Education (Men and Women) (2½)	Horne
	(Offered Summer Quarter only.)	
480	Principles of Movement (Women) (3)	Broer, Fox

- 493 Problems in Athletics (Men) (3)** Torney
- 495 Fitness Workshop (Men and Women) (3)** Fox
(Offered Summer Quarter only.)
- 501 Seminar in Physical Education (Men and Women) (3)** Broer, Torney, Wilson
Prerequisites, 345 and 450.
- 502 Problems in Physical Education (Men and Women) (2½)** Wilson, Staff
(Offered Summer Quarter only.) Prerequisites, 345 and 450, or permission.
- 506 The Curriculum (Men and Women) (3)** Kunde
Selection and organization of program content in relation to characteristics and needs of pupils and local conditions. Prerequisite, 345 or permission.
- 507 Supervision in Physical Education (Men) (2½)** Peek
(Offered Summer Quarter only.) Prerequisites, 345 and 450, or permission.
- 547 Seminar in Research Procedures (Men and Women) (3)** Broer, Fox
Prerequisites, 447 and Mathematics 281, or equivalent.
- 580 Seminar in Human Performance (Women) (3)** Broer, Staff
(Offered Summer Quarter only.) Prerequisites, Physical Education 322, 380, or permission.
- 600 Research (Men and Women) (2-5)** Staff
- 700 Thesis (Men and Women) (*)** Staff

RECREATION EDUCATION

- 344 Organization and Administration of Camp Programs (Men and Women) (3)** Kunde, Stallings
- 426 Field Work in Recreation (Women) (5)** Kidwell
- 454 Recreation Field Work (Men) (3)** Kunde
- 504 Administration of Recreation (Men and Women) (5)** Kunde
Prerequisites, 324, and Physical Education 345, or permission.
- 524 Seminar in Community Resources and Organization for Recreation (Men and Women) (3)** Kunde
Functional analysis of integrated community resources and organization for recreation services. Experience in recreation fact finding and evaluation. Study of pertinent problems and needs in the field. Prerequisite, permission.
- 600 Research (Men and Women) (2-5)** Staff
- 700 Thesis (Men and Women) (*)** Staff

PHYSICS

Executive Officer: RONALD GEBALLE, 215 Physics Hall

The Department of Physics offers programs leading to the degrees of Master of Science and Doctor of Philosophy. Specific departmental requirements are described briefly below. More complete information can be obtained by writing to the Department.

Undergraduate preparation is expected to include upper-division courses in electricity and magnetism, mechanics, the properties of matter, advanced calculus and mathematical physics, atomic physics, and nuclear physics. Deficiencies may cause a delay of as much as a year. A reading knowledge of German, French, or Russian is desirable.

Candidates for advanced degrees in Physics are expected to pass certain examinations as part of the departmental degree requirements. The first, a written preliminary examination, is designed to assess the student's knowledge and understanding of the material normally included in an undergraduate program with a major in physics. Ordinarily, a student is expected to take the preliminary examination during his first year of regular graduate study at this University. It is given during the Winter Quarter each year. No student is permitted to take the preliminary examination more than two times without special departmental approval.

MASTER OF SCIENCE. A minimum of 36 approved credits must be submitted, of which 18 must be in courses numbered 500 or above. These 18 credits must include a minimum of 3 credits in Physics 520 or Physics 600 (both courses require the sponsorship of an instructor), and a minimum of 12 credits in other physics graduate courses. No thesis is required. Candidates for the degree of

Master of Science must pass a final examination, usually oral. No student is permitted to take the final examination who has not been approved for it following the preliminary examination. Reading proficiency in a foreign language must be demonstrated by examination. Russian, French, and German are suitable for this purpose.

Students in other fields desiring a minor in physics for a master's degree must submit 9 credits in courses numbered 300 or above and 9 credits in courses numbered 400 or above.

DOCTOR OF PHILOSOPHY. The Department requires preparation equivalent to the courses 505, 506, 509, 510, 511, 513, 514, 515, 517, 518, 519, 524, 525, and 528, as well as Mathematics 527 (Elements of Real Variables for Scientists), 528, and 529 (Hilbert Space Operators and Applications). Additional courses of interest will be selected by the student and his Supervisory Committee. Reading proficiency in two foreign languages must be demonstrated by examination. Russian, French, and German are suitable for this purpose.

In addition to the preliminary examination, candidates for the degree of Doctor of Philosophy must pass successively, a written qualifying examination, a General Examination for admission to candidacy, and a Final Examination. No student is permitted to take the qualifying examination who has not been approved for it subsequent to the preliminary examination. A student in the program leading to the Ph.D. is expected to take the qualifying examination in his second year of regular graduate study. The qualifying examination is given once each Autumn and Spring Quarter. It is designed to assess the depth of the student's knowledge of the principle branches of physics.

In the oral General Examination the student is examined on topics related to the general area of physics in which he plans to do his thesis research. No student who has not passed the qualifying examination is permitted to take the General Examination, and ordinarily not until he has been accepted by a member of the staff as a research student. A student is expected to take the General Examination as soon as possible after passing the qualifying examination, usually early in his third year of regular graduate study. Passing the General Examination constitutes admission to candidacy for the Ph.D.

Each student bears responsibility for being informed of the dates on which the examinations are offered and for planning his own program so that he can take the various examinations at appropriate times.

A candidate for this degree is required to conduct an original and independent investigation in one of the fields of physics. Results of this research are submitted as a thesis. In his Final Examination, the candidate presents these results orally to the Department and is examined in his field of research.

A minor for a doctor's degree requires the equivalent of a bachelor's degree in physics and three graduate courses.

COURSES

320	Introduction to Modern Physics (3)	Staff
323	Introduction to Nuclear Physics (3)	Staff
325, 326, 327	Electricity and Magnetism (3,3,4)	Staff
367, 368, 369	Special Problems (*,*,*)	Staff
371, 372	Properties of Matter (3,3)	Staff
461, 462, 463	Introduction to Atomic and Nuclear Physics (3,3,3)	Staff
471, 472, 473	Atomic and Nuclear Physics Laboratory (3,3,3)	Staff
481, 482, 483	Introduction to Mathematical Physics (3,3,3)	Staff

Graduate courses numbered to and including 528, as well as 558, 560, 561, 566, 568, and 570, are given each year. Others are given intermittently, depending on demand; in most cases this means once every two years. Further information may be obtained from the Department of Physics or the current Yearly Time Schedule.

- 505, 506 Advanced Mechanics (3,3)** **Staff**
Dynamics of a particle; generalized coordinates and Lagrange's equations; variational principles and Hamilton's equations; kinematics and dynamics of rigid body motion; special relativity; canonical transformations and Hamilton-Jacobi theory; coupled small oscillations and normal coordinates.
- 509, 510, 511 Atomic, Molecular, and Nuclear Structure (2,2,2)** **Staff**
Introduction to quantum theory and application of quantum mechanics to problems in atomic, molecular, and nuclear structure. This course should be particularly appropriate to graduate students in other areas of science and engineering who wish to acquire some understanding of modern physics.
- 513, 514, 515 Electricity and Magnetism (4,4,4)** **Staff**
Properties of electric and magnetic fields in free space and material media; boundary value problems; radiation from accelerated charges and electromagnetic waves; relativistic formulation of electrodynamics.
- 517, 518, 519 Quantum Mechanics (4,4,3)** **Staff**
Physical and historical basis for quantum theory; solutions of the Schrödinger wave equation for discrete and continuous energy eigenvalues; representation of physical variables as operators and matrix formulation of quantum mechanics; spin angular momentum and identical particles; approximation methods; relativistic wave equations; and quantization of fields.
- 520 Seminar (1-2)** **Staff**
Seminars in the following subjects meet regularly: high energy physics, gaseous conduction studies and optical spectroscopy, magnetic resonance phenomena, nuclear, low temperature, and theoretical physics. Prerequisite, permission.
- 524, 545 Thermodynamics and Statistical Mechanics (3,3)** **Staff**
Thermodynamics and Statistical Mechanics. Statistical mechanical basis for the fundamental thermodynamical laws and concepts; applications of thermodynamic reasoning to selected physical problems; classical statistical distribution functions; quantum statistical mechanics. Prerequisite, 517 or concurrent registration in 517.
- 528 Current Problems of Physics (2)** **Staff**
Discussion of research topics which are currently being investigated within the department; detailed study of at least one research problem.
- 552 Conduction Through Gases (3)** **Staff**
Prerequisite, 509.
- 558 High Energy Physics (3)** **Staff**
Prerequisite, 560.
- 560, 561 Theoretical Nuclear Physics (3,3)** **Staff**
Prerequisites, 510 and 518.
- 562 Theory of Spectra (3)** **Staff**
Prerequisites, 509 and 518.
- 564 Relativity (3)** **Staff**
Prerequisites, 506 and 515.
- 566 Topics in Advanced Quantum Mechanics (3)** **Staff**
Prerequisite, 518.
- 568 Theory of Solids (3)** **Staff**
Prerequisite, 518.
- 570 Quantum Field Theory (3)** **Staff**
Prerequisite, 519.
- 574 Atomic and Molecular Collisions (3)** **Staff**
- 576 Selected Topics in Experimental Physics (*, maximum 6)** **Staff**
Prerequisite, permission.
- 578 Selected Topics in Theoretical Physics (*, maximum 6)** **Staff**
Prerequisite, permission.
- 600 Research (*)** **Staff**
Research currently is in progress in the following fields: acoustics, high energy physics, gaseous electronics, low temperature physics, magnetic resonance phenomena, natural radioactivity, nuclear physics, solid state physics, spectroscopy, and theoretical physics. Prerequisite, permission.
- 700 Thesis (*)** **Staff**
Prerequisite, permission.
- 702 Degree Final (0)** **Staff**
Limited to students completing a nonthesis degree program.

POLITICAL SCIENCE

Executive Officer: HUGH ALVIN BONE, 206 Smith Hall

The Department of Political Science offers courses leading to the degrees of Master of Arts and Doctor of Philosophy. Candidates for these degrees must have completed an undergraduate major or the equivalent in political science.

Candidates must acquire mastery of a field of concentration in which the doctoral thesis is prepared and of additional supporting fields. The following fields may be used for both purposes: 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 substitute special regional fields for any of the above general fields under the conditions set forth below. But if this is done, comparative government may not be offered as well. Candidates are also encouraged to minor, or offer supporting courses, in other social sciences such as history, economics, sociology, psychology, or geography.

The field of political theory is required in all programs, and courses 511, 512, and 513 are normally required. Not less than two thirds of the minimum credits required for the degree must consist of those earned in courses numbered 500 or above.

MASTER OF ARTS. A total of 36 credits in individually approved programs is required. The candidate must also submit an essay of distinction and pass a comprehensive examination on the content of a major and two minor fields.

If the candidate is permitted to adopt Far Eastern or Russian political science as a field of concentration, he must have a reading knowledge of the appropriate foreign language, and both of his supporting fields must be in general political science.

DOCTOR OF PHILOSOPHY. A minimum of 108 credits is required, including 27 allowed for the thesis. The candidate must present a field of concentration and four supporting fields.

If the candidate is permitted to adopt Far Eastern or Russian political science as a field of concentration, he may also present a related field of regional studies as one of his supporting fields.

COURSES

POLITICAL THEORY AND PUBLIC LAW

311 Theories of Modern Government (5)	Harbold
362 Introduction to Public Law (5)	Danelski
411 The Western Tradition of Political Thought (5)	Harbold
412 American Political Thought (5)	Harbold
413 Contemporary Political Thought (5)	Harbold
414 Oriental Political Thought (5) (Offered alternate years; offered 1961-62.)	Hsiao
415 Analytical Political Theory (5)	Cassinelli
460 Introduction to Constitutional Law (5)	Cole, Danelski
461 The Courts and Civil Liberty (5)	Cole
511, 512, 513 Seminar in Readings in Political Science (3,3,3) Important writings of the masters in political science; the political classics.	Cole, Danelski
514 Seminar in Problems of Political Theory (3) Selected topics, historical and conceptual, national, regional, and universal.	Harbold
515 Scope and Methods in Political Science (3) Inquiry into the philosophic foundations of various approaches in political science and their possible contributions to an understanding of politics. Substantial background in philosophy, as well as in political science, is highly desirable.	Harbold
562, 563, 564 Public Law (3,3,3) General legal concepts applicable to the conduct of governmental activities.	Cole

GOVERNMENT, POLITICS, AND ADMINISTRATION

350 Government and Interest Groups (5)	Gottfried
351 The American Democracy (5)	Gottfried
353 Theory and Practice of Government in the State of Washington (3)	Warren
360 The American Constitutional System (3)	Webster

- 370 Government and the American Economy (5) Gottfried
- 375 Problems of Municipal Government and Administration (5) Webster
- 376 State and Local Government and Administration (5) Warren
- 450 Political Parties and Elections (5) Bone
- 451 The Legislative Process (5) Bone
- 452 Political Processes and Public Opinion (5) Kessel
- 470 Introduction to Public Administration (5) Kroll, Warren
- 471 Administrative Management (5) Kroll
- 472 Introduction to Administrative Law (5) Danelski, Shipman
- 473 Comparative Administrative Systems (5) Kroll
- 480 Metropolitan Area Government (5) Warren
- 550, 551, 552 Seminar in Politics (3,3,3) Gottfried
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.
- 570-571-572 The Administrative Process (3-3-3) Kroll
An analysis of the administrative process relying primarily upon case materials and emphasizing policy formation, organization behavior, the nature of administrative roles, and the mechanism of responsibility.
- 573-574-575 Public Management (3-3-3) Shipman
Expression of public policy through program activity, program planning, programming and scheduling, budgeting, staffing, fiscal and other operating controls, evaluations of effectiveness. Prerequisite, admission to graduate curriculum in public administration, or permission.
- 576-577-578 Administrative Problems (3-3-3) Shipman
Methods employed in the analysis of administrative problems, programs, organization, process, procedure, and staffing; the design of organizations and operations. Prerequisite, admission to graduate curriculum in public administration.
- 580, 581, 582 Seminar in Metropolitan and Urban Planning Problems (3,3,3) Webster
The metropolitan community: nature, characteristics, functions, governmental structure, and intergovernmental relationships. Urban planning: theory; law and administration, policy determination, and public relations. Methods and devices for plan implementation. Drafting local ordinances for planning, zoning, subdivision control, and urban renewal.

INTERNATIONAL LAW, ORGANIZATION, AND RELATIONS

- 321 American Foreign Policy (3) Gottfried
- 322 The Foreign Service (3) Riley
- 323 International Relations of the Western Hemisphere (5) Mander
- 324 Contemporary International Relations in Europe (5) Hitchner
- 328 The United Nations and Specialized Agencies (5) Mander
- 335J Japanese Foreign Policy in Asia (3) Maki
Offered jointly with the Far Eastern and Russian Institute.
- 336 National Power and International Politics (5) Martin
- 420 Foreign Relations of the Soviet Union (5) Reshetar
- 425-426 International Law (3-3) Martin
- 427 International Government and Administration (5) Hitchner
- 429 International Relations in the Far East (5) Maki
- 430 International Relations in the Middle and Near East (5) Mander
- 432 American Foreign Policy in the Far East (5) Michael, Taylor
- 520J Seminar on the Foreign Policy of the Soviet Union (3) Reshetar
Offered jointly with the Far Eastern and Russian Institute. Prerequisite, permission.
- 521 Seminar in the Theory of International Relations (3) 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) 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) 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.

- 530 Seminar in Regional Foreign Policy (3)** **Mander**
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.

FOREIGN AND COMPARATIVE GOVERNMENT

- 343 Modern British Government (5)** **Cassinelli, Hitchner**
344 Chinese Government (5) **Michael**
(Offered alternate years; offered 1961-62.)
345J Japanese Government (3) **Maki**
Offered jointly with the Far Eastern and Russian Institute.
346 Governments of Western Europe (5) **Cassinelli, Hitchner**
347 Governments of Eastern Europe (5) **Reshetar**
441 Political Institutions of the Soviet Union (5) **Reshetar**
445 Comparative Political Institutions (5) **Hitchner, Martin**
541J The Soviet Political System (4) **Reshetar**
Critical appraisal of the principal research methods, theories, and types of literature dealing with the government and politics of the Soviet Union. Offered jointly with the Far Eastern and Russian Institute. Prerequisite, permission.
542 Seminar in Commonwealth Governments (3) **Mander**
Analysis of the governments of Canada, Australia, and New Zealand; their relations with the United Kingdom.
543 Seminar in British Government (3) **Hitchner**
Advanced studies in British parliamentary government.
545J Seminar on Japanese Government and Diplomacy (3, maximum 6) **Maki**
Offered jointly with the Far Eastern and Russian Institute.

GENERAL

- 506, 507, 508 Contemporary Problems, Domestic and Foreign (3,3,3)** **Martin**
600 Research (*) **Staff**
700 Thesis (*) **Staff**

PSYCHOLOGY

Acting Executive Officer: GEORGE P. HORTON, M40 Denny Hall

The Department of Psychology offers courses leading to the degrees of Master of Science and Doctor of Philosophy. The Department also offers jointly with the Department of Physiology and Biophysics a degree of Doctor of Philosophy.

The Department offers general and specialized courses, seminars, practica, and research opportunities in the major areas of psychology. The Department believes that general training in psychology should precede specialization.

Applicants who wish to undertake graduate study leading to an advanced degree in psychology must satisfy admission requirements of the Department of Psychology as well as those of the Graduate School. Supplementary application materials will be mailed to the applicant by the departmental Committee on Selection.

The Miller Analogies Test is required for admission to the graduate program. Arrangements for taking the test may be made through the Psychological Corporation, 304 East 45th Street, New York 17, N. Y., or through a local center certified to give the test.

The applicant to the graduate program should have a bachelor's or master's degree, courses in psychology, an academic preparation regarded as adequate by the Selection Committee, and favorable ratings by former teachers. As a general rule, the applicant should have maintained a 3.00 grade-point average in the senior year and in all graduate work completed. The type of supplementary academic preparation regarded as particularly desirable includes courses in mathematics, biology, chemistry, physics, and foreign languages (particularly French and German).

MASTER OF SCIENCE. A minimum of 27 approved course credits (major and minor) is required, with combined thesis, research, and course credits totaling at

least 36 credits. In his undergraduate and graduate work, the master's candidate must have completed the courses which in this bulletin are numbered 301, 400, 413, 514-515, 520, and additional courses assuring a general background in psychology. Reading knowledge of one foreign language (preferably French or German) is required. The student is expected to present a thesis, the general nature and design of which will be decided upon by the student and his sponsor during the second or third quarter in residence. Oral examination by the candidate's thesis committee over the thesis and any additional topics the committee feels to be desirable will be arranged approximately three weeks before the end of the quarter in which the candidate expects to receive his degree.

DOCTOR OF PHILOSOPHY. The student is normally required to complete the master's degree before being admitted to further work leading toward the doctorate. Permission to continue beyond the master's degree will depend upon the quality of the course work and of the thesis leading to that degree.

Reading knowledge of two foreign languages (preferably French and German) is required and both language examinations must be passed before the time of writing the General Examination. Substitution of one or both of these languages must be approved by the Dean of the Graduate School. The candidate is expected to present a dissertation, the general nature and design of which will be decided upon by the student and his sponsor. The candidate's Supervisory Committee will have the responsibility of arranging the Final Examination (oral) covering the dissertation and related material in his major and minor field(s). Candidates must meet all general requirements of the Graduate School and the Department before taking the Final Examinations.

The General Examination for Ph.D. candidates will be designed to evaluate not only the student's knowledge of psychology but also his critical ability and his facility and effectiveness in utilizing the concepts, methods, and procedures of the field, and will cover both the more general systematic background and the student's more special areas of interest. This examination will be given at the end of two years of full-time graduate work approved by the Department, and after the candidate has passed two of the required foreign languages.

MINORS FOR ADVANCED DEGREES IN PSYCHOLOGY. Depending upon the student's program, orientation, and recommendations by his sponsor or adviser, any of the following subject areas may constitute minors for advanced degrees: physiology, sociology, economics, anthropology, speech, mathematics, zoology, philosophy, or education. Special petition will be required for a minor in other areas. The student is expected to obtain a written statement of the requirements as they pertain to his program from the department in which he intends to minor.

MINOR IN PSYCHOLOGY. Graduate students desiring to minor in psychology are expected to have as a prerequisite at least 20 credits in psychology, including statistical methods, as preparation before credit will be given toward a minor in this field. The minor for the master's degree will consist of 12 credits (in addition to the 20 mentioned above). The candidate must present his program for approval by the Department. No examination will be required if the candidate has maintained a grade-point average of 3.00 or better in the minor field.

A minor for the Ph.D. degree will consist of 20 approved credits beyond the requirements for the M.S.

Any specific information not covered here may be obtained by writing directly to the Department of Psychology.

COURSES

301 Statistical Methods (5)

305 Abnormal Psychology (5)

306 Developmental Psychology (5)

308 Genetic Psychology (5)

331 Applied Psychology (3)

Baer, Edwards, Heathers, Smith

Sarason, Strother

Baer, Bijou, Birnbrauer

Baer

Culbert

- 345 Social Psychology (3)** Culbert, McKeever
- 400 Psychology of Learning (5)** Smith
- 401, 402 Contemporary Psychological Theory (3,3)** McKeever
- 403 Psychology of Motivation (3)** Smith
- 405 Personality (5)** Sarason
- 406 Experimental Psychology (5)** Loucks
- 409AJ Training of the Mentally Retarded (5)** Bijou, Hayden
Offered jointly with the College of Education. (Offered Summer Quarter only.) Prerequisite, permission.
- 409BJ Psychology of the Mentally Retarded (5)** Bijou, Hayden
Offered jointly with the College of Education. (Offered Summer Quarter only.) Prerequisite, permission.
- 409CJ Training the Emotionally Disturbed (5)** Hayden, Strother
Offered jointly with the College of Education. (Offered Summer Quarter only.) Prerequisite, permission.
- 409DJ Psychology of the Emotionally Disturbed (5)** Hayden, Strother
Offered jointly with the College of Education. (Offered Summer Quarter only.) Prerequisite, permission.
- 409WJ Advanced Workshop in the Education of the Retarded (10)** Staff
Offered jointly with the College of Education. (Offered Summer Quarter only.) Prerequisite, permission.
- 413 Tests and Measurements (5)** Heathers
- 414, 415 Thinking and Problem Solving (3,3)** Culbert, McKeever
- 416 Animal Behavior (3)** Horton
- 421 The Neural Basis of Behavior (5)** Woodburne
- 422 Physiological Psychology (5)** Loucks
- 423 Sensory Basis of Behavior (5)** Horton
- 426 Animal Laboratory (5)** Smith
- 427 Conditioning (5)** Loucks
- 435 Applied Experimental Psychology (3)** Culbert, Horton
- 441 Perception (5)** Culbert
- 445 Theories of Social Psychology (5)** Stotland
- 446 Objective Assessment of Personality (3)** Edwards
- 447 Psychology of Language (5)** Culbert
- 449 Psychology of Social Movements (3)** Stotland
- 450 Techniques in Social Psychology (5)** Stotland
- 451 Laboratory in Social Psychology (5)** Stotland
- 462 Readings in Psychology (1-3, maximum 9)** Staff
- 484 Laboratory in Child Behavior (5)** Baer, Birnbrauer
- 490 The Development of Behavior (5)** Baer
- 501 Problems in Learning Theory (3)** McKeever
Selected topics in the interpretation and evaluation of current theories of learning. Prerequisite, permission.
- 507 History of Psychology (5)** Esper
Experimental and theoretical backgrounds of modern psychology, especially in the nineteenth century. Prerequisite, permission.
- 509 Problems in Developmental Psychology (5)** Baer, Bijou
A critical analysis of current theoretical problems, of approaches to theory formulation, and a review of some typical pieces of research in the field of child behavior and personality development. Prerequisites, 306 or 308, 490, and permission.
- 514-515 Experimental Design (3-3)** Edwards
The nature of research and experimentation in psychology. Experimental techniques and controls. The use of randomization. Tests of technique. The analysis of variance and the design of experiments. Repeated measurements designs. Trend analysis. Models for testing hypotheses. The interpretation of research results. Prerequisites, 301 and permission.
- 516 Introduction to Multivariate Psychological Measurement (5)** 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. (Offered alternate years; offered 1962-63.) Prerequisites, 301 and 413, or permission.

- 517 Factor Analysis (5)** **Horst**
Mathematical and theoretical foundations; alternative methods of analysis; computational procedures; applications to psychological problems. (Offered alternate years; offered 1962-63.) Prerequisite, 516 or permission.
- 518 Test Construction (5)** **Horst**
Correlational analysis; statistical bases of test construction and of the use of test batteries; practice in test construction. (Offered alternate years; offered 1962-63.) Prerequisite, 517 or permission.
- 520 Seminar (2)** **Staff**
May be repeated for credit. Prerequisite, permission.
- 523 Seminar in the History of Psychology (2)** **Esper**
May be repeated for credit. Prerequisite, permission.
- 524 Seminar in Physiological Psychology (2)** **Horton, Loucks**
May be repeated for credit. Prerequisite, permission.
- 525 Seminar in Genetic and Comparative Psychology (2)** **Horton**
May be repeated for credit. Prerequisite, permission.
- 527 Seminar in Social Psychology (2)** **Edwards, Stotland**
May be repeated for credit. Prerequisite, permission.
- 528 Seminar in Experimental Psychology (2)** **Hermans**
May be repeated for credit. Prerequisite, permission.
- 529 Seminar in Clinical Psychology (2)** **Bijou, Sarason, Strother**
May be repeated for credit. Prerequisite, permission.
- 530 Seminar in Theory (2)** **Staff**
May be repeated for credit. Prerequisite, permission.
- 531 Seminar in Learning and Motivation (2)** **Staff**
May be repeated for credit. Prerequisite, permission.
- 544-545 Psychology of Social Attitudes (3-3)** **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. (Not offered 1961-62.) Prerequisite, 301 or permission.
- 581 Individual Testing (Children) (5)** **Staff**
Construction, administration, and scoring of individual mental tests used with children. Prerequisites, 306 or 308, 413, and permission.
- 582 Individual Testing (Adults) (5)** **Staff**
Construction, administration, and scoring of clinical psychological tests used with adults. Prerequisites, 305, 413, 581, and permission.
- 585 Experimental Problems in Clinical Psychology (5)** **Bijou, Birnbrauer**
Analysis of research and theories of concepts and processes in deviant behavior. Prerequisite, permission.
- 587 Advanced Personality Theory (3)** **Sarason**
The theories of personality development relating to the psychodynamics of personality organization. Prerequisites, 405 and permission.
- 588 Psychopathology (3)** **Strother**
Selected topics in psychopathology. Prerequisite, 587 or permission.
- 589 Theories and Systems of Psychotherapy (3)** **Strother**
A review of some of the principal theories and systems of psychotherapy. Prerequisite, 588 or permission.
- 591 Projective Personality Tests (3)** **Sarason**
Theory of projective tests; practice in scoring and interpreting projective tests with emphasis on the Rorschach. Prerequisites, 581, 582, or permission.
- 592 Projective Personality Tests (3)** **Sarason**
Introduction to administration, analysis, and interpretation of the Thematic Apperception Test and other projective personality tests. Prerequisites, 591 and permission.
- 593 Projective Personality Test Research (3)** **Sarason**
Review of research literature relevant to projective personality tests; experimental problems in application of projective techniques to the field of personality. Prerequisites, 591, 592, and permission.
- 596 Field Work in Clinical Psychology (3-5, maximum 36)** **Staff**
Field training in clinics and institutions for students of clinical psychology. May be repeated for credit. Prerequisite, permission.
A. Clerkship in child testing B. Clerkship in adult testing C. Externship
- 599 Survey of Clinical Psychometrics (2)** **Strother**
The nature, development, and clinical application of psychological tests. Prerequisites, permission and registration in the School of Social Work.
- 600 Research (*)** **Staff**
The name of the staff member with whom nonthesis research will be done should be indicated in registration. Prerequisite, permission
- 700 Thesis (*)** **Staff**

ROMANCE LANGUAGES AND LITERATURE

Executive Officer: HOWARD L. NOSTRAND, 217 Denny Hall

The Department of Romance Languages and Literature offers courses leading to the degrees of Master of Arts and Doctor of Philosophy. A knowledge of Latin and an acquaintance with masterpieces of other literature are strongly recommended. The equivalent of an undergraduate major in Romance Languages is required for admission to candidacy for an advanced degree in the Department.

The student is responsible for knowing and meeting the general requirements of the Graduate School.

MASTER OF ARTS. This Department offers two thesis programs for the degree of Master of Arts, both designed for those who may subsequently want to become candidates for the degree of Doctor of Philosophy, and a nonthesis, terminal program for those who intend to teach in a school or junior college. The reading knowledge examination for the M.A. degree must be taken in a language other than the candidate's major language.

For the first of the thesis programs the Departmental requirements are: oral and written proficiency in the major language; at least 36 quarter credits in literature and linguistics, usually divided between a major and a minor subject (Romance 401 and 581 must be included, and half of the 36 credits must be in courses numbered 500 and 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); a satisfactory thesis, to be submitted to the Department in completed form not less than four weeks before the date of the final examination.

The second of the thesis programs prepares the student to specialize in problems of foreign language learning and the 36 quarter credits of course work are designed to give competence in the following fields: oral and written proficiency in the major language; knowledge of representative literary works equivalent to an M.A. minor in either French or Spanish; familiarity with general and Romance linguistics; and a knowledge of educational principles and psychological forces affecting the development of language learning. The thesis requirement is the same as for the first program cited.

The nonthesis, terminal program for language teachers stresses linguistic proficiency and acquaintance with area and culture. Forty-five credits are required, including: French or Spanish 409; French or Spanish 541, 542, 543; Romance Linguistics 401 plus at least 2 credits from Romance Linguistics 505, 506, 507; French or Spanish 600, devoted to area studies (3-5 credits); qualifying essay (5 credits). The remainder of the 45 credits in this program will normally be taken from other courses offered by this Department, in accordance with the requirements of the Graduate School. Especially recommended are Romance 572J and 573J. The candidate should note the special requirements of the Graduate School for this degree, which will be found elsewhere in this Bulletin.

DOCTOR OF PHILOSOPHY. Two doctoral programs are offered. One is intended for students whose primary interest lies in language and literature, the other for those who wish to specialize in the training and supervision of language teachers and in research on language teaching. The M.A. degree is required as a prerequisite for the Ph.D. General Examination, unless an exception is voted by the Graduate Studies Committee. General requirements common to both of these programs are: candidates must be accepted by the Graduate Studies Committee of the Department; the student's adviser must present a course plan, as early as possible, to the Department's Graduate Studies Committee for approval; all candidates are expected to demonstrate near-native proficiency in the major Romance language; a satisfactory thesis must be submitted to the Chairman of the Supervisory Committee in completed form not less than six weeks before the date of the Final Examination; a reading knowledge of two foreign languages other than the

major is required (the languages are usually German and French or Spanish); prior to the General Examination, any candidate who has not written a master's thesis will be required to write, after consultation with his adviser, a critical paper designed to develop and demonstrate his capacity for research and criticism.

The program of studies for the Ph.D. degree with specialization in Romance languages and literature will require a minimum of 90 credits divided among the major, two minor fields, and any related topics for which the student may be held responsible. Whatever the combination of major and minors may be, every candidate will be examined on a minimum of one literary figure in French, Italian, and Spanish. The authors in Italian and Spanish will normally be Dante and Cervantes. The candidate will also be examined on Romance Linguistics in accordance with a syllabus obtainable from the Department. Minors outside the Department may be included in the 90 credits required. Further special requirements for this degree program are as follows:

1. **MAJOR FIELD.** The student's area of concentration is to be chosen from among the following fields: French literature, Spanish literature, (Peninsular and Spanish-American), Italian literature, and Romance linguistics.

2. **MINOR FIELDS.** Normally two minors, or supporting fields, are to be chosen by the student from among the following: French literature, Spanish literature (Peninsular and Spanish-American), Italian literature, Portuguese literature (Peninsular and Brazilian), and Romance linguistics. In the case of supporting literatures, the candidate is expected to acquire a knowledge of their historical development (using as a basis of study the works suggested in the departmental syllabi), as well as a more particular acquaintance with the works of one major author in each literature.

3. **RESEARCH METHODS.** Romance 581, Methodology and Bibliography of Research (2) is required of all candidates for the Ph.D.

4. **GENRE.** The student will be expected to demonstrate in the General Examination a thorough knowledge of one literary genre, usually in all the literatures embraced by his program and over a specified period of their history. The choice of genre and period must be approved by the student's adviser and the Graduate Studies Committee.

Special requirements for the Ph.D. candidate specializing in language teacher training and supervision include a minimum of 90 quarter credits in courses aimed at developing competence in the following fields:

1. **LITERATURE.** Candidates are expected to complete the equivalent of a Ph.D. minor in either French or Spanish literature, and consequently should have a knowledge of works such as those listed in the M.A. syllabus.

2. **LINGUISTICS.** Candidates will be expected to acquire command of current developments in linguistics, both theoretical and applied, and to demonstrate the ability to relate these principles to the analysis and teaching of French or Spanish. In addition to Romance 401, 505, 506, 507 and French or Spanish 541, 542, 543, courses in general linguistics are strongly recommended.

3. **EDUCATION AND PSYCHOLOGY OF LANGUAGE.** Candidates will be expected to acquire a knowledge of the methodology of language teaching, the application of psychological principles and the uses of experimentation, and tests and measurements in connection with the language learning process. The following courses are among those designed to develop this competence: Education 490, Educational Statistics (5); Psychology 447, Psychology of Language (5); and 514-515, Experimental Design (6).

4. **RESEARCH METHODS.** Romance 581, Methodology and Bibliography of Research (2) is required of all candidates for the Ph.D. In addition, candidates in this program are expected to acquire a knowledge of significant research and methods in the field of language teaching through participation in Romance 599, Research in Romance Linguistics (2-5, maximum 15).

COURSES

ROMANCE LINGUISTICS AND LITERATURE, GENERAL AND COMPARATIVE

- 401, 402 Introduction to Romance Linguistics (2,2)** **Dorfman**
Prerequisite, junior standing or equivalent of one year of Romance Language or Latin.
- 505, 506, 507 Romance Linguistics (2,2,2)** **Dorfman**
Principles of comparative linguistics; a brief history of the Romance languages and detailed investigation of their linguistic evolution.
- 521, 522, 523 Phonemic Analysis and Description (2,2,2)** **Dorfman**
Phonology as functional phonetics; brief history of the phoneme idea; comparison of the variant phonemic systems in the Romance languages and other linguistic structures; functional and structural analysis of linguistic expression.
- 531 Problems in Romance Linguistics (2-5, maximum 10)** **Staff**
- 572J, 573J Romance Language Teachers' Seminar (2½,2½)** **Simpson**
The teaching of foreign languages; conducted as a workshop. Opportunity for directed practice teaching of elementary and secondary school children. Offered jointly with the College of Education. (Offered Summer Quarter only.)
- 581, 582, 583 Methodology and Bibliography of Research (2,2,2)** **Nostrand, Weiner**
Bibliographical resources for Romance literatures; recurrent types of research problems and the accumulating methodology; standards of evidence; the evaluation and organization of evidence; the philosophies of literary history and its relation to bibliography and criticism.
- 584, 585, 586 Seminar in Romance Culture (3,3,3)** **Staff**
Individual and collective research in the evolution of concepts common to Romance literature. Open to graduates of this and other departments. (Offered 1961-62.)
- 590 Research in Comparative Romance Literature (2-5, maximum 20)** **Staff**
- 599 Research in Romance Linguistics (2-5, maximum 15)** **Staff**
- 700 Thesis (*)** **Staff**
- 702 Degree Final (0)** **Staff**
Limited to students completing a nonthesis degree program.

CATALAN

- 535 Catalan Language and Literature (5)** **Simpson**
Survey of political and literary history of Catalonia. Reading and reports on modern Catalan literary works. (Offered when demand is sufficient.)

FRENCH

- 304, 305, 306 Survey of French Literature (5,5,5)** **Staff**
304: 1100-1680
305: 1680-1800
306: 1800-1960
- 390 Supervised Study (2-5, maximum 20)** **Staff**
- 409 Advanced Phonetics (3)** **Creore, Dorfman**
- 421, 424, 425, 426 Fiction (3,3,3,3)** **Simpson, Snyder, Weiner, C. Wilson**
421: Fiction, 1660-1800 (Offered Spring, 1962)
424: Fiction, 1800-1850 (Offered Summer, 1962)
425: Fiction, 1850-1900 (Offered Autumn, 1961)
426: Fiction, 1900-1950 (Offered Winter, 1963)
- 430 Advanced Conversational French (1-3, maximum 6)** **Hanzeli**
(Offered Summer Quarter only.)
- 431, 432, 433, 434 Poetry (3,3,3,3)** **Nostrand, Snyder, Weiner**
431: Poetry: Baroque (Offered Summer, 1962)
432: Poetry: Romantic Poetry (Offered Spring, 1963)
433: Parnassian and Symbolist Poetry (Offered Autumn, 1962)
434: Twentieth-Century Poetry (Offered Winter, 1962)
- 454, 455, 456, 457 Nonfiction (3,3,3,3)** **David, Hanzeli, Keller**
454: Nonfiction of the Classic Period (Offered Winter, 1964)
455: Eighteenth-Century Nonfiction (Offered Spring, 1963)
456: Nineteenth-Century Nonfiction (Offered Winter, 1962)
457: Twentieth-Century Nonfiction (Offered Autumn, 1962)
- 461, 462, 463, 464 Drama (3,3,3,3)** **Chessex, Creore, Hanzeli, Snyder**
461: Seventeenth-Century Drama (Offered Winter, 1963)
462: Eighteenth-Century Drama (Offered Spring, 1962)
463: Nineteenth-Century Drama (Offered Autumn, 1963)
464: Twentieth-Century Drama (Offered Autumn, 1961)
- 501 Studies in Renaissance Prose (5)** **Koller**
Rabelais and Montaigne. (Offered Autumn, 1963.)
- 502 Studies in Renaissance Poetry (5)** **Creore**
The Pléiade. (Offered Autumn, 1962.)

- 504 Contemporary French Literature (5)** **David**
Parties and schools of thought after World War I. Special emphasis will be laid on "intelligence" and related concepts such as the "heart" and "honor." (Offered Spring, 1962.)
- 513 Old French Literature (3)** **Simpson**
Literary backgrounds; reading and discussion of selected texts. (Offered Autumn, 1961.)
- 521 Studies in Fiction: 1660-1800 (3)** **Hanzeli**
Detailed investigation of the French novel and *conte philosophique* during the period 1680 to 1800. Diderot and his contemporaries, Marivaux, Prévost, Rousseau, Laclos, and Voltaire. (Offered Summer, 1965.)
- 524 Studies in Fiction: 1800-1850 (3)** **Staff**
Detailed investigation of the development of the French novel in the first half of the nineteenth century. Hugo, Balzac, Sand, and others. (Offered Winter, 1962.)
- 525 Studies in Fiction: 1850-1900 (3)** **Simpson**
Detailed investigation of the French novel in the second half of the nineteenth century, Flaubert, Zola, Bourget, and others. (Offered Autumn, 1962.)
- 526 Studies in Fiction: 1900-1950 (3)** **C. Wilson**
Detailed investigation of the French novel in the twentieth century. The works of Proust, Gide, Aymé, Camus, Sartre, and their contemporaries. (Offered Autumn, 1964.)
- 532 Studies in Nineteenth-Century Poetry (3)** **Snyder**
Research in the poetry of the Romantic period. Critical examination of the poetic works of Hugo, Lamartine, and Vigny. (Offered Spring, 1962.)
- 533 Studies in Parnassian and Symbolist Poetry (3)** **Nostrand**
Research in the poetry of the Parnassians and Symbolists. Critical examination of the poetry of Leconte de Lisle, Hérédia, Prudhomme, and Baudelaire. (Offered Summer, 1963.)
- 534 Studies in Twentieth-Century Poetry (3)** **Weiner**
Research in French poetry of the twentieth century. Critical examination of the poetry of René Char, Valéry, Artaud, Aragon, and others. (Offered Autumn, 1963.)
- 541, 542, 543 History of the French Language (2,2,2)** **Dorfman**
A survey of the phonological, morphological, and syntactical development of the French language from its origins to the present. (Offered alternate years; offered 1962-63.)
- 554 Studies in Seventeenth-Century Nonfiction (3)** **Keller**
Intensive investigation of critics and essayists of the seventeenth century. Detailed study of La Rochefoucauld, Descartes, Pascal, La Bruyère, and Mme de Sévigné. (Offered Summer, 1962.)
- 555 Studies in Eighteenth-Century Nonfiction (3)** **Hanzeli**
Intensive investigation of critics and essayists of the eighteenth century, such as Voltaire, Montesquieu, Rousseau, and Diderot. (Offered Summer, 1964.)
- 556 Studies in Nineteenth-Century Nonfiction (3)** **David**
Intensive investigation of critics and essayists of the nineteenth century, such as Madame de Staël, Chateaubriand, Sainte-Beuve, Tocqueville, Comte, Rinan, and Taine. (Offered Winter, 1963.)
- 557 Studies in Twentieth-Century Nonfiction (3)** **David**
Intensive investigation of such contemporary critics as Péguy, Maurras, Chartier, Guilton, Thibaudet, Maurier, and Valéry. (Offered Spring, 1964.)
- 561 Studies in Seventeenth-Century Drama (3)** **Keller**
Research in the drama of Racine, Corneille, or Molière. (Offered Winter, 1962.)
- 562 Studies in Eighteenth-Century Drama (3)** **Hanzeli**
Research in the drama of the eighteenth century as exemplified in the works of Marivaux, Crébillon, Voltaire, La Chaussée, and Diderot. (Offered Winter, 1965.)
- 563 Studies in Nineteenth-Century Drama (3)** **Croore**
Research in the drama of the nineteenth century as exemplified in the works of Hugo, Musset, Scriber, Augier, and Dumas fils. (Offered Spring, 1963.)
- 564 Studies in Twentieth-Century Drama (3)** **Chessex**
Research in the drama of the twentieth century as exemplified in the works of Brieux, Curiel, Lenormand, Anouilh, Matherland, Sartre, Cocteau, Giraudoux, Beckett, and Ionesco. (Offered Summer, 1962.)
- 575, 576 Literary Criticism (5,3)** **Nostrand, Weiner**
Major philosophies of criticism and their exponents. The influences which affected standards, purposes, and methodologies.
575: Nineteenth and early twentieth centuries. (Offered Spring, 1962.)
576: Twentieth century. (Offered Winter, 1963.)
- 580 Explication de Texte (3)** **David, Keller**
Close study of short pieces of French prose and poetry. The method consists of a literary analysis of the text from different viewpoints: biographical, historical, etc. Lectures, discussion, and student *explications*. (Offered Spring, 1963.)
- 590 Special Seminar and Conference (2-5, maximum 20)** **Staff**
Group seminars and conferences will be scheduled under this number to meet special needs. For individual conferences under this number, permission of the executive officer is required.
- 600 Research (2-5, maximum 20)** **Staff**
- 700 Thesis (*)** **Staff**

- 702 Degree Final (0)** **Staff**
Limited to students completing a nonthesis degree program.

ITALIAN

- 390 Supervised Study (2-5, maximum 20)** **Budel**
- 421, 422, 423 Survey of Italian Literature (3,3,3)** **Budel**
- 512, 513 Dante (3,3)** **Budel**
Dante and the *Dolce stil nuovo*: *La vita nuova*, *Le rime*. The Dante of the *Divina commedia*. Dante's literary aesthetics: *De vulgari eloquentia*, *Il convivio*. (Offered 1962-63.)
- 531 Literary Problems (2-5, maximum 20)** **Budel**
Field (see A-F, below) must be specified in registering. For individual conferences under this number (but not for group projects) permission of the Executive Officer is required.
A. Middle ages and fourteenth century D. Eighteenth century
B. Renaissance E. Nineteenth century
C. Baroque F. Twentieth century
- 541, 542, 543 History of the Italian Language (2,2,2)** **Budel, Dorfman**
A survey of the phonological, morphological, and syntactical development of the Italian language from its origins to the present. (Offered 1962-63.)
- 551, 552, 553 Seminar in Humanist and Renaissance Prose and Poetry (3,3,3)** **Budel**
551: Humanism and Early Renaissance: Pulci, Boccaccio, Poliziano, Lorenzo il Magnifico, Boiardo, Sannazaro, Marsilio Ficino, Pico della Mirandola. (Offered 1961-62.)
552: High Renaissance: Castiglione, Ariosto, Machiavelli, Folengo, Bembo, Trissino. (Offered 1961-62.)
553: Late Renaissance: Michelangelo, Tasso, Bandello, Pietro Aretino. Renaissance literary theory from Coluccio Salutati to Scaligero. (Offered 1962-63.)
- 561, 562, 563 Italian Literature of the Nineteenth and Twentieth Centuries (3,3,3)** **Budel**
(Offered 1962-63.)
- 600 Research (2-5, maximum 20)** **Staff**
- 700 Thesis (*)** **Staff**
- 702 Degree Final (0)** **Staff**
Limited to students completing a nonthesis degree program.

PORTUGUESE

- 390 Supervised Study (2-5, maximum 20)** **C. Wilson**

PROVENÇAL

- 534 Old Provençal (3)** **Simpson**
(Offered when demand is sufficient.)

SPANISH

- 304, 305, 306 Survey of Spanish Literature (3,3,3)** **Staff**
- 390 Supervised Study (2-5, maximum 20)** **Staff**
- 409 Phonetics, Pronunciation, Intonation (3)** **Vargas-Baron**
- 430 Advanced Conversational Spanish (1-3, maximum 6)** **Ayllon**
(Offered Summer Quarter only.)
- 441, 442, 443 Drama (3,3,3)** **W. Wilson**
(Offered alternate years; offered 1961-62.)
- 451, 452, 453 Spanish Literature Since 1700 (3,3,3)** **Staff**
(Offered alternate years; offered 1962-63.)
- 461, 462, 463 Spanish Literature of the Golden Era (3,3,3)** **W. Wilson**
(Offered alternate years; offered 1963-64.)
- 471, 472, 473 Individual Authors (3,3,3)** **Staff**
(Offered when there is sufficient demand.)
- 481, 482, 483 Spanish-American Literature (3,3,3)** **Alcala, Vargas-Baron**
(Offered alternate years; offered 1961-62.)
- 485 Romanticism, Realism, and Naturalism in Spanish America (3)** **Vargas-Baron**
(Offered alternate years; offered 1962-63.)
- 486 The Modernista Movement in Spanish-American Literature (3)** **Vargas-Baron**
(Offered alternate years; offered 1962-63.)
- 487 The Contemporary Spanish-American Novel (3)** **Vargas-Baron**
(Offered alternate years; offered 1962-63.)
- 511 The Poema de Mio Cid (3)** **Sousa**
(Offered alternate years; offered 1961-62.)
- 512 Epic Poetry (3)** **Sousa**
The epic material in old Spanish literature and its later treatment in poetry and drama. Special investigations and reports. (Offered alternate years; offered 1961-62.)

- 513 The Spanish Ballad (3)** **Ayllon**
The origin and evolution of the Spanish ballad. (Offered alternate years; offered 1961-62.)
- 515 The Contemporary Spanish-American Short Story (3)** **Vargas-Baron**
Leading short story writers in Spanish America. (Offered 1962-63.)
- 521 The Renaissance in Spain (5)** **Ayllon**
(Offered alternate years; offered 1963-64.)
- 531 Literary Problems (2-5, maximum 20)** **Staff**
Field (see A-H, below) must be specified in registering. For individual conferences under this number (but not for group projects) permission of the Executive Officer is required. Maximum credit to be 5 in any one sub-division.
 A. Middle ages
 B. Renaissance
 C. Golden age
 D. Eighteenth century
 E. Nineteenth century
 F. Twentieth century
 G. Spanish colonial literature
 H. Latin America
- 541, 542, 543 History of the Spanish Language (2,2,2)** **Sousa**
A survey of the phonological, morphological, and syntactical development of the Spanish language from its origins to the present. (Offered 1962-63.)
- 571 The Modern Essay (3)** **Alcala, Vargas-Baron**
Leading essayists of Spain and Spanish America. (Offered 1963-64.)
- 572 Modern Poetry (3)** **Alcala, Vargas-Baron**
Romanticism and later movements in Spanish and Spanish-American poetry. (Offered 1963-64.)
- 600 Research (2-5, maximum 20)** **Staff**
- 700 Thesis (*)** **Staff**
- 702 Degree Final (0)** **Staff**
Limited to students completing a nonthesis degree program.

COURSES IN ENGLISH TRANSLATION

Recommended as appropriate minor or supporting studies for students majoring in other departments. Courses in English translation are not applicable toward undergraduate or graduate majors in the Department of Romance Languages and Literature.

FRENCH

- 416 Rabelais and Montaigne in English (3)** **Keller**
- 417 Racine and Moliere in English (3)** **Chessex**
- 418 Literature of the Enlightenment in English (3)** **Hanzeli**
Voltaire, Rousseau, Diderot
- 419 Nineteenth-Century Novel in English (3)** **Keller**
- 420 Twentieth-Century Fiction in English (3)** **Weiner**

ITALIAN

- 318 Italian Literature in English (5)** **Budel**
- 384 Renaissance Literature of Italy in English (2)** **Budel**
- 481, 482 Dante in English (2,2)** **Budel**

ROMANCE LITERATURE

- 460 The Literature of the Renaissance in English (5)** **Keller**

SPANISH

- 315 Latin-American Authors in English (5)** **Vargas-Baron**
- 318 Don Quijote in English (3)** **W. Wilson**
- 345 Spanish Literature of the Renaissance in English (3)** **Ayllon**
- 420 Contemporary Spanish Essay and Drama in English (3)** **Alcala**

SCANDINAVIAN LANGUAGES AND LITERATURE

Executive Officer: **SVERRE ARESTAD, 215 Denny Hall**

The Department of Scandinavian Languages and Literature offers courses leading to the degree of Master of Arts. To meet the language requirement for this degree, French or German is recommended. Candidates must earn 20 credits in courses numbered 500 and above.

COURSES**DANISH**

490 Supervised Reading (*, maximum 5) Arestad

NORWEGIAN

450 History of Norwegian Literature (3) Arestad

490 Supervised Reading (*, maximum 5) Arestad

SCANDINAVIAN LITERATURE

500, 501, 502 Old Icelandic (2,2,2) Johnson

507 Ibsen (*, maximum 5) Arestad

508 The Scandinavian Novel (*, maximum 5) Arestad

510, 511, 512 Strindberg (2,2,2) Johnson

515 Modern Danish and Norwegian Poetry (3) Arestad

516 Modern Danish and Norwegian Drama (3) Arestad

517 Modern Swedish Poetry (3) Johnson

518 The Swedish Novel (3) Johnson

700 Thesis (*) Staff

SWEDISH

450 History of Swedish Literature (3) Johnson

455 History of the Swedish Language (3) Johnson

490 Supervised Reading (*, maximum 6) Johnson

COURSES IN ENGLISH

309, 310, 311 The Scandinavian Novel in English (2,2,2) Arestad, Johnson

382 Twentieth-Century Scandinavian Drama in English (2) Johnson

480 Ibsen and His Major Plays in English (2) Arestad

481 Strindberg and His Major Plays in English (2) Johnson

SOCIOLOGY

Executive Officer: ROBERT E. L. FARIS, 108A Smith Hall

The Department of Sociology offers courses leading to the degrees of Master of Arts and Doctor of Philosophy.

All graduate students must complete undergraduate requirements for a major in sociology before becoming candidates for degrees. Students whose undergraduate work in sociology seems inadequate may be required to pass a qualifying examination before being admitted 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 or a program of related courses. At least 9 of the sociology credits must be in courses numbered 500 and above. A reading knowledge of a foreign language is required. 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 taken. The master's thesis must be submitted seven weeks before the degree is to be granted.

DOCTOR OF PHILOSOPHY. Candidates must complete a program of courses approved by the Department. Half of the credits, including the thesis, must be in courses numbered 500 and above. The residence requirement is three years, two of them at the University of Washington. One of the two years must be spent in continuous full-time residence.

A reading knowledge of two foreign languages is required.

A completed thesis must be submitted seven weeks before the degree is conferred.

A written General Examination will cover four fields of specialization, one of which must be research methods and social statistics. A minor sequence or a program of related courses in addition to the fields, is also required.

An oral Final Examination is given on the completion of all requirements, including the thesis.

COURSES

310 General Sociology (5)	Larsen, Staff
331 Population Problems (5)	Watson
352 The Family (5)	Staff
362 Race Relations (5)	Barth
365 Urban Community (5)	Cohen
371 Criminology (5)	Hayner, Schrag
389 Reading in Selected Fields (2-5, maximum 15)	Staff
410 History of Sociological Thought (5)	Catton
411, 412, 413 Systematic Sociology (3,3,3)	Dodd
414 Sociological Theory (5)	Schrag
415 Theory of Social Organization (5)	Wager
420 Methods of Sociological Research (5)	Faris
421 Methodology: Case Studies and Interviewing (3)	Larsen
423 Advanced Social Statistics (5)	Costner
425J Graphic Techniques in the Social Sciences (5) Offered jointly with the Department of Geography.	Schmid
426 Methodology: Quantitative Techniques in Sociology (3)	Costner
427 Statistical Classification and Measurement (3)	Costner
428-429 Sampling and Experimentation (3-3)	Costner
430 Human Ecology (5)	Cohen, Schmid
440 Primary Interaction and Personal Behavior (5)	Faris
442 Public Opinion (3)	Larsen
443 Mass Communication (5)	Larsen
445 Social Movements (3)	Miyamoto
447 Social Control (5)	Staff
448 Sociometric Analysis and Group Structure (5)	Schrag
450 Contemporary American Institutions (5)	Wager
451 Social Change and Trends (5)	Catton
453 Social Factors of Marriage (3)	Leik
455 Housing in the American Community (5)	Cohen
458 Institutional Forms and Processes (5)	Faris
459 Comparative Social Systems: Latin America (3)	Hayner
460 Social Differentiation (5)	Barth
463 American Negro Community (3)	Barth
466 Industrial Sociology (5)	Wager
467 Industry and the Community (3)	Wager
468 Sociology of Occupations and Professions (5)	Wager
472 Juvenile Delinquency (5)	Hayner, Schrag
473 Corrections (5)	Hayner, Schrag
474 Probation and Parole (3)	Hayner
475 Problems in the Administration of Correctional Programs (3)	Schrag
N510, N511, N512 Departmental Seminar (0,0,0) Monthly meetings with reports on independent research by graduate students and staff members.	Staff

- 521, 522, 523 Seminar in Methods of Sociological Research (3,3,3)** **Staff**
Prerequisites, 223, 414, and 420, or equivalents.
- 528 Seminar in Selected Statistical Problems in Social Research (3)** **Staff**
Prerequisite, 426.
- 530 Advanced Human Ecology (3)** **Schmid**
Prerequisites, 230 or 430, and 15 credits in social science.
- 531 Demography (3)** **Schmid**
Research problems in population and vital statistics. Prerequisites, 331, and 15 credits in social science or permission.
- 540 Seminar in Social Interaction (3)** **Miyamoto**
Evaluation of studies in social interaction. Analyzes types of interaction, interaction models, and such major variables as roles, self-conception, and the influence of norms. Prerequisite, 440 or equivalent.
- 541 Seminar on Small Group Research (3)** **Miyamoto**
Theories, methodology, and studies in the area of small group research. Covers such topics as interaction channels, group cohesion, group locomotion, and consensus in groups. Prerequisite, permission.
- 543 Communications Seminar (3)** **Larson**
Sociological research in mass communication. Emphasis on the role of groups in providing norms and networks in the flow of information and influence from the mass media. Prerequisite, 443 or equivalent.
- 550, 551, 552 Marriage and the Family (3,3,3)** **Leik**
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.
- 566, 567 Industrial Sociology Seminar (3,3)** **Wager**
Research training in industrial sociology. Readings and field projects. Prerequisite, 466 or equivalent.
- 571 Correctional Communities (3)** **Hayner**
Prerequisites, 371 and 473, or equivalent.
- 572 Analysis of Criminal Careers (3)** **Hayner**
Personal and social factors in criminal maturation and reformation. Prerequisites, 371 and 473, or equivalent.
- 573 Crime Prevention (3)** **Hayner**
Prerequisites, 371 and 472, or equivalent.
- 574 Seminar in Methods of Criminological Research (3)** **Schrag**
Provides training in the technical analysis of published research in criminology; designs and processes studies in parole prediction, prediction of prison adjustment, and prediction of treatment effect. Prerequisite, permission.
- 599 Reading in Selected Fields (2-5, maximum 15)** **Staff**
Open only to qualified graduate students by permission.
- 600 Research (2-5)** **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 permission.
- 700 Thesis (*)** **Staff**

SPEECH

Executive Officer: HORACE G. RAHSKOPF, 209 Parrington Hall

The Department of Speech offers courses leading to the degrees of Master of Arts and Doctor of Philosophy.

Students who undertake advanced study of speech usually have college teaching or clinical work in speech and hearing therapy as their goals, although they may be planning to enter other professions where a high degree of competence in and understanding of oral communication are essential. Such students are expected to present an undergraduate background of not less than 35 quarter credits of approved courses in speech. In certain cases the Department may accept a limited amount of credit in closely related fields as part of the required undergraduate background. In general it is expected that a student's background in speech will constitute a broad orientation in the field. When this is not the case, the Department may require certain speech courses outside the area of specialization, either as additional undergraduate training or as part of the graduate program.

Facilities of the Department include laboratories for research in oral communication and experimental phonetics and a well-equipped speech clinic with unusually wide resources for clinical experience and research.

MASTER OF ARTS. Candidates must complete 36 credits of approved course work of which 12 credits should be in a minor or supporting courses from closely related areas. Thesis research may be in any subdivision of the field.

DOCTOR OF PHILOSOPHY. Two major areas of concentration are available: public address and rhetoric including argumentation and discussion, and speech correction and hearing including experimental phonetics.

COURSES

VOICE AND PHONETICS

- 310 Voice Science (5)** Tiffany
411 Anatomy of the Vocal Organs and Ear (5) Palmer
415 Advanced Voice and Phonetics (5) Tiffany
 Prerequisite, 310 or permission.
510 Experimental Phonetics (3) Tiffany
 Application of experimental methods to research in voice and phonetics; critical review of research literature. Prerequisite, 415 or permission.

RHETORIC AND PUBLIC ADDRESS

- 320 Public Speaking (5)** Franzke
 Not open to students who have credit in 420. Prerequisite, 220 or permission.
420 Advanced Public Speaking (5) Baskerville
 Not open to students who have credit in 320. Prerequisite, 220 or permission.
421 Persuasion (3) Pence
 Prerequisite, 220 or 230, or permission.
425, 426 American Public Address (5,5) Baskerville
428 British Public Address (5) Strother
 (Offered alternate years; offered 1961-62.)
521 Studies in Greek and Roman Rhetoric (5) Rahskopf
 Critical analysis of writings on rhetoric by Plato, Aristotle, Cicero, Quintilian, and others.
522 Studies in Medieval and Renaissance Rhetoric (5) LaRusso
 A critical analysis of selected persons, works, and topics related to the development of rhetorical theory during the Middle Ages and the Renaissance. (Offered alternate years; offered 1961-62.) Prerequisite, 521.
523 Studies in Modern Rhetoric (5) Pence
 Critical analysis of writings on rhetoric by Cox, Wilson, Bacon, Campbell, Blair, Whately, and others. (Offered alternate years; offered 1962-63.) Not open to students who received credit for 522 prior to Spring, 1957.
525 Rhetorical Criticism (3) Baskerville
 The history and method of rhetorical criticism. Application of standards to notable British and American speeches. Prerequisite, 425, 426, or 428.
530 Experimental Problems in Public Address (3-5) Pence
 Analysis of theoretical considerations in audience and listening behavior; application of measurement techniques. (Offered alternate years; offered 1961-62.) Prerequisite, permission.

ARGUMENT AND DISCUSSION

- 332 Principles of Group Discussion (5)** Crowell, Nilsen
335 Methods of Debate (3) Strother
 Prerequisite, 220 or 230, or permission.
432 Problems of Discussion Leadership (3) Crowell
436 Methods of Public Discussion (5) Franzke

ORAL INTERPRETATION OF LITERATURE

- 340 Oral Interpretation of Prose (3)** Grimes
345 Choral Speaking (3) Grimes
 (Offered alternate years; offered 1962-63.)
440 Oral Interpretation of Poetry (3) Grimes
540 Studies in Oral Interpretation (3) Grimes
 Critical analysis of writings by Sheridan, Walker, Rush, Delsarte, Bell, Curry, Emerson, and others. (Offered alternate years; offered 1961-62.) Prerequisite, 440.

TEACHING OF SPEECH

- 359 Speech in the Classroom (3)** Nelson

- 457 Debate and Discussion Problems in High School and College (2½)** **Staff**
(Offered Summer Quarter only.)
- 550 Studies in Speech Education (3)** **Nolson**
Philosophical, curricular, and methodological problems of speech instruction. (Offered alternate years; offered 1962-63.)

RADIO-TV SPEECH

- 361 Advanced Radio-TV Speech (3)** **Bird**

SPEECH CORRECTION

- 470, 471 Speech Correction (5,5)** **Carrell**
- 473 Diagnostic Methods in Speech Correction (5)** **Wingate**
Prerequisite, 471.
- 474 Clinical Practice in Speech Correction (1-5, maximum 15)** **Palmer**
Prerequisites, 471 and 473 which may be taken concurrently.
- 475 Stuttering (2)** **Wingate**
- 476 Language Development of the Child (3)** **Wingate**
(Offered alternate years; offered 1962-63.)
- 478 Interview Techniques for Speech and Hearing Rehabilitation (3)** **Wingate**
(Offered alternate years; offered 1961-62.)
- 570, 571, 572, 573 Organic Disorders of Speech (3,3,3,3)** **Carrell**
Etymology, diagnosis, and therapy. 570: morphogenic disorders, especially cleft palate and dental malocclusions. Not open to students who took 574 prior to Autumn, 1956. (Offered alternate years; offered 1962-63.) 571: dysarthria, especially cerebral palsy. (Offered alternate years; offered 1961-62.) 572: aphasia. (Offered alternate years; offered 1962-63.) 573: pathologic disorders of voice. (Offered alternate years; offered 1961-62.) Prerequisite for each course, 471 or permission.
- 574 Advanced Clinical Practice in Speech Correction (1-5, maximum 10)** **Palmer**
Prerequisite, 474.
- 575 Stuttering Therapy (3)** **Wingate**
(Offered alternate years; offered 1962-63.) Prerequisite, 475 or permission.
- 578 Psychogenic Factors in Speech and Hearing Disorders (2)** **Wingate**
Psychogenic factors as etiological agents in speech and hearing disorders. (Offered alternate years; offered 1961-62.) Prerequisite, Psychology 305 or permission.

HEARING

- 480 Introduction to Hearing (5)** **Hanley**
- 481, 482 Principles and Methods of Aural Rehabilitation (5,5)** **Palmer**
Prerequisites, 480 for 481; 481 or permission for 482.
- 484 Clinical Practice in Aural Rehabilitation (1-5, maximum 15)** **Hanley**
Prerequisite, 480, 481.
- 485 Medical Background for Audiology (2)** **Staff**
(Offered alternate years; offered 1962-63.)
- 487 Audiometry (3)** **Hanley**
- 488 Hearing Aid Evaluation and Selection (2)** **Hanley**
(Offered alternate years; offered 1962-63.)
- 580 Advanced Audiology (5)** **Hanley**
Methods, techniques, and instruments used in the measurement of auditory function. Review of research literature. (Offered alternate years; offered 1962-63.) Prerequisite, 480 or permission.
- 584 Advanced Clinical Practice in Aural Rehabilitation (1-5, maximum 10)** **Hanley**
Prerequisite, 484.
- 587 Advanced Audiometry (2)** **Hanley**
Special diagnostic tests of auditory function; clinical practice. (Offered alternate years; offered 1961-62.) Prerequisite, 487.
- 588 Advanced Audiometry (2)** **Hanley**
Course in clinical diagnostic procedures involved in threshold finding, pre-surgical and surgical audiometry and electroencephalographic audiometry. (Offered alternate years; offered 1962-63.) Prerequisite, 487.
- 589 Advanced Audiometry (2)** **Hanley**
Clinical procedures utilized in the measurement of auditory recruitment and aural overload. Special attention will be placed on the Rainville masking technique. (Offered alternate years; offered 1961-62.) Prerequisite, 487.

GENERAL

- 400 Backgrounds in Speech (3)** **Rahskopf**
- N500 Departmental Seminar (0)** **Staff**
Reports of research by graduate students and staff members.

501 Introduction to Graduate Study in Speech (3)	Crowell
600 Research (*)	Staff
700 Thesis (*)	Staff

SEMINARS

590 Seminar in Theory of Speech (2, maximum 6) Prerequisite, 400 or permission. (Offered 1962-63.)	Rahskopf
591 Seminar in Voice and Phonetics (2, maximum 6) Prerequisite, permission. (Offered 1961-62.)	Tiffany
592 Seminar in Rhetoric and Public Address (2, maximum 6) Prerequisite, permission. (Offered 1961-62.)	Staff
593 Seminar in Argument and Discussion (2, maximum 6) Prerequisite, permission. (Offered 1963-64.)	Staff
594 Seminar in Oral Interpretation (2, maximum 6) Prerequisite, permission. (Offered 1962-63.)	Grimes
595 Seminar in the Teaching of Speech (2, maximum 6) Prerequisite, permission. (Offered 1961-62.)	Nelson
597 Seminar in Speech Correction (2, maximum 6) Prerequisite, permission. (Offered 1962-63.)	Staff
598 Seminar in Hearing (2, maximum 6) Prerequisite, permission. (Offered 1962-63.)	Staff

ZOOLOGY

Executive Officer: ARTHUR W. MARTIN, 142 Johnson Hall

The Department of Zoology offers courses of study leading to the degrees of Master of Science and Doctor of Philosophy. Candidates for advanced degrees are expected to complete the academic work outlined in the undergraduate curriculum for the Bachelor of Science degree, in addition to their graduate course program. Students seeking an advanced degree must be accepted for research supervision by a member of the staff. A choice of supervisor need not be made immediately, but will not ordinarily be delayed into the second year of graduate work. Graduate students are not formally recognized as candidates by the Department until they have passed the written General Examination in five basic fields: comparative anatomy, embryology, general physiology, genetics, and invertebrate zoology.

COURSES**BIOLOGY**

401 Cytology (3) Prerequisite, Botany 112 or Zoology 112, or permission of instructor.	Hsu
401L Cytology Laboratory (2) To be taken concurrently with 401. Prerequisite, permission of instructor.	Hsu
451 Genetics (3)	Roman
451L Genetics Laboratory (2) To be taken concurrently with 451.	Roman
452 Cytogenetics (3)	Roman
452L Cytogenetics Laboratory (2) To be taken concurrently with 452.	Roman
453 Topics in Genetics (2, maximum 6)	Roman
454 Evolutionary Mechanisms (3)	Kruckeberg
472 Principles of Ecology (3) Prerequisite, 10 credits in upper-division biological science, or permission of instructor.	Edmondson
472L Ecology Laboratory (2) To be taken concurrently with 472. Prerequisite, permission of instructor.	Edmondson
473 Limnology (5) Prerequisites, Botany 112 or Zoology 112, one year college chemistry, upper-division standing, and permission of instructor.	Edmondson
501 Advanced Cytology (5) Detailed study of structure and function of the cell.	Hsu

- 508 Cellular Physiology (3)** **Whiteley**
Cell membrane and permeability, cytoplasmic physiology, intracellular energetics and biosynthesis, physiology of cell division, cell movement. (Offered alternate years; offered 1962-63.) Prerequisite, Zoology 400 or permission of instructor.
- 508L Cellular Physiology Laboratory (2)** **Whiteley**
Prerequisites, concurrent registration in Biology 508 or 509, and permission of instructor.
- 509 Cellular Physiology (3)** **Whiteley**
Chemistry and physiology of the interkinetic and dividing nucleus, nucleocytoplasmic interactions, physiology of differentiated cells. (Offered alternate years; offered 1961-62.) Prerequisite, Zoology 400 or permission of instructor. (Biology 508 and 509 may be elected separately or in either sequence).
- 573 Topics in Limnology (2)** **Edmondson**
Readings in the literature of limnology, with detailed discussion of modern problems. May be repeated for credit. Prerequisite, permission of instructor.

ZOOLOGY

- 330 Natural History of Marine Invertebrates (5)** **Staff**
Prerequisite, permission of instructor.
- 362 Natural History of Vertebrates (5)** **Snyder**
(Offered alternate years; offered 1962-63.)
- 381 Microtechnique (4)** **Hsu**
- 400 General Physiology (5)** **Flory**
- 402 History of Zoology (3)** **Hatch**
- 403 Comparative Vertebrate Histology (5)** **Staff**
- 409 Ethology (3)** **Orians**
Prerequisite, permission of instructor.
- 409L Ethology Laboratory (2)** **Orians**
Prerequisite, 409 concurrently and permission of instructor.
- 423 Protozoology (5)** **Osterud**
Prerequisite, upper-division standing or permission of instructor.
- 432 Marine Invertebrate Zoology (8)** **Staff**
(Offered at Friday Harbor Summer Quarter only) Not open for credit to students who have had 433, 434.
- 433, 434 Invertebrate Zoology (5,5)** **Illg, Kohn**
Not open for credit to students who have had 432. Prerequisite, permission of instructor.
- 435 Parasitology (5)** **Osterud**
Prerequisite, upper-division standing or permission of instructor.
- 444 Entomology (5)** **Hatch**
- 453-454 Comparative Anatomy of Chordates (5-5)** **Snyder**
- 456 Vertebrate Embryology (5)** **Haggis**
- 457 Experimental Morphogenesis (3)** **Fernald**
- 457L Experimental Morphogenesis Laboratory (2)** **Fernald**
Prerequisite, permission of instructor.
- 458 Vertebrate Physiology (6)** **Martin**
Prerequisite, 20 credits in biological science or permission.
- 462 Vertebrate Systematics and Life Histories (5)** **Orians, Snyder**
(Offered alternate years; offered 1961-62.) Prerequisites, 112 or equivalent, and permission of instructor.
- 464 Natural History of Birds (Ornithology) (5)** **Richardson**
(Alternates with 465)
- 465 Natural History of Mammals (5)** **Staff**
(Alternates with 464)
- 475 Vertebrate Zoogeography (3)** **Staff**
- 498 Special Problems in Zoology (1-5, maximum 15)** **Staff**
- 506 Topics in Experimental Embryology (2, maximum 6)** **Staff**
Seminars and discussions of aspects of growth of special current interest.
- 516 Chemical Embryology (3)** **Whiteley**
Cytochemistry of cytoplasmic segregation, specificity in growth and development, cellular interactions in development, control mechanisms in development. (Offered alternate years; offered 1961-62.) Prerequisite, permission of instructor.
- 516L Chemical Embryology Laboratory (2)** **Whiteley**
Must be accompanied by 516.
- 517 Chemical Embryology (3)** **Whiteley**
Sex determination, gametogenesis, sperm metabolism, physiology of fertilization, mechanics of cleavage, energetics of development. (Offered alternate years; offered 1962-63.) Prerequisite, permission of instructor.

- 517L Chemical Embryology Laboratory (2)** **Whiteley**
Must be accompanied by 517.
- 520, 521, 522 Seminar (1,1,1)** **Staff**
- 533 Advanced Invertebrate Zoology (6)** **Staff**
The rich and varied invertebrate fauna of the San Juan Archipelago is studied, emphasizing systematics and ecology, with opportunity for developing individual research problems. (Offered at Friday Harbor Summer Quarter only.) Prerequisite, 10 credits in invertebrate zoology or equivalent.
- 534 Topics in Advanced Invertebrate Zoology (2)** **Illg**
Advanced considerations in morphology, ecology, phylogeny of invertebrates; emphasizing current developments. Prerequisites, 434 or equivalent, and permission of instructor.
- 536 Advanced Invertebrate Embryology (6)** **Staff**
Morphological and experimental studies of development of selected types of marine invertebrates. (Offered at Friday Harbor Summer Quarter only.) Prerequisites, 433, 434, and 456.
- 537 Comparative Invertebrate Physiology (3)** **Floreys**
Selected chapters of comparative physiology of nerve, muscle, circulation, respiration, renal function, and hormone action. Prerequisites, 400 and 434.
- 537L Comparative Invertebrate Physiology Laboratory (2)** **Floreys**
Exercises in kymographic, oscilloscopic and other recording of mechanical, electrical, and metabolic phenomena of invertebrate organ function. Must be accompanied by 537. Prerequisite, permission of instructor.
- 538 Advanced Invertebrate Physiology (6)** **Staff**
Comparative physiology of muscle and nervous systems, selected topics in the physiology of osmoregulation, respiration, circulation, chromatophore regulation, metabolism, and nutrition. (Offered at Friday Harbor Summer Quarter only.) Prerequisite, chemistry through organic, physics, and 10 credits in invertebrate zoology or equivalent.
- 554 Advanced Vertebrate Morphology (3)** **Snyder**
Current problems and trends in vertebrate anatomy emphasizing functional relationships. Prerequisites, -454, 456, and permission of instructor.
- 558 Comparative Vertebrate Physiology (6)** **Martin**
Advanced studies with particular reference to cold-blooded vertebrates and to birds. Prerequisite, 400 or equivalent.
- 578 Advanced Ecology (5)** **Orians**
Analysis of ecosystems, fundamental properties of populations, problems of environmental utilizations, population regulation, community sampling. Prerequisite, Biology 472 or permission of instructor.
- 581 Systematic Zoology (4)** **Illg**
History, principles, and procedures of zoological taxonomy; review of biological bases of phylogeny; history and principles of zoological nomenclature. Prerequisite, permission of instructor.
- 598 Seminar in General and Comparative Physiology (2)** **Floreys**
Study and discussion of classical and current literature in the field of general and comparative physiology. Prerequisites, 400, 433, 434, and permission of instructor.
- 600 Research (*)** **Staff**
- 700 Thesis (*)** **Staff**

COLLEGE OF BUSINESS ADMINISTRATION

Dean: AUSTIN GRIMSHAW, 115 Business Administration Staff Building

The College of Business Administration offers courses leading to the degrees of Master of Business Administration, Master of Arts, and Doctor of Business Administration. Graduate training is given in these fields of specialization: accounting; business and its environment; business policy and business administration; finance and banking; international business; marketing; personnel and industrial relations; production; real estate; research and statistical control; and transportation. However, these areas shall not be held to exclude others which may be appropriate in special instances. There are no foreign language requirements for the M.B.A. and D.B.A. degrees.

Before the College approves an application for admission the applicant must have submitted to the College the result of the Admission Test for Graduate Study in Business. Inquiries concerning this test should be addressed to the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey, or 4640 Hollywood Boulevard, Los Angeles 27, California.

Full graduate standing is granted applicants who have the necessary prerequisites and a cumulative grade-point average of 3.00 (B) or higher. *Students who*

do not meet this requirement may be admitted (1) if they have a grade-point average of 3.25 or higher during their senior year, (2) if they rank in the upper third of their collegiate graduating class, or (3) if they have achieved a high score on the Admission Test for Graduate Study in Business.

MASTER OF BUSINESS ADMINISTRATION. The M.B.A. program is designed for students who are preparing for professional careers in business management. Graduate seminars in business policy, administration, and controls build upon a foundation of undergraduate courses in functional and tool subjects; only a modest amount of specialization in a single subject area is possible. The broad objective is to help the student develop the analytical tools and understanding of business administration which would be of continuing value throughout his career as a business manager.

A minimum of 36 credits is required for the M.B.A. degree. At least 27 credits must be in business administration courses. The following courses are required:

	Credits
Accounting 592	3
General Business 570, 571-572	9
Policy and Administration 575, 576, or 586.....	3
Policy and Administration 593 or 594.....	3
Electives (The electives must include at least three areas of business administration with a <i>maximum</i> of 9 credits in <i>any</i> area. All of the elective credits shall be in 500-numbered courses.)	18
	<hr/> 36

In addition to the above course requirements, students will be required to pass a comprehensive written examination in their final quarter of course work.

The residence requirement for master's degrees is one year (three quarters). Students who lack background in business administration and economics may require from one to three quarters of additional study.

MASTER OF ARTS. The M.A. program is designed for students who desire greater specialization than is possible under the M.B.A. program (except by exceeding the minimum 36 quarter credits). Students electing the M.A. program usually have an objective other than preparation for a career as a professional manager; some are interested in becoming technical business specialists, some are interested in research careers, and others are interested in teaching careers in a limited subject area.

The student in this program must complete a minimum of 36 credits including a thesis, with a major in one of the fields of graduate study offered by the College of Business Administration. A minimum of 15 credits, exclusive of the thesis, must be earned in the major field. A minor may be taken in the College of Business Administration or elsewhere. A minimum of 9 credits is required in the minor field. If the minor is elected outside the College, requirements of the department offering the minor must be met.

A minimum of 18 credits must be earned in courses for graduates (500 to 600 series); the remaining course credits may be in 400-level courses approved for graduate credit. The student must have a reading knowledge of an acceptable foreign language, as determined by examination.

Minor in Business Administration. Candidates for a master's degree in other colleges who elect a minor in the College of Business Administration must have as a background 15 credits in acceptable courses in business administration. The student must earn a minimum of 15 credits in approved upper-division and graduate courses in one field of business administration.

DOCTOR OF BUSINESS ADMINISTRATION. The D.B.A. program is designed to further advanced study in business administration for persons preparing for careers in teaching, business, and government; since the inception of the program, the

majority of D.B.A. graduates have entered university teaching careers. Students enrolled in this program are expected to possess the professional administrative competency which is the objective of the M.B.A. program, and—in addition—they are required to demonstrate academic competence in four areas of study, at least three of which must be in the College of Business Administration. Hence, the objective of the D.B.A. program is to provide breadth of training in the integrative processes involved in administrative planning and control concurrently with subject area specialization which will enable a graduate to actively participate in advancing the frontiers of knowledge both in teaching and research in his primary areas.

A requirement for consideration for the D.B.A. program is a grade-point average of at least 3.25 during the preceding year of graduate study. Applications for admission to the D.B.A. program must be accompanied by three letters of recommendation, at least two of which must come from former instructors.

COURSES

ACCOUNTING

Managerial Accounting

- | | |
|----------------------------------|-------|
| 311 Cost Accounting (3) | Staff |
| 460 Advanced Cost Accounting (3) | Staff |
| 475 Administrative Controls (3) | Staff |

Financial Accounting

- | | |
|-------------------------------------------|-------|
| 321 Equity Accounting (3) | Staff |
| 331 Income Determination Accounting (5) | Staff |
| 485 Consolidated Financial Statements (3) | Staff |
| 486 Fiduciary Accounting (2) | Staff |
| 490 Advanced Problems (3) | Staff |
| 495 Advanced Accounting Theory (3) | Staff |

Income Tax

- | | |
|------------------------------|-------|
| 421 Federal Income Tax (5) | Staff |
| 450 Special Tax Problems (3) | Staff |

Auditing

- | | |
|-------------------------------------------|-------|
| 411 Auditing Standards and Principles (3) | Staff |
| 470 Case Studies in Auditing (5) | Staff |

Systems and Data Processing

- | | |
|-----------------------------------------------------------------------------------------|-------|
| 344 Introduction to Electronic Data Processing (3) | Staff |
| 440 Accounting Systems (3) | Staff |
| 444J Applications of Digital Computers (3)
Offered jointly with Business Statistics. | Staff |

Institutional Accounting

- | | |
|-------------------------|-------|
| 480 Fund Accounting (3) | Staff |
|-------------------------|-------|

Graduate Seminars

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 520 Seminar in Financial Accounting (3)
A critical examination of accounting theories, concepts, and standards pertaining to current assets and liabilities and relevant income determination problems. Prerequisites, 321, 331 and permission. | Staff |
| 521 Seminar in Financial Accounting (3)
A critical examination of accounting theories, concepts, and standards pertaining to noncurrent balance sheet items and relevant income determination problems. Prerequisites, 321, 331, and permission. | Staff |
| 522 Seminar in Cost Accounting (3)
Critical examination of theories of managerial accounting. Differentiation of objectives of managerial and financial accounting, joint costs, absorption costing, direct costing, standard costing, distribution costing, techniques of analysis of cost data, including differential cost analysis. Prerequisites, 311 and permission. | Staff |

- 592 Seminar in Administrative Controls (3)** **Staff**
The use of accounting and statistics by management in the exercise of its planning and controlling functions; e.g., forecasting, budgets, standard costs, analysis of cost variations. Controllership as a function in the business enterprise. Prerequisites, 230 and permission.
- 604 Research (*, maximum 10)** **Staff**
Prerequisite, permission.
- 700 Thesis (*)** **Staff**
- 702 Degree Final (0)** **Staff**
Limited to students completing a nonthesis degree program.

BUSINESS AND ITS ENVIRONMENT

- 552 Legal Aspects of Business Regulation (3)** **Staff**
Examination, from the administrative point of view, of advanced legal problems bearing directly upon top management's decisions concerning basic operating policy. Prerequisite, permission.
- 562 Responsibilities of Business Leadership (3)** **Staff**
Social responsibilities of business in relation to changing social forces. Relationships between business and consumers, government, labor, and agriculture. Problems of business ethics. Prerequisite, permission.
- 590 Business History (3)** **Staff**
Evolution of business institutions with special emphasis upon changing administrative policy, business organization, and methods in the American environment from the colonial period to the present. Prerequisite, permission.
- 593 Seminar in Business Fluctuations (3)** **Staff**
Business problems arising from fluctuations in prices and demand; analysis of static causes and effects of business policy on fluctuations; methods of adjustment by the firm; appraisal of corrective measures internal and external to business. Prerequisite, permission.
- 594 Seminar in Business Forecasting (3)** **Staff**
Problems of business forecasting and their setting; study and appraisal of forecasting methods in current use by corporations, advisory services and governmental agencies; review of actual cases and experience; techniques of preparing forecasts for the individual firm. Prerequisite, permission.
- 597 Behavioral Science of Business (3)** **Staff**
Analysis of the business system in the light of the concepts and methods of the behavioral disciplines. Prerequisite, permission.
- 598 Analysis of Business Behavior (3)** **Staff**
Current broad problems of business concerns in the American economy. The topics, one of which is usually discussed each quarter, emphasize practical price determination, cost analysis, firm behavior, motivation, or other similar subjects. Prerequisite, permission.
- 604 Research (*, maximum 10)** **Staff**
Prerequisite, permission.
- 700 Thesis (*)** **Staff**
- 702 Degree Final (0)** **Staff**
Limited to students completing a nonthesis degree program.

BUSINESS COMMUNICATIONS

- 410 Advanced Written Business Communications (5)** **Staff**

BUSINESS LAW

- 403 Commercial Law (5)** **Staff**
- 420 Law in Accounting Practice (3)** **Staff**

BUSINESS STATISTICS: QUANTITATIVE ANALYSIS

- 330 Time Series Analysis and Index Number Theory (3)** **Staff**
- 340 Survey Research Methods for Business (3)** **Staff**
- 350 Quantitative Analysis for Business (5)** **Staff**
- 401 Advanced Business Statistics (3)** **Staff**
- 444J Application of Digital Computers (3)** **Staff**
Offered jointly with the Department of Accounting.
- 450 Analytical Techniques in Business I (3)** **Staff**
- 451 Analytical Techniques in Business II (3)** **Staff**
- 460 Multivariate Analysis for Business (3)** **Staff**
- 501 Quantitative Methods (3)** **Staff**
A survey of techniques in analytical and descriptive statistics and operations research useful in guiding business decisions. Prerequisite, permission.

- 520 Seminar in Business Statistics (3, maximum 6)** **Staff**
Reading, discussion, and limited practice in the application of selected statistical techniques. Areas: statistical decision processes; nonparametric statistics; advanced application of statistical techniques in administrative control; advanced multivariate analysis; theories and techniques of time series analysis and index number construction. Prerequisite, permission.
- 550 Seminar in Operations Research Techniques (3, maximum 6)** **Staff**
An intensive study of operations research tools useful in business analysis such as linear and other programming techniques, queuing theory, and simulation. Prerequisite, permission.
- 604 Research (*, maximum 10)** **Staff**
Prerequisite, permission.
- 700 Thesis (*)** **Staff**
- 702 Degree Final (0)** **Staff**
Limited to students completing a nonthesis degree program.

FINANCE

- 327 International Finance (3)** **Staff**
- 330 Investments (3)** **Staff**
- 335 Securities Markets (3)** **Staff**
- 420 Money Markets (3)** **Staff**
- 423 Commercial Banking (3)** **Staff**
- 428 Credit Administration (3)** **Staff**
- 436 Investment Analysis (3)** **Staff**
- 450 Problems in Corporation Finance (4)** **Staff**
- 453 Capital Allocation (3)** **Staff**
- 520 Seminar in Banking Problems (3)** **Staff**
Selected problems of contemporary and permanent significance in domestic and international banking and finance. Prerequisite, permission.
- 521 Seminar in Money Markets (3)** **Staff**
Supply and demand for funds in short-term and long-term money markets; analysis of the influence of the money supply, bank reserves, legal restrictions, institutional portfolio policies, and changing needs and instruments of corporation finance. An objective of this seminar is to develop ability to analyze and appraise current money market developments. Prerequisite, permission.
- 522 Seminar in Corporation Finance (3)** **Staff**
Emphasizes selected contemporary problems and methods, internal and external, in solving corporate financial problems and indicating financial trends. Extensive reading and discussion is required in designated areas. Prerequisite, permission.
- 604 Research (*, maximum 10)** **Staff**
Prerequisite, permission.
- 700 Thesis (*)** **Staff**
- 702 Degree Final (0)** **Staff**
Limited to students completing a nonthesis degree program.

GENERAL BUSINESS

- 439 Analysis of Business Conditions (4)** **Staff**
- 441 Managerial Economics (3)** **Staff**
- 444 Business and Society (4)** **Staff**
- 570 Seminar in Business Research (3)** **Staff**
Business research methods and techniques. Emphasis is placed on what business research is; how it is done (stressing the scientific method as a research procedure) and who does it. Sources of relevant information are covered. Students will carry out the formulation of a research project—defining the problem, pinpointing sources of information, selecting a method of approach. Prerequisite, permission.
- 571-572 Business Studies (3-3)** **Staff**
Independent study of the field of business administration; critical evaluation of business analysis and research methods. Effective communication of ideas is emphasized. Methods and content of independent research studies being completed by the students are subjected to critical evaluation in seminar discussion. Prerequisites, 570 and approved research topic outline for 571-; 571- for -572; 571-572 open only to Master of Business Administration nonthesis students.
- 604 Research (*, maximum 10)** **Staff**
Prerequisite, permission.
- 700 Thesis (*)** **Staff**
- 702 Degree Final (0)** **Staff**
Limited to students completing a nonthesis degree program.

HUMAN RELATIONS IN BUSINESS AND INDUSTRY

- 460 Human Relations in Business and Industry (4)** **Staff**
Not open to BA graduate students.

INTERNATIONAL BUSINESS

- 320 International Business Environment (5)** **Staff**
370 Foreign Area Analysis (5) **Staff**
420 Foreign Trade Practices (5) **Staff**
470 Problems in Foreign Operations Management (5) **Staff**
520, 521 Seminar (3,3) **Staff**
Trends and contemporary problems in international operations management, business relations and services, economic policies, and related subjects; research and sources of information useful for solving international business problems. Each quarter a different aspect is emphasized. Prerequisite, permission.
604 Research (*, maximum 10) **Staff**
Prerequisite, permission.
700 Thesis (*) **Staff**
702 Degree Final (0) **Staff**
Limited to students completing a nonthesis degree program.

MARKETING

- 371 Wholesaling (5)** **Staff**
381 Retailing (5) **Staff**
391 Advertising (5) **Staff**
400 Marketing and Physical Distribution Management (Domestic and Foreign) (3) **Staff**
401 Sales Management (5) **Staff**
421 Marketing Research (5) **Staff**
441 Retail Sales Promotion (3) **Staff**
491 Marketing Problems (5) **Staff**
520 Marketing Trends and Developments (3) **Staff**
The current evolution of marketing is subjected to critical evaluation. Significant marketing trends and developments are reviewed analytically. Prerequisite, 301 and permission.
521 Marketing's Role in Contemporary America (3) **Staff**
The role of marketing in helping to meet the challenges of full employment and an expanding flow of goods and services through the American economy. Specific problem areas which may be examined include: marketing costs and efficiency, marketing and government, marketing and monopoly, pricing, and channels of distribution. Prerequisites, 301 and permission.
522 Advanced Marketing Concepts (3) **Staff**
The interdisciplinary exchange of ideas related to marketing is studied. New marketing theories and evolving concepts of marketing management are examined and critically appraised. Prerequisites, 520 or 521, and permission.
604 Research (*, maximum 10) **Staff**
Prerequisite, permission.
700 Thesis (*) **Staff**
702 Degree Final (0) **Staff**
Limited to students completing a nonthesis degree program.

PERSONNEL AND INDUSTRIAL RELATIONS

- 345 Personnel Methods and Theory I (3)** **Staff**
346 Personnel Methods and Theory II (3) **Staff**
450 Industrial Relations Administration (5) **Staff**
520 Seminar in Personnel and Industrial Relations (3) **Staff**
By case discussion and brief written reports, analysis of the problems and policies in personnel administration in the following areas is covered: business philosophy, ethics, personnel policies, the role of the personnel director, breadth of the personnel department's responsibilities, collective bargaining, supervision, job evaluation, and safety. Prerequisite, permission.
521 Current Problems in Personnel and Industrial Relations (3) **Staff**
Current problems in these areas: selection, appraisal, performance review, and development of executives; executive salary administration; white-collar unionization; preparation for contract negotiations; problems surrounding strikes. Prerequisite, one course in personnel, industrial relations, or labor economics, or permission.
604 Research (*, maximum 10) **Staff**
Prerequisite, permission.

- 700 Thesis (*)** **Staff**
702 Degree Final (0) **Staff**
 Limited to students completing a nonthesis degree program.

POLICY AND ADMINISTRATION

- 440 Organization Theory (3)** **Staff**
441 Advanced Organization Theory (3) **Staff**
463 Administrative Behavior (4) **Staff**
470 Business Policy (4) **Staff**
471 Problems of the Independent Businessman (3) **Staff**
480 Business Simulation (5) **Staff**
565 Seminar in Comparative Administrative Theory (3) **Staff**
 An evaluation of the various approaches to the study of administration. A theoretical and historical point of view is taken. Each approach to the study of administration is analyzed independently, and also related to a general theory of administration. Prerequisite, permission.
575 Human Aspects of Administration (3) **Staff**
 Examines the processes of administration in organizations with a primary focus on organizational behavior. Develops the basic contributions of social science and other sources in the formulation of administrative-organizational behavior concepts and conceptual schemes. Critically evaluates the status of administrative theory in relation to administrative practice. Prerequisite, permission.
576 Human Aspects of Administration (3) **Staff**
 Develops in depth some of the most basic contributions to administrative theory and practice made by past and current research, thought, and experience. Typically examines several major research studies relating to administration and organizational behavior, drawing on studies from psychology, sociology, social, and cultural anthropology, business administration, government, and other sources. Prerequisite, permission.
580 Planning and Decision Theory (3) **Staff**
 Development of a theory of planning including foundation for theory, process of planning, role of participants in planning, the auxiliary functions, and integration into a general theory. Prerequisite, permission.
586 Seminar in Administrative Organization (3) **Staff**
 A reading, research, and discussion course in organization theory covering concepts of power, authority and influence, objectives and goals, decision and planning theory, communications theory, delegation and decentralization, and considerations of values, social issues, and future trends in organization. Research and theories in other fields, such as the behavioral sciences and economics, will be related to business organization theory. Prerequisite, permission.
593, 594 Policy Determination and Administration (3,3) **Staff**
 Development of an appreciation for and skill in dealing with policy problems faced by the chief administrative officers of business firms. Analysis of problems which relate to determination of objectives; development of policies to achieve the objectives; organization of executive personnel to implement the policies; coordination of the organization; appraisal and adjustments to changes in the environment. The course is intended to give a clearer insight not only into how business decisions are reached, but into the motivation of businessmen in deciding what to do under varying circumstances. Case study seminars with simulation (business gaming) included in 594. (It is recommended that these courses be scheduled toward the end of the student's course work.) Prerequisites, permission for 593; 593 for 594.

- 604 Research (*, maximum 10)** **Staff**
 Prerequisite, permission.

- 700 Thesis (*)** **Staff**

- 702 Degree Final (0)** **Staff**
 Limited to students completing a nonthesis degree program.

PRODUCTION

- 341 Production Management I (3)** **Staff**
342 Production Management II (3) **Staff**
343 Production Management III (3) **Staff**
455 Analytical Techniques in Production Management (3) **Staff**
460 Manufacturing Administration (5) **Staff**
520 Seminar in Production (3) **Staff**
 Research, readings, and reports on current problems in the field using a topical approach with emphasis on such areas as product research and development, plant location, equipment policies, materials and quality controls, and production planning and control. Prerequisite, permission.
521 Seminar in Manufacturing (3) **Staff**
 Policy formulation and administration of manufacturing enterprises by analysis of case studies of selected industries emphasizing integration of the functions of production management with the major goals of the organization. Prerequisite, permission.

- 604 Research (*, maximum 10) Staff
Prerequisite, permission.
- 700 Thesis (*) Staff
- 702 Degree Final (0) Staff
Limited to students completing a nonthesis degree program.

REAL ESTATE

- 410 Real Estate Valuation and Administration (5) Staff
- 520 Seminar in Real Estate and Urban Land Economics (3) Staff
Analysis and evaluation of land allocation systems, institutional aspects of the real-estate industry, and problems arising from competition of spatial units within urban markets. Prerequisite, permission.
- 521 Seminar in Real Estate Administration (3) Staff
The administrative approach to management problems in the real-estate industry; analysis of the business functions of production, finance, and distribution of real-estate services. Prerequisite, permission.
- 604 Research (*, maximum 10) Staff
Prerequisite, permission.
- 700 Thesis (*) Staff
- 702 Degree Final (0) Staff
Limited to students completing a nonthesis degree program.

RISK AND INSURANCE

- 320 Insurance Theory (3) Staff
- 330 Risk Analysis (5) Staff
- 432 Advanced Risk Problems I (3) Staff
- 438 Advanced Risk Problems II (3) Staff
- 480 Risk Management (3) Staff
- 520 Seminar (3) Staff
Considers theoretical aspects of the insurance business rather than the public and sales factors. Examination is made of the economic theory underlying insurance and a number of the management problems facing the industry. Class is conducted on a discussion basis, with the members of the class preparing and presenting reports on the management problems discussed. Prerequisite, permission.
- 604 Research (*, maximum 10) Staff
Prerequisite, permission.
- 700 Thesis (*) Staff
- 702 Degree Final (0) Staff
Limited to students completing a nonthesis degree program.

TRANSPORTATION

- 372 Physical Distribution Management (3) Staff
- 440 Transportation Pricing (3) Staff
- 471 Public Policy in Transportation (3) Staff
- 481 Cases in Transportation Carrier Management (3) Staff
- 491 Cases in Physical Distribution Management (3) Staff
- 520 Seminar (3) Staff
Current transportation problems and practices. Relationship and effect of changing national policies and regulations on transportation businesses. Prerequisite, permission.
- 604 Research (*, maximum 10) Staff
Prerequisite, permission.
- 700 Thesis (*) Staff
- 702 Degree Final (0) Staff
Limited to students completing a nonthesis degree program.

SCHOOL OF DENTISTRY

Dean: MAURICE J. HICKEY, C301 Health Sciences

Director, Graduate Dental Education: SAUL SCHLUGER, B324 Health Sciences

The School of Dentistry offers, through the Graduate School, course work leading to a Master of Science in Dentistry degree with a major in orthodontics, pedodontics, restorative dentistry, oral pathology, oral surgery, periodontics, or endodontics. Classes are selectively admitted once a year at the beginning of the Autumn Quarter.

An applicant is eligible for admission to the Graduate School provided he is a graduate of a School of Dentistry approved by the Council on Dental Education of the American Dental Association, or of a university dental school, located outside of the North American continent, whose curriculum and admission requirements are similar to those of the School of Dentistry, University of Washington. The candidate must also meet the admission requirements of the Graduate School of the University of Washington.

After a candidate has been declared eligible for admission, his acceptance must be approved by the Graduate Admissions Committee of the School of Dentistry. This approval will be based upon the availability of places in the various classes. A maximum of ten students can be accommodated each year in orthodontics, two in pedodontics, and varying numbers, not to exceed two, in each of three phases of restorative dentistry, depending upon the availability of teaching and research staff members. There will be four openings for majors in periodontics, two in endodontics, one in oral pathology, and one in oral surgery, beginning each Autumn Quarter.

A minimum of eight consecutive quarters (24 months) of residence is required for the Master of Science in Dentistry degree with a major in periodontics, endodontics, and oral pathology; a minimum of six consecutive quarters (18 months) for a major in orthodontics and pedodontics; a minimum of three quarters (9 months) of basic science subjects plus a two-year hospital residency for a major in oral surgery, and a minimum of three quarters (9 months) for a major in restorative dentistry. Under the program for restorative dentistry, the student determines his major field (operative dentistry, fixed partial dentures, or prosthodontics) by the electives he selects. No foreign language is required.

ORAL PATHOLOGY. Required courses are: 520, 521; Pathology 441- 442- 443.

ORAL SURGERY. Required courses are: 500, 501, 502, 530, 531, 532, 540, 541, 542, 550; Oral Diagnosis and Treatment Planning 500; Oral Pathology 531; Conjoint (Med.) 426-427, 446-447; Conjoint (Med.) 585; Physiology and Biophysics, 484; Pathology 441-442-443; Psychiatry 400.

ORTHODONTICS. Required courses are: 500, 501, 502, 503, 504, 546, 547, 548, 549, 550; Dentistry 416, 417, 510, 511, 512, 513, 514, 515, 518, 588, 589; Pediatrics 505; Psychiatry 450.

PEDODONTICS. Required courses are: Conjoint 532; Dentistry 416, 417, 510, 511, 512, 513, 515; Orthodontics 500; Pediatrics 505 (Physical Growth of the Well Child); Pedodontics 500, 501, 502, 503, 504, 546, 547, 548, 549, 550; Psychiatry 450 (Principles of Personality Development).

PERIODONTICS. Required courses are: 546, 547, 548, 549, 550, 551, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 591, 592, 593; Anatomy 405, 406; Biochemistry 401, 402; Conjoint (Dent.) 532, 533; Psychiatry 400, 430; Dentistry 563.

ENDODONTICS. Required courses are: 535, 546, 547, 548, 549, 550, 551, 560, 561, 562, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 591, 592, 593; Anatomy 405, 406; Biochemistry 401, 402; Psychiatry 400; Microbiology 441, 442, 510.

RESTORATIVE DENTISTRY. Required courses are: Conjoint (Dent.) 532, 533; Dentistry 416, 417, 510, 511, 518, 580, 581, 588, 589, 590; Prosthodontics 560, 561, 562, 563, 564; and electives to make a total of 45 credits. In this program, the student selects electives to specialize in either operative dentistry, fixed partial dentures, or prosthodontics.

The approved list of electives for all programs includes such subjects as anatomy, anthropology, biometrics, child development, education, microbiology, nutrition, physiology, psychiatry, psychology, public health, speech, and maxillofacial prosthesis courses.

The programs are planned to prepare students to think independently, to evaluate their own services and the literature used, and to develop their clinical operative skills to a level to permit the successful practice of their chosen specialty. Emphasis is placed on the basic principles of diagnosis and treatment, which comprise the clinician's most valuable armamentarium. The seminar method of teaching is generally used. The purpose of the programs is not only to train students in the art of their respective specialties, but also to encourage basic science research in specialties on a graduate level in possible preparation for academic careers or for research. Research may be undertaken in the major department or in cooperation with other departments. The opportunity for collaborative research is excellent because of the close proximity of the other colleges and departments in the University.

The graduate programs operate on the quarter system. There are three 11-week quarters in the academic school year. In order for the graduate dental programs to be continuous, the Summer Quarter has also been made an 11-week quarter.

Applications are received and processed throughout the school year. All applications for admission, as well as all necessary credentials, must be submitted on or before December 1 for consideration for entrance in the following Autumn Quarter.

COURSES

CONJOINT

532, 533 Basic Science (3,4)

Sreebny, Staff

Seminars on clinical pathological phenomena with their basic causal factors discussed from inter-disciplinary viewpoints.

DENTISTRY

416 Scientific Methodology in Dental Research (3)

Kraus

Principles of scientific methodology and basic statistics. Problem definition. Principles of classification. Collection of data. Techniques of analysis. Formation of hypothesis. Search of the literature. Experimentation. Sampling techniques. Graphic presentation of material. Ordering of quantitative data. Phenomena of distributions of biological data. Tests of significance, and their interpretation.

417 Scientific Methodology in Dental Research (3)

Kraus

Advanced biometric techniques. Analysis of variance and co-variance. Linear and curvilinear regression. Multiple regression and analysis of variance. Orthogonal polynomials. Experimental designs: general principles, precision, replications. Randomized blocks and Latin squares. Incomplete block designs.

510 Applied Osteology and Myology of the Head and Neck (2)

Moore

Detailed study as a background for the study of the growth and development of the head and for cephalometric roentgenogram interpretation. (Department of Orthodontics)

511 Roentgenographic Cephalometry (2)

Erickson, Moore

Basic principles, history, and techniques of roentgenographic cephalometry. (Department of Orthodontics)

512, 513 Growth and Development (2,2)

Moore

Review of the various methods of studying human growth, with special emphasis upon growth of the head, and study of the development of the dentition from birth through maturity; analysis of the factors that produce normal occlusion and malocclusion. Prerequisite, 512 for 513. (Department of Orthodontics)

514 Genetics and Its Applications to Dental Problems (2)

Kraus

Genes and the nature of genic action. Significance of mitosis and meiosis. Hereditary syndromes involving cranial structures. Introduction to population genetics. Genetics of the blood groups and their medico-legal implications. Hereditary aspects of the human dentition.

515 Evolution of the Human Cranio-facial Complex (2)

Kraus

Darwinism and the genetic basis for biological evolution. Principles of evolution. Paleontological evidence of human evolution. Evolution of the cranio-facial complex. Evolution of the dentition. Malocclusion from the genetic and phylogenetic perspectives. Variability in the cranio-facial complex and its interpretation in terms of evolution.

518 Scientific Methodology in Dental Research (2)

Kraus

Critical review of dental literature. Application of principles learned in 416 and 417 to selected monographs and papers in dentistry and related fields of the basic sciences.

535 Oral Microbiology (3)

Zeldow

An advanced lecture-laboratory survey of the oral flora and diseases related to their activity.

563 Minor Tooth Movement (2)

Moore

A lecture-clinic course dealing with minor tooth movement necessary to successful periodontal therapy. Prerequisite, permission.

- 580 Gnathodynamics (2)** **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. (Departments of Orthodontics and Prosthodontics)
- 581 Restorative Treatment Planning (4)** **Morrison, Staff**
Coordinated application of knowledge gained from both graduate and undergraduate courses to the diagnosis and treatment of the more complicated cases. (Department of Operative Dentistry)
- 582 Cast Metal Restorations (4)** **Morrison, 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. (Department of Fixed Partial Dentures)
- 588, 589, 590 Seminar in Occlusion (2,2,2)** **Staff**
A continuous seminar in the dynamics and physiology of occlusion and related phenomena.

ENDODONTICS

- 545, 547, 548 Clinical Endodontics (3,4,4)** **Ingle, Staff**
The clinical diagnosis and treatment of the pulpless tooth.
- 549, 550, 551 Clinical Endodontics (3,4,4)** **Ingle, Staff**
The clinical diagnosis and treatment of the pulpless tooth. Prerequisites, 546, 547, 548.
- 560, 561, 562 Restoration of the Pulpless Tooth (2,1,1)** **Morrison, Staff**
A lecture-clinical course emphasizing the restorative problem peculiar to the pulpless tooth.
- 576, 577, 578 Endodontic Seminar (2,2,2)** **Ingle, Staff**
A continuous weekly seminar devoted to review of endodontic and related literature and to discussion of teaching methods and philosophy of teaching and treatment.
- 579, 580, 581 Endodontic Seminar (2,2,2)** **Ingle, Staff**
A continuous weekly seminar devoted to review of endodontic and related literature and to discussion of teaching methods and philosophy of teaching and treatment. Prerequisites, 576, 577, 578.
- 582, 583, 584 Treatment Planning Seminar (2,2,2)** **Ingle, Staff**
A weekly seminar to discuss controversial treatment problems and difficult diagnostic cases.
- 585, 586, 587 Treatment Planning Seminar (2,2,2)** **Ingle, Staff**
A continuation of the weekly seminar to discuss controversial treatment problems and difficult diagnostic cases. Prerequisites, 582, 583, 584.
- 591, 592, 593 Clinical Practice Teaching (1,1,1)** **Ingle, Staff**
A closely supervised experience in teaching clinical endodontics to the undergraduate dental student. Prerequisites, 546, 547, 548, 576, 577, 578.
- 600 Research (*)** **Ingle, Staff**
An investigative program in one of the basic sciences under the direction of the departmental faculty. Prerequisite, permission.
- 700 Thesis (*)** **Ingle, 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 clinical application.

FIXED PARTIAL DENTURES

- 400, 401 Advanced Fixed Partial Dentures (1,1)** **Hagen, Morrison**
- 446 Advanced Clinical Crowns and Fixed Partial Dentures (8)** **Morrison, Staff**
- 561 Abutments and Distribution of Masticatory Stresses (4)** **Morrison, 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 consideration of abutment preparation.
- 562 Advanced Dental Ceramics (3)** **Morrison, Staff**
Baked porcelain as a substitute for lost tooth structure. Physical properties of the material; pyrochemical reactions in firing. Indications and contraindications in restorative dentistry. Color in dental ceramics; esthetics, a major consideration; use of stains. Veneer crowns and inlays—variant preparations of the teeth. Methods of impression taking, die formation, and construction of matrices. Manipulation of the various porcelains; the factors involved. Variations in technics of fabrication of restoration. Clinical considerations in respect to insertion and maintenance.
- 700 Thesis (*)** **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.

OPERATIVE DENTISTRY

- 400, 401, 402 Advanced Operative Dentistry (1,1,1)** **Stibbs**
- 446 Advanced Clinical Operative Dentistry (7)** **Stibbs, Staff**
- 561 Plastics as Restorative Materials (4)** **Stibbs, Staff**
 Metallography of silver-tin amalgams; physical properties of zinc oxyphosphate cements, siliceous cements, and acrylic resins. Postoperative 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 technics of manipulation of plastics; analysis of failures in plastics.
- 562 Gold Foil Restorations (4)** **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.
- 700 Thesis (*)** **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.

ORAL DIAGNOSIS AND TREATMENT PLANNING

- 400, 401, 402 Advanced Oral Diagnosis and Treatment Planning (1,1,1)** **Jacobson**
- 446 Advanced Clinical Oral Diagnosis and Treatment Planning (1)** **Staff**
- 500 Extraoral Radiology (1)** **Jacobson**
 The purpose of this course is to familiarize the student with the various techniques necessary to produce diagnostic radiographic films of the jaws and their contiguous parts. This is done by means of seminar and clinical performance on patients.
- 502 Advanced Roentgenology (1)** **Jacobson**
 Techniques and radiographic interpretation of advanced oral roentgenology.

ORAL PATHOLOGY

- 520 Seminar in Oral Pathology (1-3, maximum 9)** **Staff**
 Conferences, seminars and round table discussions of advanced topics and recent literature in oral pathology. Prerequisite, permission.
- 531 Oral Pathology (5)** **Staff**
 The purposes of this course are to train the student so that he may intelligently interpret manifestations of pathology as they occur in the oral cavity and to stimulate an intellectual curiosity regarding the basic pathological mechanisms responsible for these changes.
- 600 Research (*)** **Staff**
 Prerequisite, permission.
- 700 Thesis (*)** **Staff**

ORAL SURGERY

- 500, 501, 502 Oral Surgery Seminar (2,2,2)** **Gehrig, Swenson, Staff**
 A continuous weekly seminar devoted to oral surgery theory and literature and practical case reviews.
- 530 Clinical Pathology Conference (1)** **Gehrig, Swenson, Staff**
 A clinical pathology conference of patients presented by graduate students.
- 540, 541, 542 Advanced Oral Surgery Clinic (3,3,3)** **Gehrig, Swenson, Staff**
 The clinical diagnosis and treatment of oral surgical conditions.
- 550 Anatomical Approaches to Head and Neck Surgery (2)** **Gehrig, Swenson, Staff**
 A study and laboratory dissection of the anatomical structures as they are found in major oral surgery procedures. Prerequisite, permission.
- 600 Research (*)** **Gehrig, Swenson, Staff**
 An investigative program in one of the basic or clinical sciences under the direction of the departmental faculty. Prerequisite, permission.
- 700 Thesis (*)** **Gehrig, Swenson, Staff**

ORTHODONTICS

- 500, 501, 502, 503, 504 Orthodontics Seminar (2,4,4,2,2)** **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)** **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 (*) **Staff**
Prerequisite, permission.

700 Thesis (*) **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

500, 501, 502, 503, 504 Pedodontics Seminar (2,2,2,2,2) **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 (*,*,*,*,*) **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 (*) **Staff**
Prerequisite, permission.

700 Thesis (*) **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.

PERIODONTICS

546, 547, 548 Clinical Periodontics (3,4,4) **Schluger, Staff**
The clinical diagnosis and treatment of periodontal disease.

549, 550, 551 Clinical Periodontics (3,4,4) **Schluger, Staff**
The clinical diagnosis and treatment of periodontal disease. Prerequisites, 546, 547, 548.

576, 577, 578 Periodontics Seminar (2,2,2) **Stern**
A continuous weekly seminar devoted to review of periodontic and related literature and to discussion of teaching methods and philosophy of teaching and treatment.

579, 580, 581 Periodontics Seminar (2,2,2) **Stern**
A continuation of the weekly seminars devoted to review of periodontic and related literature and to discussion of teaching methods and philosophy of teaching and treatment. Prerequisites, 576, 577, 578.

582, 583, 584 Treatment Planning Seminar (2,2,2) **Schluger**
A weekly seminar to discuss controversial treatment problems and difficult diagnostic cases.

585, 586, 587 Treatment Planning Seminar (2,2,2) **Schluger**
A continuation of the weekly seminar to discuss controversial treatment problems and difficult diagnostic cases. Prerequisites, 582, 583, 584.

591, 592, 593 Clinical Practice Teaching (1,1,1) **Ogilvie, Staff**
A closely supervised experience in teaching clinical periodontics to the undergraduate dental student. Prerequisites, 546, 547, 548, 576, 577, 578.

600 Research (*) **Staff**
An investigative program in one of the basic sciences under the direction of the departmental faculty. Prerequisite, permission.

700 Thesis (*) **Schluger, 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 clinical application.

PROSTHODONTICS

400, 401 Advanced Complete Denture Prosthodontics (1,1) **Young, Special Lecturers**

402 Advanced Removable Partial Denture Prosthodontics (1) **Wykhuis**

446 Senior Clinical Prosthodontics (5) **Staff**

560 Complete Dentures (4) **Young**
A seminar-laboratory-clinic course dealing with the needs for reproduction of oral tissues in the edentulous mouth; the physical requirements of various types of complete denture restorations; routines, materials, equipments used; tissue responses to physical and functional stimuli.

561 Immediate Dentures (4) **Young**
A seminar-laboratory-clinic course in immediate complete denture treatments. Discussion of diagnosis and treatment planning; variations in basic denture procedures; the surgical operations preparing the ridges for dentures; tissue reaction and wound healing; postoperative care; patient information. Clinical operations using procedures and equipments for denture construction.

- 562 Removable Partial Dentures (4)** **Young**
A seminar-laboratory-clinic course in removable partial denture treatments. Discussions of diagnosis and treatment planning; stresses on mucosa, bone, and abutment teeth, and the influence of natural and modified tooth crowns on abutment values. Clinical operations using procedures and equipments for removable partial denture construction.
- 563 Obturators and Speech Appliances (2)** **Beder**
Theories, principles, technical and clinical experience in the fabrication of prostheses for the patient presenting congenital or acquired defects of the palate and contiguous tissue. Active participation in affiliated hospital programs will be provided whenever available. Desirous for applicant to furnish own patient if possible.
- 564 Definitive and Adjunctive Maxillofacial Appliances (2)** **Beder**
Theories, principles, technical experience in the fabrication of somatoprostheses, appliances for the osteotomized mandible, vehicle and protective devices in irradiation therapy, stents, cranial prostheses, and splints. Active participation in affiliated hospital programs will be provided whenever available. Desirous for applicant to furnish own patient if possible.
- 700 Thesis (*)** **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.

COLLEGE OF EDUCATION

Dean: GORDON CANFIELD LEE, 230 Miller Hall

EDUCATIONAL OBJECTIVES OF THE GRADUATE PROGRAMS IN EDUCATION. The advanced degree programs in Education are designed to further the knowledge of candidates in specialized subject-matter areas and to offer advanced professional training appropriate to the goal of the individual. Qualifications for acceptance include a solid undergraduate training and successful teaching experience. In addition to opportunities for specialized training, candidates are required to have training in the conduct and application of research procedures and the development of communication skills.

The College of Education offers courses leading to the degrees of Master of Arts, Master of Education, Doctor of Education, and Doctor of Philosophy.

All candidates for advanced degrees are required to 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 continuously successful teaching or administrative experience are required for admission to doctoral candidacy.

MASTER OF ARTS. The requirements are: 24 credits in education, including 591 and 10 credits in each of two fields in education; and 12 credits of approved course work in a department other than education. The fields in education from which work may be taken for the M.A. degree are: higher education, curriculum, educational administration and supervision, educational methods, educational psychology, educational sociology, elementary education, guidance and counseling, history and philosophy of education, and remedial and special education. Students must pass written final examinations, and present an acceptable thesis on an approved topic.

Master's candidates who are taking a minor in education must present a minimum of 12 approved credits in education courses.

MASTER OF EDUCATION. The requirements are: 27 credits in education, including 591 and a minimum of 5 credits in each of four fields in education; and 15 credits in two departments other than education, including 5 credits in courses numbered above 500. The fields in education from which work may be taken for the M.Ed. degree are: audio-visual education, business education, higher education, comparative education, curriculum, educational administration, educational methods, educational psychology, educational sociology, educational supervision, elementary education, guidance and counseling, history and philosophy of education, industrial education, remedial and special education, secondary education, and tests and measurements. Students must pass written final examinations over the selected four fields in education and present an acceptable thesis on an approved topic.

DOCTOR OF EDUCATION. The requirements are: 60 credits in education, including 490 or 491, 587 and 588 or 589, 591, a minimum of 12 credits in one field in education, a minimum of 9 credits in each of three other fields in 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. The fields in education from which prospective Ed.D. candidates may elect work are: higher education, curriculum, educational administration and supervision, educational methods, educational psychology, educational sociology, elementary education, guidance and counseling, history and philosophy of education, and remedial and special education. Normally, it is expected that students who plan to enter upon doctoral work will have maintained a grade-point average of 3.50 or better in their work for the master's degree.

DOCTOR OF PHILOSOPHY. The requirements are: 70 credits in education, including 490, 587 and 588 or 589, 591, and approximately 15 credits in each of three fields in education; and either 35 credits in one department other than education, or 20 credits in each of two departments other than education. The fields in education in which prospective Ph.D. candidates may specialize are: higher education, curriculum, educational administration and supervision, educational methods, educational psychology, elementary education, guidance and counseling, history and philosophy of education, and remedial and special education. Normally, it is expected that students who plan to enter upon doctoral work will have maintained a grade-point average of 3.50 or better in their work for the master's degree.

Doctoral candidates who are taking a minor in education must present a minimum of 35 approved credits in education courses.

COURSES

For a listing of courses offered any given quarter, together with the time and place of meeting, consult the Yearly Time Schedule which is available for reference in the College of Education Advisory Office, 221 Miller Hall. Since the amount of credit for courses offered during Summer Quarter varies slightly in some cases from that given during the regular quarters, it is advisable to refer to the Summer Quarter Bulletin for the specific number of credits for a particular course.

401 Advanced Educational Psychology (3)	Fea
Prerequisite, permission.	
402 Child Study and Development (3)	Hayden, McDonald
Prerequisite, permission.	
403 Psychology of Elementary School Subjects (3)	Foster
Prerequisite, permission.	
404 Education of Exceptional Children (3)	Hayden
Prerequisite, permission.	
405 Problems of Adolescence (3)	Fea
Prerequisite, 209 and permission.	
406 Character Education (3)	Staff
Prerequisite, permission.	
407 Teaching the Gifted Child (3)	Staff
Prerequisite, permission.	
407W Workshop in Teaching the Gifted Child (3)	Staff
Prerequisite, permission.	
408 Mental Hygiene for Teachers and Administrators (3)	Salyer
Prerequisite, permission.	
409AJ Training of the Mentally Retarded (5)	Bijou, Hayden
Offered jointly with the Department of Psychology. (Offered Summer Quarter only.) Pre-requisite, permission.	
409BJ Psychology of the Mentally Retarded (5)	Bijou, Hayden
Offered jointly with the Department of Psychology. (Offered Summer Quarter only.) Pre-requisite, permission.	
409CJ Training the Emotionally Disturbed (5)	Hayden, Strother
Offered jointly with the Department of Psychology. (Offered Summer Quarter only.) Pre-requisite, permission.	
409DJ Psychology of the Emotionally Disturbed (5)	Hayden, Strother
Offered jointly with the Department of Psychology. (Offered Summer Quarter only.) Pre-requisite, permission.	

409F The Teaching of Speech to the Deaf (6)	Staff
Prerequisite, permission.	
409G The Teaching of Language to the Deaf (6)	Staff
Prerequisite, permission.	
409WJ Advanced Workshop in the Education of the Retarded (10)	Staff
Offered jointly with the Department of Psychology. (Offered Summer Quarter only.) Prerequisite, permission.	
410 Educational Sociology (3)	Jessup
Prerequisite, permission.	
412 Foundations of Freedom and Education (3)	Staff
(Offered Summer Quarter only.) Prerequisite, permission.	
415 Principles of Safety Education (3)	Corbally
Prerequisite, permission.	
415D Principles of Safety Education: Driver Education (5)	Corbally
Prerequisite, permission.	
417 Adult Education (3)	Jessup
Prerequisite, permission.	
417W Workshop for Administrators of Adult Education (3)	Staff
Prerequisite, permission.	
420 Theory and Technique of Kindergarten and Primary Teaching (3)	MacDonald
Prerequisite, permission.	
421 Remedial Education (3)	Fea
Prerequisite, permission.	
422 Remedial Education Clinic (3)	Fea
Prerequisite, 425 or equivalent.	
425 Remedial Reading (3)	Fea
Prerequisite, 374 or equivalent.	
430 Public School Administration (3)	Strayer
Prerequisite, permission.	
430P Workshop for Public School Business Officials (2)	Staff
(Offered Summer Quarter only.)	
430W Workshop in School Administration (1)	Staff
(Offered Summer Quarter only.)	
431 School Finance (3)	Strayer
Prerequisite, 430 or permission.	
433 Elementary School Organization and Administration (3)	Jessup
Prerequisite, permission.	
434 High School Organization and Administration (3)	Strayer
Prerequisite, permission.	
435 Administration and Supervision of Junior High Schools (3)	Staff
Prerequisite, permission.	
437 School Supervision (3)	Jessup
Prerequisite, permission.	
439 Pupil Personnel and Progress Reporting (3)	Vopni
Prerequisite, permission.	
445V Principles and Objectives of Vocational Education (3)	Baily
Prerequisite, permission.	
447 Principles of Guidance (3)	Salyer
Prerequisite, permission.	
448E Guidance in the Elementary School (3)	Salyer
Prerequisite, 447.	
448S Guidance in the Secondary School (3)	Salyer
Prerequisite, 447.	
449 Workshop on Pupil Personnel Service (3)	Vopni
Prerequisite, permission.	
455 Auditory and Visual Aids in Teaching (3)	Hayden
Prerequisite, permission.	
456 Auditory and Visual Aids in Teaching (3)	Hayden
Prerequisite, 455 or equivalent.	
457 Audio-Visual Aids Management (3)	Hayden
Prerequisite, permission.	
459J Television in the Schools (3)	Staff
Offered jointly with the School of Communications. Prerequisite, permission.	
460J Field Training in Health Education (5)	Vavra
Offered jointly with the Department of Preventive Medicine. Prerequisite, permission.	

461 Elementary School Curriculum (3) Prerequisite, permission.	Jessup
466 Workshop in Curriculum Improvement (1-15, maximum 15) Prerequisite, 467 or permission.	Draper
467 Principles and Techniques of Curriculum Improvement (3) Prerequisite, 360.	Draper
470 Historical Backgrounds of Educational Methods (3) Prerequisite, permission.	Staff
471D Observation and Student Teaching of Deaf Children (6) Prerequisite, permission.	Staff
471E,X,S Advanced Directed Teaching (4-16) Prerequisite, 371 or permission.	Staff
474 Workshop in the Improvement of Teaching (5) Prerequisite, permission.	Boroughs, Foster, Hayden, Vopni
475 Improvement of Teaching (3) Prerequisite, permission.	Hayden
475A Improvement of Teaching: Secondary Mathematics (5) Prerequisite, teaching experience or permission.	Staff
475B Improvement of Teaching: Arithmetic (3) Prerequisite, permission.	Vopni
475GJ Geography in the Social Studies Curriculum (5) Offered jointly with the Department of Geography. Prerequisite, permission.	Staff
475H Improvement of Teaching: Language Arts (3) Prerequisite, permission.	Fea
475I Improvement of Teaching: Industrial Education (3) Prerequisite, permission.	Baily
475LJ Improvement of Teaching: Latin (5) Offered jointly with the Department of Classics. (Offered Summer Quarter only.) Prerequisite, permission.	Grummel
475M Improvement of Teaching: Social Studies (3) Prerequisite, permission.	Boroughs
475N Introduction to the Literature of Nature Study (2) Prerequisite, permission.	Vopni
475S Improvement of Teaching: Elementary School Science (3) Prerequisite, permission.	Vopni
475T Improvement of Teaching: Secondary School Science (3) Prerequisite, permission.	Vopni
475XJ Caesar for High School Teachers (2½) Offered jointly with the Department of Classics. (Offered Summer Quarter only.) Prerequisite, permission.	Staff
476D Materials and Methods of Teaching Typewriting (2½) (Offered Summer Quarter only.) Prerequisite, permission.	Staff
476E Materials and Methods of Teaching Office and Clerical Practice (2½) (Offered Summer Quarter only.) Prerequisite, permission.	Staff
476H Workshop in Current Problems of Distributive Education (2½, maximum 5) (Offered Summer Quarter only.) Prerequisite, permission.	Staff
476I Problems of Distributive Education (3) Prerequisite, permission.	Staff
476K Coordination of Distributive Education and Diversified Occupational Programs (2-3, maximum 3) (Offered Summer Quarter only.) Prerequisite, permission.	Staff
476L Materials and Methods of Teaching Gregg Shorthand and Transcription (2½) (Offered Summer Quarter only.) Prerequisite, permission.	Staff
476M Principles and Problems of Business Education (2½) (Offered Summer Quarter only.) Prerequisite, permission.	Staff
476N Materials and Methods of Teaching Bookkeeping and General Business Subjects (2½) (Offered Summer Quarter only.) Prerequisite, permission.	Staff
477 The Teaching of Reading (3) Prerequisite, permission.	Fea
478J Workshop in Elementary School Physical Education (2½) Offered jointly with the Department of Women's Physical and Health Education. (Offered Summer Quarter only.) Prerequisite, permission.	Staff
480 History of Education (5) Prerequisite, permission.	Jessup

- 481 Workshop in Industrial Education (3-10, maximum 10)** **Baily, Staff**
Prerequisite, permission.
- 482 Advanced Tools and Materials (3)** **Baily**
Prerequisite, permission.
- 483 Organization and Administration of Industrial Education (3)** **Baily**
Prerequisite, permission.
- 484 Comparative Education (5)** **Jessup**
Prerequisite, permission.
- 485 Advanced General Shop for Industrial Education Teachers (3)** **Baily**
Prerequisite, 182 or equivalent, or permission.
- 486 Trends in Industrial Education (3)** **Baily**
Prerequisite, permission.
- 487 Instructional Analysis for Industrial Education Teachers (3)** **Baily**
Prerequisite, permission.
- 488 Philosophy of Education (3)** **Staff**
Prerequisite, permission.
- 489 Current Problems in Industrial Education (3)** **Baily**
Prerequisite, permission.
- 490 Educational Statistics (5)** **Dvorak**
Prerequisite, 390.
- 491 Advanced Educational Measurements (3)** **Dvorak**
Prerequisite, 390 and 490, or Psychology 301 or equivalent.
- 497J Special Topics in Mathematics for Teachers (2-5, maximum 15)** **Staff**
Offered jointly with the Department of Mathematics. Prerequisite, permission.
- 501 Seminar in Educational Psychology (3)** **Fea**
Psychological principles of education; summary of research results in application to school problems. Prerequisites, a background in general and educational psychology, and permission.
- 506 Internship in Special Education (2-10, maximum 10)** **Hayden**
Supervised experiences in special education for advanced students. Prerequisite, permission.
- 510 Seminar in Educational Sociology (3)** **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. Prerequisite, permission.
- 522 Seminar in Diagnostic and Remedial Work in Education (3)** **Fea**
Study of the recent research in diagnosis of and remediation for learning difficulties in the academic school subjects. Prerequisite, permission.
- 525 Seminar in Elementary Education (3)** **Boroughs**
An exploration into the philosophy, history, curriculum, and method of the elementary school, with emphasis upon individual research. Prerequisite, doctoral candidacy or special permission.
- 531 Seminar in Administration: Finance (5)** **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, 431, and doctoral candidacy or special permission.
- 533 Seminar in Administration: School Buildings (3)** **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. Prerequisites, 430 and doctoral candidacy or special permission.
- 536 Internship in Educational Administration (1-10, maximum 10)** **Strayer**
Recommended for all doctoral candidates preparing for administrative positions except those having sufficient experience as administrators. Half-time work in a school district or districts in close proximity to the University of Washington for one, two, or three quarters, depending upon the student's previous experience. Supervision by staff members of the College of Education and the superintendent of schools or school principal in the selected school district. Prerequisites, 430 and doctoral candidacy or special permission.
- 538 Public Relations for Public Schools (3)** **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. Prerequisites, 430 and doctoral candidacy or special permission.
- 541 Student Appraisal (3)** **Vopni**
Emphasis on the utilization of objective measures for purposes of guidance. Prerequisite, 447 or permission.
- 542 Information Services (3)** **Vopni**
Emphasis on educational and vocational guidance. Prerequisite, 447 or permission.

- 543 Counseling (3)** **Vopni**
Emphasis on the theory and practice of pupil counseling. Prerequisite, 447 or permission.
- 544 Organization and Administration of Guidance Programs (3)** **Vopni**
Basic considerations in planning, organizing, and operating school guidance programs; analysis of issues and problems encountered in formulating policy and evaluating services. Prerequisite, 447 or permission.
- 546 Internship in Guidance (2-10, maximum 10)** **Vopni**
Supervised practice in guidance activities for advanced students. Prerequisite, 447 or permission.
- 547 Seminar in Guidance (3)** **Corbally**
Individual problems in the areas of organization, supervision, and administration of guidance in the elementary and secondary schools. Prerequisites, 447 or equivalent and doctoral candidacy or special permission.
- 550 Development and Organization of Higher Education (3)** **Staff**
Higher education from the standpoint of the new instructor; history of administrative organization. Prerequisite, doctoral candidacy or special permission.
- 551 College Problems (3)** **Staff**
A consideration of the pertinent problems of the college teacher and his tasks. Prerequisite, doctoral candidacy or special permission.
- 552 Improvement of College Teaching (3)** **Hayden**
An analysis of type 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. Prerequisite, doctoral candidacy or special permission.
- 555 The Junior College (3)** **Staff**
An outline study of the history, philosophy, and curriculum of junior colleges in general, with special emphasis upon junior colleges in the Northwest. Special problem studies are optional.
- 560 Seminar in Curriculum: Cooperative Research in Curriculum (3)** **Draper**
Research studies in the field of curriculum development will be designed for experimentation in the public schools. An analytical study will be made of the place of action research in the curriculum field. Prerequisites, 467 and doctoral candidacy or special permission.
- 561 Seminar in Curriculum: Studies in Fusion, Correlation, and Child-Centered Programs (3)** **Draper**
Research in fusion, correlation, and child-centered programs in the large block of time. Prerequisites, 467 and doctoral candidacy or special permission.
- 568 Seminar in Secondary Education (3)** **Draper**
Research in the field of extraclass activities with emphasis on evaluation. Fusion and correlation with curriculum areas will be studied. Prerequisite, 467.
- 570, 571 Problems in Modern Methods (3,3)** **Foster**
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.
- 572J, 573J Romance Language Teachers' Seminar (2½, 2½)** **Staff**
Theory and practice of foreign language learning; how language is learned; the principal obstacles; techniques for learning a foreign language as a child, as an adolescent, as an adult; the possibilities and the limits of electronic aids. Offered jointly with the Department of Romance Languages and Literature. (Offered Summer Quarter only.)
- 575 Seminar in Language Arts (3)** **Fea**
Study of recent research in listening, oral language, reading and written language, emphasizing psychological and interrelated aspects. (Offered Summer Quarter only.) Prerequisites, 374, 475 or equivalent, and permission.
- 587, 588, 589 Seminar in Philosophy of Education (3,3,3)** **Staff**
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)** **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 (*)** **Staff**
Prerequisites, 591 and permission of instructor and Director of Graduate Studies in Education. Instructor and field must be designated in registration.
 Audio-visual education Educational supervision
 Higher education Elementary education
 Comparative education Guidance and counseling
 Curriculum History and philosophy of education
 Educational administration Industrial education
 Educational methods Remedial and special education
 Educational psychology Secondary education
 Educational sociology Tests and measurements
- 700 Thesis (*)** **Staff**
Advanced degree candidates in education must register for "thesis." When registration is for "thesis only," an incidental fee of \$56.50 is charged and the work may be done *in absentia* by special permission.

COLLEGE OF ENGINEERING

Dean: HAROLD E. WESSMAN, 206 Guggenheim Hall

In the College of Engineering, 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.

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 aeronautical, chemical, civil, electrical, and mechanical engineering, in metallurgy, and through the interdisciplinary program of engineering mechanics.

Admission to graduate study in engineering requires the approval of both the Graduate School and the engineering department in which the major work will be done.

NUCLEAR ENGINEERING

A graduate program in Nuclear Engineering leading to the degree Master of Science in Engineering is now offered by the College of Engineering. The degree is designated as Major: Nuclear Engineering. The program is a cooperative undertaking of the Departments of Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, and Metallurgical Engineering, and is administered by a faculty committee composed of representatives from these departments under the chairmanship of Dr. Albert L. Babb, Department of Chemical Engineering.

The requirements for the Master of Science in Engineering degree are 36 credits of course work and a thesis equivalent to 9 credits of course work. The course work is usually divided in the ratio of two to one between nuclear engineering courses and selected courses from other departments. It is recommended that candidates for this degree include 500, 501, 510, and 539 among their courses. Attendance in N521 will normally be required for three quarters. No foreign language is required.

Doctorate programs are available for students with undergraduate majors in Chemical and Mechanical Engineering and who have a master's degree, with a major in Nuclear Engineering or equivalent.

COURSES

444 Nuclear Materials (4)	Polonis
445 Nuclear Metallurgy Laboratory (2)	Polonis
484 Introduction to Nuclear Engineering (4)	Babb
485 Nuclear Instruments (3)	Wilson
486 Nuclear Power Plants (3)	McFeron
487 Tracer Techniques in Engineering Measurements (3)	Feroy
500 Nuclear Reactor Theory I (5)	Garlid

A lecture course in nuclear reactor physics covering: nuclear reactions; production of neutrons; diffusion of neutrons; slowing down of neutrons; Fermi Age Theory and applications; general theory of homogeneous multiplying systems and heterogeneous reactors. Prerequisites, 484 or permission, Physics 323 or equivalent, and Mathematics 221; equivalent of Mathematics 428 recommended.

- 501 Nuclear Reactor Theory II and Laboratory (4)** **Staff**
A continuation of 500, covering time behavior of nuclear reactors; fundamentals of reactor control; elements of perturbation and transport theory. The laboratory work will center around the natural uranium-graphite reactor. Experiments will include measurements of the scattering and absorption of neutrons, flux distributions in the exponential pile, lattice parameters, and studies with a reactor simulator and reactor control circuits. Prerequisite, 500.
- 502 Nuclear Engineering Laboratory (5)** **Staff**
An advanced laboratory course centered around the 10-KW nuclear reactor. Experiments will include studies of reactor operating characteristics and measurements utilizing gamma and neutron radiations. Prerequisite, 501.
- 510 Nuclear Reactor Engineering (3)** **Babb**
An advanced course in engineering analysis of nuclear reactor systems. The course covers core design methods; heat generation and distribution in nuclear reactor systems; the removal and utilization of heat for power production; fuel cycles and processing of irradiated reactor fuels; shielding of nuclear radiations. Prerequisite, 500.
- N521, N522, N523 Graduate Seminar (0,0,1)** **Staff**
- 539 Nuclear Reactor Design (3)** **McFeron**
A design laboratory course involving the synthesis of reactor theory, engineering analysis, material specifications, and economics to meet the design specifications for a complete nuclear reactor facility. Emphasis upon cycle analysis, hazards, arrangements and requirements peculiar to nuclear reactor plants. Prerequisite, 510.
- 559 Control of Radioactive Wastes (3)** **Bogan**
Environmental problems resulting from utilization of nuclear reactions; radioactive waste disposal practice; decontamination of water supplies; reactor site location and control of stream and atmospheric pollution. Prerequisite, Physics 320 or permission.
- 599 Special Topics in Nuclear Engineering (2-5, maximum 15)** **Staff**
Discussions and readings of topics of current interest in the field of nuclear engineering research. Subject matter may include reactor fuels and materials, reactor dynamics and control, instrumentation, thermonuclear processes, and direct conversion problems.
- 700 Thesis (*)** **Staff**

Additional complementary courses are offered in the Departments of Chemistry, Mathematics, and Physics within the College of Arts and Sciences. Mathematics 427, 428, and 429 (Topics in Applied Analysis) are particularly recommended for majors in nuclear engineering. Students having prerequisite courses in physical chemistry will be interested in the following two courses: Chemistry 418 (Radiochemistry) and 419 (Radiochemistry Laboratory).

All students planning to take graduate work in nuclear engineering are advised to include in their undergraduate programs the following courses or their equivalents: Mathematics 221 (Elements of Differential Equations); Physics 320 (Introduction to Modern Physics), Physics 323 (Introduction to Nuclear Physics); Materials Engineering 250 (Fundamentals of Materials Science); Nuclear Engineering 484 (Introduction to Nuclear Engineering).

Questions concerning the nuclear engineering program should be addressed to Dr. Albert L. Babb.

AERONAUTICAL ENGINEERING

Executive Officer: RICHARD JOHN H. BOLLARD, 207 Guggenheim Hall

The Department of Aeronautical Engineering offers courses leading to the advanced degrees of Master of Science in Aeronautical Engineering, Master of Science in Engineering (see page 173), Master of Aeronautical Engineering, and Doctor of Philosophy. Students who intend to work toward advanced degrees must meet the requirements of the Graduate School, and must have, or must take without graduate credit, a first course in differential equations. Candidates for advanced degrees with insufficient undergraduate aeronautical engineering background may be required to take some undergraduate courses which are not counted toward the advanced degree.

MASTER OF SCIENCE IN AERONAUTICAL ENGINEERING. A total of 30 credits of course work and a thesis equivalent to 9 credits of course work are required. All programs of study must be approved by the Department and will normally include aeronautical courses in the 500 series, plus selected courses from other depart-

ments. No foreign language is required. The thesis for the Master of Science degree may be waived in certain cases for students who present evidence of having performed a thesis-type investigation. Such a waiver requires staff approval and 9 additional credits of course work.

MASTER OF AERONAUTICAL ENGINEERING. A total of 72 credits of course work and a more extensive thesis, equivalent to 18 credits of course work, are required for this more advanced degree. Other requirements are similar to those for the Master of Science degree.

DOCTOR OF PHILOSOPHY. Candidates for this degree must complete an approved program of studies and a research program which makes a definite contribution to knowledge.

Before the student is allowed to take the General Examination for admission to candidacy, he must take comprehensive written and oral examinations to test his understanding and comprehension of the broad field of Aeronautical Engineering, including aerodynamics, dynamics, structures, aeroelasticity, mathematics, and physics. After admission to candidacy and while carrying out the investigation for his thesis, it is recommended that the student be in full-time residence for at least one academic year of three consecutive quarters.

COURSES

300, 301, 302 Aerodynamics (3,3,3)	Staff
320 Aerodynamics Laboratory (3)	Staff
330, 331, 332 Aircraft Structural Analysis (3,3,3)	Dill, O'Brien
350 Aircraft Structural Laboratory (2)	Dill, O'Brien
360 Aircraft Engines (3)	Eastman
N390-N391-392 Seminar (0-0-1)	Eastman, Staff
404 Introduction to Theoretical Aerodynamics (3)	Ganzer, Street
405 Elements of Gas Dynamics (3)	Ganzer, Street
410, 411, 412 Aircraft Design (3,3,3)	Staff
422 Aerodynamics Laboratory (3)	Staff
425 Flight Test Laboratory (3)	Joppa
430 Aerodynamic Performance, Stability, and Control (3)	Ganzer
441 Advanced Structural Design (3)	O'Brien
450 Astronautics (3)	Street
461 Jet Propulsion (3)	Ganzer
462 Propellers and Moving Wing Systems (3)	Eastman
470 Analytical Problems in Aeronautics (3)	Staff
480 Elementary Dynamics (3)	Staff
481 Elementary Aeroelasticity (3)	Martin, O'Brien
499 Special Projects (2-5, maximum 10)	Staff
505 Aerodynamics of Incompressible Fluids (3)	Fyfe, 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. Prerequisite, 404 or permission.	
506 Aerodynamics of Incompressible Fluids (3)	Street
Theory of viscous incompressible fluids; the Navier-Stokes equations, dimensional analysis, and exact solutions; Prandtl's boundary layer theory, Karman's integral theorem, and laminar and turbulent boundary layer over airfoils and bodies of revolution.	
508 Aerodynamics of Compressible Fluids (3)	Fyfe, Street
Equations of motion in general vector form; exact solutions for shock waves, expansion waves, and flow past cones; small perturbation theory applied to bodies of revolution and wings in subsonic and supersonic flow. Prerequisite, 405 or permission.	
539 Hypersonic Aerodynamics (3)	Street
Fundamental concepts of hypersonic flow; Newtonian flow theory, small disturbance theory and other known methods of solution of inviscid flow problems; the hypersonic laminar boundary layer; flow over flat plate; the blunt body problem; high temperature effects. Prerequisite, 405 or permission.	

- 510 Nonstationary Gas Dynamics (3)** **Fyfe, O'Brien**
Time dependent fluid flow problems; wave and shock propagation in gases and solids; the interaction of different wave forms and boundaries. Prerequisite, 569J or permission.
- 511 Unsteady Aerodynamics (3)** **Fyfe, O'Brien**
Oscillating airfoils at subsonic and supersonic speeds; consideration of wings and bodies in unsteady flow. Prerequisites, 404, 405, or permission.
- 513 Heat Transfer in Aeronautics (3)** **Street**
Laws of heat transfer; forced convection in laminar and turbulent boundary layers with heat transfer; methods of alleviation and applications in high-speed aerodynamic heating. Prerequisite, 506 or permission.
- 514 Rarefied Gas Dynamics (3)** **Street**
Kinetic theory of gases; Boltzmann equation and the Maxwell transport equation; equations of continuum and slip flow, free-molecule and near free-molecule flows; applications to ultra-high altitude flight. Prerequisites, 405 and permission.
- 516 Stability and Control I (3)** **Ganzer**
Aerodynamics of control; the general problem of dynamic stability; the influence of aerodynamic parameters on flying characteristics. Prerequisite, 430 or equivalent.
- 517 Stability and Control II (3)** **Ganzer**
Equations of motion with control terms; response of airplane to actuation of controls; automatic stability and control. Prerequisite, 516.
- N520-N521-522 Seminar (0-0-1)** **Staff**
- 523 Seminar in Aerodynamics (1-2, maximum 12)** **Fyfe, Street**
Study of recent advances in aerodynamics with students and staff reporting on recent publications. Topics vary from year to year. Open only to students having the M.S. degree or its equivalent.
- 530 Theory of Elastic Structures (3)** **Dill, Martin**
Stresses, strains, displacements; Hooke's Law; basic equations of elasticity; virtual work and energy theorems; application of theory to selected problems; approximate methods.
- 531 Analysis of Shells (3)** **O'Brien**
Kinematical, equilibrium, and inertial relationships for arbitrary shells; considerations of orthotropy, finite deflections and thermal stresses; applications to advanced aerospace structures.
- 533 Theory of Plasticity (3)** **Dill, Martin**
Physical behavior of elastic-plastic and plastic structures; development of stress-strain relations and conditions for yielding; discussion of extremum principles; application of theory to representative problems. Prerequisite, 530 or Civil Engineering 572, or Mechanical Engineering 551.
- 540 Structural Problems (3)** **Dill, Martin**
Theory for analysis of complex structures; displacement and force methods; use of high speed calculating equipment; heated structures; nonlinear problems. Prerequisite, 530 or Civil Engineering 572, or Mechanical Engineering 551.
- 550 Dynamics of Aircraft Structures (3)** **Martin, O'Brien**
Equations of motion of restrained and unrestrained elastic structures; response of elastic systems to time dependent forces and to forces arising from motion of the system; calculation of dynamic overstresses in complex structures. Prerequisite, 553, or Civil Engineering 574, or Mechanical Engineering 567.
- 553 Aircraft Vibrations (3)** **Martin, O'Brien**
Natural frequencies and modes of vibrations of linear systems; forced vibrations and motion dependent forces; Lagrange's equations and Hamilton's principle; matrix methods for discrete and continuous systems typical of aircraft structures. Prerequisite, 480 or permission.
- 556 Aeroelasticity (3)** **Martin, O'Brien**
Concept of functional diagrams and aeroelastic operators; quasi-static lifting-surface deformations and stability; control surface effectiveness; nonstationary lifting-surface deformations and stability; general dynamics of aerodynamic, structural, and control system interactions. Prerequisite, 481 or permission.
- 557 Nonlinear Problems in Airplane Dynamics (3)** **Fyfe, 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. Prerequisite, Mathematics 538, or equivalent.
- 567, 568 Analysis in Engineering (3,3)** **Staff**
Mathematical methods for solving problems arising in engineering. 567: vector analysis, matrices, tensors, complex variables; 568: calculus of variations, Sturm-Liouville problems, series solutions and special functions for ordinary differential equations, orthogonal functions.
- 569J Partial Differential Equations (3)** **Fyfe, Street**
Classification of second order partial differential equations; solution by separation of variables and reduction to a boundary value problem; theory of characteristics and solutions by means of Green's functions. Examples from classical mechanics of continua. Offered jointly with the Department of Mathematics. Prerequisite, 568 or Mathematics 428.

- 580, 581, 582 General Theory of Continuous Media (3,3,3)** **Dill, Street**
 General formulation of the classical field theories: Fundamental concepts of motion, stress, energy, entropy, and electromagnetism for a continuum; conservation of mass; balance of momentum; balance of energy, including thermodynamics of irreversible deformations; balance of electromagnetism. General nature of constitutive equations for a continuum. Examples of kinematic, energetic, mechanical, thermo-mechanical, electromagnetic, and electromechanical constitutive equations. Prerequisite, 567 or permission.
- 599 Special Projects (2-5, maximum 15)** **Staff**
 An investigation on a special project by the student under the supervision of a staff member.
- 600 Research (*)** **Staff**
 Prerequisite, permission of Executive Officer.
- 700 Thesis (*)** **Staff**
- 702 Degree Final (0)** **Staff**
 Limited to students completing a nonthesis degree program.

CHEMICAL ENGINEERING

Executive Officer: RALPH W. MOULTON, 37 Bagley Hall

The Department of Chemical Engineering offers courses leading to the degrees of Master of Science in Chemical Engineering, Master of Science in Engineering (see page 173), and Doctor of Philosophy.

Entrance, or qualifying, examinations are required of prospective candidates for the degrees of Master of Science in Chemical Engineering and Doctor of Philosophy. 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 Thursday and Friday 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 30 credits of course work and a thesis. The course work is usually divided in the ratio of about two to one between major department and other departments. It is recommended that candidates for this degree include 570, 571, 574, and 575 among their courses. 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 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 Supervisory 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

- N381, N382 Field Trip (0,0)** **Staff**
- 383 Industrial Stoichiometry (2)** **Staff**
- 384 Industrial Stoichiometry (4)** **Staff**
- 385 Chemical Engineering Thermodynamics (4)** **Staff**
- 470 Transport Process Principles (4)** **Staff**
- 471, 472, 473 Unit Operations (3,3,3)** **Staff**
- 474, 475, 476 Unit Operations Laboratory (2,2,2)** **Staff**
- 481 Process Design Principles I (3)** **Staff**
- 482 Process Design Principles II (3)** **Staff**

- 483 Chemical Engineering Process Design (4)** **Staff**
- 485 Industrial Electrochemistry (3)** **Moulton**
(Offered when demand is sufficient.)
- 520 Graduate Seminar (1-5)** **Staff**
- 570 Introduction to Transport Phenomena (3)** **Sleicher**
Derivation of general differential equations for transport of heat, mass, and momentum; kinetic theory of fluids and its application to transport phenomena based on molecular motion; methods for estimating transport coefficients in fluids. Prerequisite, 471.
- 571 Heat Transfer (3)** **David**
Steady and unsteady state conduction with emphasis on numerical methods. Radiation; design theory background and application to furnace design; convection; introductory concepts; methods for predicting coefficients; recent developments in theory; heat-exchanger design. Prerequisites, 570 and 575, or permission.
- 572 Mass Transfer (3)** **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. Prerequisites, 570 and 575, or permission.
- 573 Absorption and Extraction (3)** **Heideger**
Diffusion theory; transfer of material between phases; design of absorption equipment; multicomponent systems; performance of absorption equipment; simultaneous absorption and chemical reaction; solvent extraction. (Offered alternate years; offered 1962-63.) Prerequisites, 570 and 575, or permission.
- 574 Fluid Mechanics (3)** **Sleicher**
Mechanism of fluid flow. Total energy balance and Bernoulli's theorem. Integration of the differential equations for motion of a fluid. Poiseuille, Fanning, and other equations. Turbulent flow and boundary-layer relationships. High velocity flow. Introductory design calculations. Prerequisites, 570 and 575, or permission.
- 575 Advanced Chemical Engineering Thermodynamics (3)** **McCarthy**
Principles of thermodynamics. Applications to unit operations and to prediction of phase equilibria and chemical equilibria. Prerequisite, 385.
- 581 Kinetics and Catalysis (3)** **Johanson**
Homogeneous and heterogeneous systems, with emphasis on chemical engineering principles applied to industrial reactor design. Prerequisites, 571 and 575, or permission.
- 582 Advanced Topics in Mass Transfer (3)** **Staff**
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 Advanced Topics in Chemical Engineering (1-3)** **Staff**
Discussions and readings of topics of current interest in the field of chemical engineering unit operations. Subject matter changes from year to year. Prerequisite, satisfactory completion of one year of graduate study in chemical engineering or permission.
- 584 Advanced Topics in Chemical Engineering Science (1-3)** **Staff**
Discussions and readings of topics of current interest in the field of chemical engineering unit processes. Subject matter changes from year to year. Prerequisite, satisfactory completion of one year of graduate study in chemical engineering or permission.
- 585 Topics in Chemical Engineering Plant Design (1-3)** **Staff**
Discussions and readings of topics of current interest in the field of chemical engineering plant design. Subject matter changes from year to year. Prerequisite, satisfactory completion of one year of graduate study in chemical engineering or permission.
- 586 Chemistry of High Polymers (3, maximum 6)** **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. (Offered alternate years; offered 1962-63.) Prerequisites, Chemistry 232 and 356.
- 587 Cellulose and Lignin (3)** **McCarthy**
Chemistry and technology of cellulose, lignin, and related substances. Origin and status in plant tissue, isolation procedures, physical characteristics, and chemical reactions. Chemical processing in pulp, paper, rayon, and plastic industries. (Offered alternate years; offered 1961-62.) Prerequisites, Chemistry 336 and 356, or permission.
- 596 Topics in Chemical Engineering Research (3, maximum 18)** **Staff**
Discussions and readings of topics of current interest in the field of chemical engineering research. Subject matter changes from year to year. Prerequisite, satisfactory completion of one year of graduate study in chemical engineering or permission.
- 600 Research (*)** **Staff**
Prerequisite, permission of Executive Officer.
- 700 Thesis (*)** **Staff**

CIVIL ENGINEERING

Acting Executive Officer: THOMAS H. CAMPBELL, 201 More Hall

The Department of Civil Engineering offers courses leading to the degrees of Master of Science in Engineering (see page 173), Master of Science in Civil Engineering, and Doctor of Philosophy.

MASTER OF SCIENCE IN CIVIL ENGINEERING. Graduate work leading to this degree is offered in the fields of hydraulic engineering, sanitary engineering, soil mechanics, engineering mechanics, structural engineering, and transportation (highway) engineering. The requirements are: a minimum of 39 credits, of which 30 credits must be in formal course work and 9 in thesis. No foreign language is required.

DOCTOR OF PHILOSOPHY. Candidates for this degree must complete an approved program of studies and a research program which makes a definite contribution to knowledge. This research program may be in one of the following areas: hydraulics and fluid mechanics, sanitary engineering, soil mechanics, engineering mechanics, structural engineering, or transportation engineering.

COURSES

GENERAL

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 509 Engineering Relations (2) | Staff |
| Methods of setting up engineering problems and investigations; written and oral presentation, both professional and economic, in the student's major field. Prerequisite, graduate standing. | |
| 520 Seminar (1, maximum 6) | Staff |
| Formal presentation for discussion and criticism of all research of the graduate years, 1 credit (required). Required of all candidates for the master's degree during their final quarter in residence. | |
| 595 Advanced Professional Design and/or Analysis (2-5, maximum in one field, 15) | Staff |
| Special studies under the direction of staff members. Students should register for H (hydraulics), M (materials), P (planning), S (structural), W (sanitary), or T (transportation). | |
| 600 Research (*) | Staff |
| Special investigation by graduate students under the direction of staff members. Students should register for H, M, P, S, W, or T. Prerequisite, permission of Executive Officer. | |
| 700 Thesis (*) | Staff |

SURVEYING

- | | |
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| 315 Photogrammetry (3) | Chittenden, Colcord |
|-------------------------------|----------------------------|

TRANSPORTATION ENGINEERING

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| 403 Principles of Urban Planning (3) | Horwood |
| 422 Railway Engineering (3) | Ekse |
| 423 River and Harbor Engineering (3) | Ekse, Meese |
| 424 Highway Pavement Design (3) | Ekse |
| 426 Airfield Design (3) | Ekse |
| 428 Highway Policy and Economics (3) | Hennes, Horwood |
| 429 Traffic Engineering—Operations (3) | Horwood, Sawhill |
| 430 Traffic Engineering—Design (3) | Sawhill |
| 521 Seminar in Urban Transportation Planning (2) | Hennes, Horwood |
| Prerequisite, Civil Engineering or Urban Planning graduates, or permission. | |
| 523 Port Development (4) | Ekse, Hennes |
| 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. Prerequisites, 342 and senior or graduate standing. | |
| 524 Modern Pavement Theory (4) | Ekse |
| Elastic slab theory as applied to rigid pavements, considering such factors as subgrade reaction, stress repetition, temperature, and warping stresses; theories of plastic equilibrium as applied to base courses and flexible mats. Other elements of highway design. Two lectures, one laboratory period, and one conference. Prerequisite, graduate standing. | |
| 530 Advanced Traffic Engineering—Freeways (4) | Sawhill |
| Factors and elements in the geometric design and location of arterials, freeways, interchange connections, and parking facilities. Special studies and reports. Prerequisite, Civil Engineering graduate, or permission. | |

HYDRAULIC ENGINEERING

- 342 **Fluid Mechanics (4)** Chenoweth, Kent, Moritz, Nece, Richey
- 343 **Hydraulic Engineering (5)** Chenoweth, Kent, Moritz, Richey
- 441 **Intermediate Fluid Mechanics (3)** Nece, Richey
- 442 **Introduction to Hydrodynamics (3)** Nece, Richey
- 445 **Hydraulic Machinery (3)** Chenoweth, Moritz
- 447 **Applied Hydrology (3)** Campbell, Richey
- 448 **Reclamation (3)** Campbell, Van Horn
- 542 **Hydrodynamics I (4)** Nece, Richey
Fundamentals of fluid potential motion. Two- and three-dimensional flow examples, including free surface flows. Complex variables, conformal mapping, other solution techniques. (Not open to students with credit in 442.) Prerequisite, 441 or permission.
- 543 **Hydrodynamics II (3)** Nece, Richey
Circulation and lift. Vortex motion. Introduction to viscous flows: the Navier-Stokes equations, and some exact solutions. Instability of laminar flow. Introduction to turbulent flow. Prerequisite, 542.
- 544 **Wave Dynamics (3)** Richey
Application of wave theory to the interaction of water waves and objects, emphasizing forces on moored and stationary marine structures. Forces on bottom sediments. Prerequisites, 542, Oceanography 411, or permission.
- 547 **Advanced Hydrology (4)** Campbell, Richey
Theory and application of hydrology, with emphasis on water power development. Precipitation, runoff, maximum and minimum flows, flood routing. Economics of storage and transportation of water. Types of hydroelectric installations; multiple use projects. Special problems in hydrology and hydraulic power. Prerequisites, 342 and graduate standing.
- 549 **Experimental Hydrodynamics (3)** Nece, Richey
Experimental studies of steady and unsteady flow phenomena. Model tests as used in hydraulic design. Instrumentation and experimental techniques. Prerequisite, 441 or equivalent, or permission.

SANITARY ENGINEERING

- 350 **Introduction to Sanitary Engineering (3)** Bogan, Carlson, Sylvester
- 450 **Advanced Sanitary Engineering Laboratory (5)** Bogan, Sylvester
- 452 **Water Supply (3)** Bogan, Carlson, Sylvester
- 453 **Water Treatment (3)** Bogan, Sylvester
- 454 **Sewerage (3)** Bogan, Carlson, Sylvester
- 456 **Sewage Treatment (3)** Bogan, Sylvester
- 457 **Environmental Engineering Problems (3)** Bogan, Sylvester
- 553 **Advanced Water Treatment Design (4)** Bogan, Sylvester
Functions and performance of unit operations employed in water treatment. Methods of design and process applications involving sedimentation, chemical coagulation, filtration, demineralization, and the removal of radioisotopes. Functional design of a complete water treatment plant by the student to meet specific requirements. (Not open to students with credit in 453.) Prerequisites, 450, 452, or permission.
- 556 **Advanced Sewage Treatment Design (4)** Bogan, Sylvester
Application and design of unit operations and processes employed in sewage treatment, including mechanical and gravitational separations, aerobic and anaerobic biochemical transformations, aeration and ORP control. Functional design of a complete sewage treatment plant. (Not open to students with credit in 456.) Prerequisites, 450, 454, or permission.
- 557 **Industrial Waste Treatment (4)** Bogan, Sylvester
Origin and properties of waste gases, aerosols, and liquids from industries, including chemical, petroleum, pulp and paper, food processing, metallurgical, pharmaceutical, and nuclear energy. Laboratory analysis and treatment of wastes. (Not open to students with credit in 457.) Prerequisites, 450, 452, 454; Physics 320; Microbiology 300 or 301; or permission.

ENGINEERING MATERIALS

- 362 **Materials of Construction (3)** Clanton, Mittet
- 363 **Materials of Construction (3)** W. Miller, Vasarhelyi
- 466 **Soil Mechanics (3)** Hennes, Meese
- 467 **Earthwork Engineering (3)** Hennes, Meese
- 468 **Engineering Properties of Soils (3)** Hennes, Meese

- 567 Advanced Soil Mechanics and Foundations (4)** Hennes, Meese
Design of earth dams and analysis of slope stability. Dam foundations. Stress distribution in a semi-infinite elastic solid, and its application to foundation analysis. Hydraulics of groundwater flow, including piping, uplift, and quicksand phenomena. Flow net construction. Moisture-density control in earth embankment. Weekly seminar on current publications in the field of soil mechanics with special emphasis on landslides, seepage, and earth fill. (Not open to students with credit in 467.) Prerequisites, 466 and graduate standing.
- 569 Applied Soil Mechanics (3)** Hennes, Meese
Soil mechanics in engineering practice; the application of theory to the analysis of footings, piling, retaining walls, tunnels, and other substructures. Prerequisites, 466 and graduate standing.

STRUCTURAL ANALYSIS AND DESIGN AND ENGINEERING MECHANICS

- 371, 372, 373 Structural Theory (3,3,3)** Chenoweth, Clanton, Hartz, Mittet, Rhodes
- 475, 476, 477 Structural Design (3,3,3)** Clanton, A. L. Miller, Rhodes, Sergev
- 482 Advanced Reinforced and Prestressed Concrete (3)** Mittet
- 485 Applied Structural Analysis (3)** A. L. Miller
- 494 Introduction to the Mechanics of Continuous Media (3)** Hartz
- 570 Strain Measurements (3)** Hartz, Vasarhelyi
Experimental determination of strain under static and dynamic loads; mechanical, optical and electrical strain gages; transducers for displacement, velocity and acceleration; photoelasticity, strain rosette, brittle coating and other methods; problems of instrumentation, and analysis of data. Prerequisite, graduate standing in engineering.
- 571 Advanced Strength of Materials (3)** Hartz, Sergev
Stresses and deflection of curved bars, beams on elastic foundation, beams with axial forces, shear center, stresses and deflection of thin plates, stresses in thick cylinders; stresses in pressure vessels. Particular emphasis is on the technique of breaking down the problems to fundamentals and solving the resultant mathematical equations. Prerequisites, Mathematics 221 and graduate standing in engineering.
- 572 Theory of Elasticity (3)** Sergev
A more rigorous approach to stress and strain problems, including differential equations of equilibrium, compatibility conditions, stress function; stresses in and deflection of beams, stresses in semi-infinite plates, disks, curved bars, and stress concentration. Introduction to torsion of prismatic bars and energy methods. The subject matter deals primarily with two-dimensional problems. Prerequisite, 571, or permission.
- 573 Elastic Stability (3)** Sergev
The study of buckling phenomena in columns, beams, plates, and tubes, with practical application. Prerequisite, 571, or permission.
- 574 Dynamics of Structures (3)** Hartz
Stresses and deflections in structures due to dynamic loads. Methods for the analysis of lumped and distributed mass systems. Response of structures to earthquake, moving, and blast loads. Prerequisite, 585, or permission.
- 576 Theory of Plates and Shells (3)** Sergev
Stresses and deflections of flat plates and shells. Effect of transverse loads on circular and rectangular plates. General theory of thin shells. Prerequisite, 573 or permission.
- 577 Energy Methods in Structural Mechanics (3)** Hartz
Basic energy and minimal principles of mechanics, calculus of variations and variational methods; applications to structures, elasticity, plates and shells, stability, and vibrations. Prerequisites, 571, 585, or permission.
- 578 Advanced Analytical Mechanics (3)** Paris
Generalized coordinates and La Grange's equations; fundamental theorems and applications; Hamilton's principle; canonical equations; transformation theory; integrals of dynamical equations. Prerequisite, Mathematics 221, or permission.
- 579 Advanced Theory of Elasticity (3)** Hartz
General formulation of the equations of two- and three-dimensional linear theory of elasticity using vectors and tensors; general methods of solution including stress and strain functions and complex variable; nonlinear elasticity. Prerequisites, Mathematics 221, Civil Engineering 572, or Mechanical Engineering 551, or Aeronautical Engineering 530, or permission.
- 581 Advanced Structures (3)** A. L. Miller, Vasarhelyi
Truss deflection and secondary stresses. Trussed arches. Multi-span trusses. Redundant members. Mueller-Breslau Maxwell-Mohr, and strain-energy methods.
- 582 Advanced Structures (3)** A. L. Miller, Vasarhelyi
Multi-story, multi-bay rigid frames including wind and earthquake loads. Theory of flexure of members of nonuniform section. Nonrectangular rigid frames. Moment-area and moment-distribution methods.
- 583 Advanced Structures (3)** A. L. Miller, Vasarhelyi
Ideal, two-hinged and hingeless elastic arches. Influence lines for statically indeterminate structures. Castigliano's theorem and strain-energy methods applied to curved members of nonuniform section.

- 584 Plastic Design of Structures (3)** **Vasarhelyi**
Plastic (inelastic) behavior of structural materials. Applications to the design of structural members and systems. Principles of upper and lower bound. Limitations and economy of the procedure. Prerequisite, 581.
- 585 Numerical and Model Methods of Structural Analysis (3)** **Hartz, Vasarhelyi**
Review of basic structural theory. Introduction to matrix, numerical, and approximate methods. Dimensional analysis and model similitude. Structural model analysis. Analogs and analog computers. Prerequisite, graduate standing in engineering.
- 586 Structural Materials and Design (3)** **Vasarhelyi**
A critical review and discussion of the mechanical properties of structural steel, structural aluminum alloy, and reinforced concrete which affect structural design. Fatigue and impact in metal structures. Failure of structures and structural members. Prerequisite, graduate standing in Civil Engineering.
- 587 Design of Welded Structures (3)** **Vasarhelyi**
A broad review of the factors such as the function of the structure, the mechanical properties of the base metal and welds, structural details, and type of loading which must be considered in the design of a welded structure. Prerequisite, 586.
- 590 Structures Under Wind (3)** **Farquharson**
Fundamental principles governing the static or dynamic response of suspended structures, transmission lines, tall stacks and other flexible structures subject to deflection, overturning, or oscillation, as result of wind action. Prerequisite, graduate standing in engineering.

ELECTRICAL ENGINEERING

Executive Officer: AUSTIN V. EASTMAN, 202 Electrical Engineering

The Department of Electrical Engineering offers courses leading to the degrees of Master of Science in Electrical Engineering, Master of Science in Engineering (see page 173), Master of Electrical Engineering, and Doctor of Philosophy.

No foreign language is required for the master's degrees, but mathematics through at least one quarter of differential equations is a prerequisite to all graduate work.

Students who received their undergraduate training at other institutions are expected to have substantially the same training as that given to students at this University. In case of deficiencies, students may be required to take certain undergraduate courses in addition to the normal graduate program.

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. The courses must include 510 and N520-N521-522. Other electrical engineering courses must be chosen from those numbered 500 or above, with the following exception: On the approval of the candidate's supervisory committee, not more than two of the following senior elective courses, 441, 469, 479, 485, may be applied to this degree. University of Washington graduates are expected to include 441 and one of the others in their undergraduate programs.

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.

DOCTOR OF PHILOSOPHY. This is primarily a research degree. It is not conferred as a result of course work, no matter how faithfully or long it is pursued. The granting of the degree under the sponsorship of the faculty in this department is based essentially on general proficiency and distinctive attainments in electrical engineering, particularly on the demonstrated ability to pursue independent research. Evidence of research investigation is the production of a doctoral thesis which makes a definite contribution to knowledge and is presented with a satisfactory degree of literary skill. In addition to the general requirements of the Graduate School (see page 74) the faculty in this department selects prospective

candidates for the doctor's degree from outstanding students at the master's level by means of a series of written examinations given each year in the Winter Quarter.

COURSES

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| 311 Electric Transients (4) | Staff |
| To be taken concurrently with 312. | |
| 312 Electric Transients Laboratory (1) | Staff |
| To be taken concurrently with 311. | |
| 331 Fields and Materials (4) | Staff |
| To be taken concurrently with 332. | |
| 332 Fields and Materials Laboratory (1) | Staff |
| To be taken concurrently with 331. | |
| 333 Basic Electronics I (4) | Staff |
| To be taken concurrently with 334. | |
| 334 Basic Electronics Laboratory (1) | Staff |
| To be taken concurrently with 333. | |
| 335 Basic Electronics II (4) | Staff |
| To be taken concurrently with 336. | |
| 336 Electronics Laboratory (1) | Staff |
| To be taken concurrently with 335. | |
| 400 Vacuum Tubes and Electronics (5) | Staff |
| 441 Linear System Analysis (3) | Lewis |
| 451 Dynamics of Electro-Mechanical Systems (3) | Staff |
| 469 Advanced Field Theory (4) | Staff |
| 471 Amplifier Theory (5) | Hill |
| 477 Principles of Computer Applications (4) | Johnson |
| 479 Fundamentals of Automatic Control (4) | Bergseth, Clark, Hsu, Noges |
| 483 Introductory Communication Theory (3) | Lytle, Swarn |
| 485 Introduction to Solid State Electronics (4) | Bjorkstam, Watt |
| 493 Guidance and Control (4) | Clark |
| 505 Analysis of Random Processes (3) | Lytle |
| Probability theory; discrete and continuous random variables; stochastic processes. Spectral analysis of random signals and noise. Introduction to Markov processes. | |
| 510 Introductory Network Theory (5) | Hsu, Lewis, Lytle |
| Mathematical concepts applicable to network theory, including mesh and nodal formulations in matrix form. Linear transformations and relation of quadratic forms to energy functions. Elements of complex variable including conformal transformations and complex potential applied to fields and networks. Complex contour integration and evaluation of residues; application to Laplace transforms and determination of transient response. Prerequisite, 441. | |
| 511, 512 Network Synthesis (3,3) | Lewis |
| Network representations in the complex frequency domain, realizability criteria, synthesis of driving point and transfer impedance and coupling networks for prescribed transfer characteristics, canonical forms and network equivalents, frequency and time domain aspects of approximating response functions. Prerequisite, 510. | |
| 514 Power System Analysis (5) | Bergseth |
| Methods of analysis of power systems, with emphasis on the interrelations between generation, transmission, and distribution; symmetrical components; evaluation of system parameters and sequence networks; fault studies; transient and steady-state behavior of systems; elements of system protection. Prerequisite, 340 or 351. | |
| 515 Measurements and Circuit Components (2) | Cochran |
| Measurements of circuit components from zero to one thousand megacycles, impedance and phase measurements at audio through UHF; use of electronic counters and precision frequency measuring equipment; noise figure measurements. Prerequisite, 411. | |
| N520-N521-522 Seminar (0-0-2) | Staff |
| Required for all graduate students. | |
| 531 Solid State Electronics I (4) | Bjorkstam, Watt |
| Matrix formulation of quantum theory, perturbation theory; lattice vibrations; introduction to the band theory of solids; some properties of normal and super conducting metals; dielectric and magnetic properties of materials including some discussion of ferroelectricity and ferromagnetism; luminescence; fundamentals of magnetic resonance. | |
| 532 Solid State Electronics II (4) | Bjorkstam, Hanson |
| Solid state electronic devices including ferrites, parametric amplifiers, masers, semiconductor and superconductor devices. | |

- 551 Power System Protection (3)** **Bergsoth**
Protection of power systems and equipment against both overvoltages and overcurrents; includes power circuit breakers, fuses, relays, lightning arrestors, expulsion tubes, and the influence of neutral grounding methods in overvoltages. (Offered alternate years; offered 1962-63.) Prerequisite, 514 or permission.
- 562 Physical Electronics (3)** **Shimada**
Basic analysis of vacuum tubes and gas discharges. Thermionic emission, work function, Schottky effect. Field emission and devices using field emission and cold emission. Space-charge-limited current flow. Application of conformal mapping in electrostatic field in tubes. Noise. Kinetic theory of gases; creation of charged particles. Modes of gas discharges; various regions in gas discharges. Microwave properties of plasma. Ion sheath; probe technique. Discussions on plasma energy convectors. Prerequisite, 441.
- 563 Electrical Noise I (3)** **Shimada**
The noise theory and its application to electron devices. Fourier analysis of stationary random process; correlation; noise power spectrum. Statistics; distribution functions; Gaussian distribution. Characterization of noisiness; noise ratio, noise figure, noise measure, noise temperature. Noise measurements; noise in quadratic detector. Prerequisite, 505 or permission.
- 564 Electrical Noise II (3)** **Shimada**
Noise in vacuum tubes, semiconductors; noise suppression, excess noise. Noise in transistors, mixers, detectors, parametric amplifiers, electron beam devices, masers, and other low noise devices. Prerequisite, 563.
- 566 Microwave Measurements (2)** **Harrison**
Measurements of wave length, admittance, power, dielectric constant, and losses in the microwave frequency region utilizing wave guide techniques. Problems in impedance matching and impedance transformation based on laboratory work. Includes one three-hour laboratory per week. Prerequisites, 335 and 411.
- 567 Microwave Vacuum Tubes (4)** **Harrison**
Theory of microwave vacuum tubes, including triodes, klystrons, traveling wave tubes, and magnetrons, and their modulation characteristics. Oscillator theory is considered in detail, with klystron oscillators used to illustrate general principles. Prerequisite, 566 or permission.
- 568 Microwave Electronics (3)** **Golde**
A selection of topics applicable to the study of microwave tubes. Formation and focusing of electron beams. Application of various theories to the interaction of electron beams with electro-magnetic fields. Prerequisite, 469.
- 570 Antenna Theory (3)** **Reynolds, Swamp**
Theory of radiation; impedance characteristics and radiation patterns of thin linear antenna elements; properties and synthesis of antenna arrays; field intensity calculations. Prerequisite, 469.
- 572 Microwave Network Theory (4)** **Ishimaru**
Theory of uniform waveguides, application of general network theory to waveguides and cavities; matrix representation; equivalent circuit for waveguide discontinuities. Quasi-static solution and variational principles. Radial and spherical waveguides; slow-wave structures; anisotropic media. Prerequisites, 411, 441, and 469.
- 574 Microwave Antennas (4)** **Carswell**
Fundamental principles underlying the design of microwave antennas. Slot antenna on cylinder. Green's function and eigenfunctions. Watson transform. Theory of slot on waveguides. Physical optics, variational expression for radar cross section. Corequisites, 572 and Mathematics 429, or permission.
- 575 Microwave Propagation (3)** **Ishimaru**
Microwave propagation through anisotropic media. Slow waves and leaky waves. Surface waves. Mode theory and dipole over earth. Rayleigh and Kirchhoff approximation. Wiener-Hopf techniques. Prerequisite, 572.
- 576 Communication Theory I (3)** **Lytle**
Mathematical theory of communication. Information theory for discrete and continuous systems. Channel capacity and coding. Prerequisite, 505 or permission.
- 577 Communication Theory II (3)** **Lytle**
Communication in the presence of noise. Analysis of systems with random inputs. Optimum linear systems, statistical detection of signals, decision theory. Statistical analysis of nonlinear systems. Prerequisite, 505 or permission.
- 578 Radio Propagation I (3)** **Swarm**
Theory of electromagnetic propagation over a finite conductive earth and in a horizontally stratified media; theory of scattering with applications to the troposphere. Prerequisite, 469.
- 579 Radio Propagation II (3)** **Swarm**
Theory of electromagnetic propagation in ionized medium with application to the ionosphere. Theory of ionospheric scattering, meteor reflection, and auroral propagation. Prerequisite, 469.
- 580 Electroacoustics (4)** **Rogers, Hill**
Vibration of strings, bars, and membranes; acoustical wave equation and solutions; electric, acoustic, and mechanical analogies; acoustical networks and measurements; architectural acoustics; properties of hearing; loudspeakers, microphones, and sound reproduction. Includes one four-hour laboratory on alternate weeks. (Offered alternate years; offered 1962-63.) Prerequisite, 411.

- 581 Control System Measurements (2)** **Noges**
Theory and practice in measurement of control system parameters. Determination of transfer functions for various system components by transient and frequency response measurements. Prediction of feedback system performance from experimentally derived data, with experimental verification. Use of the analog computer in simulation. Prerequisite, 479.
- 582 Analytical Design of Linear Control Systems (4)** **Clark**
Synthesis of linear automatic control systems to satisfy analytical performance criteria. Performance measures for control systems and minimization techniques. Elements of probability theory and statistical analysis of random, continuously varying time functions. Minimization of mean square error in the presence of noise. The adaptive control system problem. Prerequisites, 479, 505, and 510.
- 583 Nonlinear Control Systems (3)** **Clark, Noges**
Dynamic analysis of nonlinear control systems. Graphical and numerical methods for solution of nonlinear differential equations. Limit cycles and other phenomena peculiar to nonlinear systems. Use of phase-space, describing function, and simulation techniques in the analysis of nonlinear servomechanisms. Self-adaptive control systems. Prerequisites, 479 and 510.
- 584 Sampled-Data Control Systems I (4)** **Hsu**
Sampling process and data reconstruction; Z-transform analysis of linear sampled-data systems; modified Z-transform analysis behavior of systems between sampling instants; multirate sampled-data systems; sampled-data systems with finite sampling duration; general design principles of sampled-data systems. Prerequisites, 479, 510, Mathematics 427.
- 585 Sampled-Data Control System II (4)** **Hsu**
Digital compensation of control systems; sampled-data control systems with random input; nonlinear sampled-data control systems; other current topics on sampled-data control systems. Prerequisite, 584.
- 586 Electrical Computing Methods (4)** **Johnson**
Study of field models, analog and digital computers, and various special-purpose computers for solving electrical problems. Includes one three-hour laboratory per week. Prerequisite, graduate standing.
- 587 Applications of Digital Computers to Engineering Problems (4)** **Johnson**
Evaluation and application of numerical methods in solution of typical engineering problems by means of digital computers. Choice of method, problem organization, error, convergence, limitations and considerations for specific computers. Curve fitting and random selection. Prerequisites, 505 and 586.
- 588 Logical Design of Digital Computers (3)** **Johnson**
Circuit components and binary numbers, Boolean algebra and the simplification of Boolean functions. Memory element input and application equations. Digital computer memories, computer arithmetic units, control units. Computer design organization. Prerequisite, graduate standing.
- 599 Selected Topics in Electrical Engineering (*)** **Staff**
Prerequisite, permission of Executive Officer.
- 600 Research (*)** **Staff**
Prerequisite, permission of Executive Officer.
- 700 Thesis (*)** **Staff**

MECHANICAL ENGINEERING

Executive Officer: BRYAN T. McMINN, 142 Mechanical Engineering

The Department of Mechanical Engineering offers courses leading to the degrees of Master of Science in Engineering (see page 173), Master of Science in Mechanical Engineering, and Doctor of Philosophy.

MASTER OF SCIENCE IN MECHANICAL ENGINEERING. 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, heat transfer, gas dynamics, air conditioning and refrigeration, nuclear power, advanced engineering materials, stress analysis, and design will find well-integrated programs available. Subject to the approval of the candidate's committee, work beyond bachelor requirements in physics, mathematics, aeronautical engineering, civil engineering, 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.

DOCTOR OF PHILOSOPHY. Candidates for this degree must complete an approved program of studies and a research program which makes a definite contribution to knowledge.

COURSES

- 320 Thermodynamics (5) Childs, McMinn, Nordquist
 325 Thermodynamics (4) Childs, Depew, McFeron
 327 Thermodynamics (3) Costello, McMinn, Waibler
 330 Experimental Thermodynamics (3) Costello, Crain, Firey
 340 Engineering Materials (3) Day, Ford, Mills, Taggart
 341 Aircraft Materials (2) Schaller
 342 Industrial Materials and Processes (3) Ford, Mills
 Not open to engineering students.
 361, 362 Machine Design (3,3) Browne, Crain, Fritz, Kielling, Morrison
 367 Dynamics of Machines (3) Balise, Morrison, Nordquist, Sherrer
 368 Kinematics (3) Day, Kielling, Morrison
 410 Engineering Administration (3) Owens, Schaller, Setchfield
 411 Engineering Economy (3) Schaller, Setchfield
 414 Industrial Safety (2) Anderson
 415 Statistical Quality Control (3) Drui, Fritz, Owens
 417 Methods Analysis (3) Drui, Owens
 418 Work Simplification (2) Owens
 424 Power Plants (5) Nordquist, Waibler
 425 Air Conditioning (3) Crain, Depew
 426 Thermodynamics for Nonmajors (4) Childs, McFeron, Waibler
 428 Refrigeration (3) Depew, McMinn
 430 Introduction to Heat Transfer (3) Childs, Costello, McFeron, Waibler
 432 Gas Dynamics I (3) Childs, Costello
 434 Advanced Mechanical Engineering Laboratory (3) Firey, Nordquist
 436 Friction and Lubrication (3) Firey, Mills, Morrison
 441 Automatic Control (3) Balise, Galle
 443 Instrumentation (3) Balise, Galle
 464 Theory of Welding (3) Holt
 465 Welding Design (3) Holt
 468 Machine Design (3) Day, Kielling, Morrison
 469 Dynamics of Machines (3) Balise, Kobayashi, Morrison, Nordquist
 481 Internal Combustion Engines (3) Firey, Guidon
 482 Internal Combustion Engine Laboratory (3) Firey, Guidon
 483 Internal Combustion Engine Design (3) Firey, Guidon
 485 Rocket Propulsion (3) Guidon
 490, 491, 492 Naval Architecture (3,3,3) Rowlands
 516 Statistical Analysis of Engineering Measurements (3) Drui, Owens
 Application of statistical techniques to engineering problems; design of engineering test procedures so as to evaluate experimental error; investigation of inherent variability of processes and systems. Prerequisite, 415 or permission.
 N518-N519-520 Seminar (0-0-1, maximum 6) Staff
 521 Thermodynamics III (3) Childs, Costello, Nordquist
 A critical study of the fundamental concepts of thermodynamics; nonflow and steady-flow processes; enthalpy; point properties; reversibility; vapors vs. perfect gases. Prerequisites, 327 and graduate standing, or permission.
 522 Thermodynamics IV (3) McFeron, Waibler
 Selected topics from the thermodynamics and dynamics of fluid flow. The thermodynamics of reactive systems. Introductory kinetic theory of gases. Prerequisite, 521.
 524 Combustion (3) Firey
 Chemical and physical processes of combustion, preparation of fuels, applications, design of combustion equipment. Prerequisite, 521.
 526 Air Conditioning (3) Childs
 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 Advanced Refrigeration (3)** **Depew**
Review of basic cycles and equipment, cold storage practice, refrigeration in food manufacture and distribution, industrial applications, frozen foods and other low temperature applications, capital and operating cost studies, and design problems. Prerequisites, 428 and graduate standing or permission.
- 530 Radiative Heat Transfer (3)** **Depew**
Fundamentals of thermal radiation for black, gray, nongray, diffuse, and specular surfaces. Gaseous radiation and special applications of thermal radiation. Prerequisite, graduate standing in engineering or permission.
- 531 Heat Transfer (3)** **Childs, Costello, Waibler**
Fundamentals of the conduction process. The analysis of steady-state and transient heat conduction in single and multidimensional systems by mathematical, graphical, numerical, and analogical methods. Solutions for transient systems with unsteady boundary conditions, and with moving or fixed heat sources. Prerequisites, 430 and differential equations.
- 532 Convective Heat Transfer (3)** **Waibler**
An introduction to fluid flow and boundary layer theory as applicable to forced and natural convection heat transfer. Dimensional analysis. Condensation and boiling heat transfer. Design of heat exchangers. Prerequisite, 430, differential equations, or permission.
- 533 Gas Dynamics II (3)** **Childs, Costello**
A continuation of 432. A study of the dynamic and thermodynamic relationships for the flow of fluids. Application of basic laws to flow processes in pipes, nozzles, diffusers, compressors, and turbines; wave phenomena; introduction to multidimensional flow; experimental techniques and measurements. Prerequisites, 432 and graduate standing, or permission.
- 534 Experimental Heat Transfer (3)** **McFeron, Waibler**
Study of instrumentation and techniques used in heat transfer measurements; investigation of conduction, radiation, and convection phenomena. Liquid metal and water heat-transfer loops will be used for experiments to determine heat flux, film coefficients, boiling pressure drops, and other phenomena of current interest. Prerequisite, 531 or 532, or permission.
- 536 Gas Dynamics III (3)** **Childs**
A continuation of 533. A study of the dynamic and thermodynamic relationships for the flow of fluids; application of the basic laws in multidimensional flow; unsteady one-dimensional flow. Prerequisite, 533.
- 537 Gas Dynamics IV (3)** **Childs**
A study of the dynamic and thermodynamic relationships for the flow of real fluids considering effects of viscosity and heat conductivity; applications of basic laws to problems in flow through nozzles, diffusers and ducts; free turbulence; jets and wakes. Prerequisite, 536.
- 541 Advanced Engineering Materials (3)** **Mills, Taggart**
Behavior of engineering materials as affected by various conditions of loading and environment. Lecture, laboratory, and studies of technical literature. Prerequisite, 340 or permission.
- 542 Topics in Engineering Materials (3)** **Mills, Taggart**
Selected topics of current importance concerning the nature and behavior of engineering materials. Lecture, laboratory, and studies of technical literature. Prerequisite, 541 or permission.
- 545 Automation (3)** **Baliso**
Concepts in addition to feedback that are important in automatic production, including automatic data processing, computers, numerical control of machine tools, and integrated manufacturing systems. Prerequisite, 564 or permission.
- 549 Fluid Power Control (3)** **Baliso**
An analytical treatment of hydraulic and pneumatic power applied in control systems. Valve actuators, hydraulic transmissions, block diagram representation, steady-state and dynamic analysis, applications, recent developments.
- 551 Applied Elasticity (3)** **Day, Kobayashi, Sherrer**
General equilibrium relations and the stress-strain relations, homogeneous, isotropic, elastic materials. Elastic stress distributions in machine components; plane-stress and plane-strain problems; torsion of various-shaped bars, bending of prismatic bars; thermal-stress problems. Prerequisite, graduate standing in mechanical engineering, or permission.
- 552 Applied Plasticity (3)** **Kobayashi, Sherrer**
Yield conditions and stress-strain relations in the transition range. Elastic-plastic stress distributions in machine components; thick-walled spherical shells and thick-walled tubes under internal pressures; rotating cylinders and disks; torsion and bending of bars; thermal stresses in shells, rotating disks and plates. Prerequisite, 551 or permission.
- 553 Applied Viscoelasticity (3)** **Kobayashi, Sherrer**
Time-dependent aspects of stress, strain, and stability in mechanical-engineering design. Stress analysis in the presence of creep and stress relaxation. Uniaxial loading, pressure vessels, rotating disks, plates, columns. Cyclic variation of load and temperature. Prerequisite, 551 or permission.
- 554 Advanced Theory of Plasticity (3)** **Kobayashi**
Basic equations for three-dimensional problems of perfectly plastic solid, general consideration of discontinuous solutions, problems in plane strain and plane stress, problems in elastic-plastic solids and rigid-plastic solids. Prerequisites, 552, Civil Engineering 579, or permission.

- 556 Experimental Stress Analysis (3)** **Day**
Studies of stress and strain relationships under static and dynamic loading. Analytical methods for determination of stress and strains in irregular members. Theory and practice of the photoelastic method. Brittle lacquer method for study of strain. Application of resistance wire strain gauges to measurement of dynamic and static strain. Interferometry as a tool in stress analysis. Principles and application of mechanical strain gauges. Lecture and laboratory. Prerequisite, graduate standing in engineering or permission.
- 557 Experimental Stress Analysis (3)** **Day**
Study of the membrane, electrical and other analogies for the solution of two-dimensional stress problems. Application of the computer to the iterative method of solution for stress analysis. Birefringent coating and three-dimensional photoelastic applications to engineering problems. X ray, brittle coatings, and strain-rosette methods of strain analysis. Residual stress study, dynamic photoelasticity and evaluation of strain measuring instruments. Lecture and laboratory. Prerequisite, 556.
- 558 Experimental Stress Analysis (3)** **Day**
Seminar and individual research on special problems in experimental stress analysis. Prerequisite, 557 or permission.
- 564 Mechanical Engineering Analysis (3)** **Balise**
Development of solutions to mathematically analogous problems from various fields in mechanical engineering with emphasis on analytical thinking. Use of analogs in the study of mechanical behavior. Distributed parameters in heat flow and dynamics problems. Application of complex variables to mechanical system analysis. Prerequisites, 463 or equivalent, and graduate standing in mechanical engineering, or permission.
- 567 Advanced Dynamics of Machines (3)** **Kobayashi, Sherrer**
Dynamics of particles and of rigid bodies, with emphasis upon applications involving machine parts and other engineering components. Generalized coordinates, La Grange's equations, Hamilton's principle. Prerequisite, 469 or equivalent, or permission.
- 568 Vibrations of Machinery (3)** **Kobayashi, Mills, Sherrer**
Study of mechanical vibration phenomena, linear damped and undamped multi-degree-of-freedom and continuous systems, free and forced vibration, analytical and numerical methods. Prerequisite, Mathematics 321 or permission.
- 571 Servomechanisms I (3)** **Balise**
Applications of feedback to meet accuracy and stability requirements of closed-loop systems; transient and transfer-function methods of analysis; comparative study of mechanical, hydraulic, pneumatic, and electrical components; testing and design. Prerequisite, 564 or permission.
- 572 Servomechanisms II (3)** **Balise**
Continuation of 571 to include topics of current importance. Further study of nonlinear control, statistical analysis of feedback systems, sampled-data methods, self-adaptive systems. Prerequisite, 571.
- 584 Gas Turbines (3)** **Guidon**
Applications of gas turbines; gas turbine cycles (theoretical Brayton, simple open, regenerative, reheat, intercooling, and closed cycles); axial-flow compressors; centrifugal compressors; turbines; combustion systems; gas turbine power plant materials; plant performance. Prerequisites, 481 and graduate standing in engineering, or permission.
- 589 Nonlinear Mechanical Vibrations (3)** **Sherrer**
Study of systems with nonlinear damping and restoring forces, applications of the phase-plane delta and the Ritz averaging method, and stability of nonlinear oscillations. Prerequisite, 568 or permission.
- 590 Random Mechanical Vibrations (3)** **Sherrer**
The study of the problems in measuring random vibrations, in designing simulation equipment, and in mechanical design for random vibration in aircraft and missiles. Prerequisite, 568 or permission.
- 599 Special Projects (1-5, maximum 9)** **Staff**
- 600 Research (*)** **Staff**
Prerequisite, permission of Executive Officer.
- 700 Thesis (*)** **Staff**

MINERAL ENGINEERING

Director: DRURY A. PIFER, 328 Roberts Hall

The School of Mineral Engineering, through the Divisions of Ceramic, Metallurgical, and Mining Engineering, offers courses leading to the degrees of Master of Science in Engineering (see page 173), Master of Science in Mining, Coal Mining, Metallurgical, or Ceramic Engineering; and Master of Science in Ceramics or Metallurgy. No foreign language is required for these degrees. The School also offers preparation for the degree of Doctor of Philosophy in metallurgy.

Materials Engineering

Courses in materials engineering relate to those aspects of applied science which are common to many kinds of materials. They are offered jointly by the faculties in ceramics, metallurgy, and mining, and are basic to more advanced study.

COURSES

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 351 Mineral Processing I (4) | Brien |
| 352 Mineral Processing II (2) | Brien |
| 412 Introduction to X-ray Diffraction (3) | Mueller |
| 481 Mineral Industry Economics (3) | Pifer |
| 512 X-ray Diffraction Analysis (3) | Mueller |
| Theory and laboratory practice in use of X-ray diffraction for quantitative analysis and introduction to structure determination. Prerequisite, 412 or equivalent. | |
| 513 X-ray Diffraction Analysis (3) | Flanagan |
| Advanced theory of X rays as applied to problems of the solid state; concept of reciprocal space and application of Fourier analysis to study of crystal perfection; analysis of randomness, size effect and cold work distortion in crystals by X-ray diffraction interpretation of diffuse scattering. | |
| N520 Engineering Materials Science Colloquium (0) | Staff |

Ceramic Engineering

MASTER OF SCIENCE IN CERAMIC ENGINEERING. A total of 36 credits of course work and a suitable thesis is required for this degree. A comprehensive oral examination completes the requirements. Candidates may select courses and research in accordance with their special interests and objectives. Graduate work is largely concerned with advanced materials science as applied to ceramics; however, courses may be selected which also prepare for plant operation and management. Graduates of accredited ceramic engineering curricula and graduates of other accredited engineering curricula who complete the basic undergraduate courses in ceramic engineering and in science 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

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| 312 Physical Ceramics: Structure and Rheology (5) | Mueller |
| 313 Physical Ceramics: Colloids and Rheology (3) | Mueller |
| 314 Physical Ceramics: Ceramic Equilibria I (3) | McNeilly |
| 315 Vitreous State (4) | McNeilly |
| 401 Process Ceramics: Drying and Firing (4) | Campbell |
| 402-403 Equipment and Plant Design (2-2) | Campbell |
| 410 Physical Ceramics: Ceramic Equilibria II (3) | McNeilly |
| 421 Ceramic Bodies Laboratory (3) | Campbell, McNeilly |
| 422 Ceramic Petrography (3) | Brien |
| 440 Glass Technology (3) | Staff |
| 450 Pyroprocessing of Nonmetallics (3) | Bauer |
| 470 Refractories (3) | Mueller |
| 500 Ceramic Vitrology (3) | McNeilly |
| Composition and formation of glasses in ceramic bodies: their effect on such properties as mechanical and dielectric strength, porosity, hardness, chemical durability, refractoriness, and resistance to erosion. | |
| 501 Process Ceramics: Production Control (3) | Campbell |
| Application of industrial management and production control methods in the ceramic industry; production characteristics and their effects on the product; explanation and analysis of standards for products and their effects on manufacturing methods in the ceramic industry. | |

- 502 Process Ceramics: Unit Process Control (3)** **Campbell**
Principles of process control as applied to the ceramic 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.
- 503 Process Ceramics: High Temperature Topics (3)** **Campbell**
Application of the fundamentals of heat transfer, reaction rates, and heat sources to the design and use of high temperature kilns, furnaces, and allied equipment.
- 511 Theoretical Physical Ceramics (3)** **Mueller**
Theory and application of colloidal phenomena to the use of ceramic raw materials; colloidal state; colloidal crystal structure; surface phenomena; electrokinetics; base exchange. Prerequisite, 512.
- 512 Theoretical Physical Ceramics (3)** **Mueller**
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, maximum 6)** **Mueller, Staff**
Application of physical ceramic principles to the control of ceramic production; instrumentation studies. Prerequisite, 512.
- 520 Seminar (1, maximum 6)** **Staff**
Required for all graduate students.
- 590 Industrial Minerals Research (*)** **Staff**
- 599 Special Topics in Ceramics (*)** **Staff**
- 600 Research (*)** **Staff**
Prerequisite, permission of Executive Officer.
- 700 Thesis (*)** **Staff**

Metallurgical Engineering

MASTER OF SCIENCE IN METALLURGICAL ENGINEERING. A total of 36 credits in course work and a suitable thesis are required for this degree; and a comprehensive oral examination completes the requirements. Candidates may select courses in accordance with their special interests and objectives. Graduate work is largely concerned with advanced materials science as applied to physical metallurgy, extractive metallurgy, or mineral dressing. However, courses may also be selected which prepare for 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.

DOCTOR OF PHILOSOPHY PROGRAM (METALLURGY). Students who have completed one year of graduate work may request an examination to determine whether or not the faculty will advise proceeding to the Ph.D. General Examination. A critical examination of the applicant's record, recommendations, and proposed course of study will be pertinent to this decision. The language requirement will be satisfied by passing the scheduled examinations in any two of either German, French, or Russian. In addition to course work, a candidate will be expected to study independently for examination on a list of subjects prepared by his Supervisory Committee. General Examinations will be taken at the end of the second year or during the third year of residence. The General Examinations will be sufficiently comprehensive to demonstrate the candidate's ability to deal with broad aspects of materials science, as well as his specialized subject area. Each candidate will present a written dissertation based on his research program which makes an original and independent contribution to knowledge. Proficiency in basic research will be of paramount importance and the research will be conducted in the University laboratories. The Final Examination will consist of the candidate's oral defense of his thesis.

COURSES

321 Metallurgical Stoichiometry II (3)	Morgan
322 Metallurgical Thermodynamics I (3)	Morgan
324 Chemical Metallurgy Laboratory (1)	Morgan
361, 362, 363 Physical Metallurgy (4,4,4)	Roberts
420 Metallurgical Plant Design (2)	Morgan
421 Metallurgical Thermodynamics II (4)	Lloyd
422 Chemical Metallurgy: Process Calculations (2)	Staff
424 Metallurgical Experimental Techniques (2)	Morgan
441 Engineering Physical Metallurgy (3)	Polonis
442 Engineering Physical Metallurgy Laboratory (1) May be taken concurrently with 441.	Polonis, Staff
450 Light Metals (3)	Roberts
460 Deformation of Metals (3)	Polonis
461 Advanced Physical Metallurgy (3)	Roberts
464 Applied Physical Metallurgy (3)	Flanagan
466 Theory of Metals (3)	Flanagan
520 Seminar (1, maximum 6) Review of research problems and recent literature. Required for all graduate students.	Staff
525 Thermodynamic Topics in Metallurgy (3) Selected topics in the application of classical and statistical thermodynamics to systems of current metallurgical interest. Prerequisite, 322.	Morgan
531 Advanced Metallurgy (*) Study of selected problems, with particular attention to recent publications and scientific applications in physical or extractive metallurgy.	Staff
541 Theoretical Structural Metallurgy (3) Advanced study of structural imperfections in metals; vacant lattice sites; influence of foreign atoms; fundamentals and applications of dislocation theory. Prerequisite, 363.	Polonis
542 Theoretical Structural Metallurgy (3) Metal crystal growth; detailed consideration of solidification including experimental techniques; single crystals, substructure, segregation phenomena and zone melting; interfaces and internal boundaries. Prerequisite, 541.	Polonis
543 Theoretical Structural Metallurgy (3) The fundamental view of mechanical properties and deformation of metals; elasticity, anelasticity, and internal friction; plasticity, geometry of slip, work hardening. Prerequisite, 541.	Polonis
551 Special Topics in Advanced Physical Metallurgy (3, maximum 6) Selected topics concerned with current developments in physical metallurgy.	Flanagan
561 Phase Transformations in Solid Metals (3) Phase transformations in solid metals and alloys. An advanced treatment of phase transformations from the standpoint of crystallography, reaction kinetics, and thermodynamics. Prerequisite, 363.	Roberts
562 Phase Transformations in Solid Metals (3) Kinetics of tempering carbon and low-alloy steels, theories of nucleation and grain-growth phenomena, recrystallization, precipitation hardening. Prerequisite, 561.	Roberts
563 Phase Transformations in Solid Metals (3) Diffusion theory, martensitic transformations, and other solid state transformations. Prerequisite, 562.	Roberts
566 Advanced Theory of Metals (3) Modern theories of the metallic state and their relationship to the physical properties of metals. Prerequisite, 466.	Flanagan
599 Special Topics in Metallurgy (*)	Staff
600 Research (*) Prerequisite, permission of Executive Officer.	Staff
700 Thesis (*)	Staff

Mining Engineering

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, engineering, or 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 may 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 in order to become candidates.

COURSES

306 Mine Excursion (1, maximum 2)	Staff
322 Methods of Mining (4)	Anderson
325 Mineral Land Valuation (2)	Anderson
330 Mine Surveying (3)	Anderson
331 Mine Mapping (1)	Anderson
425 Rock Mechanics (2)	Pifer
426 Exploration and Development of Mineral Deposits (3)	Pifer
427 Exploration Geophysics: Introduction (2)	Anderson
432 Mine Engineering (5)	Anderson
433 Mine Ventilation (3)	Anderson
463 Mineral Processing: Flotation (3)	Brien
464 Mineral Processing: Hydrometallurgy (4)	Brien
465 Mineral Processing: Microscopy (2)	Brien
466 Mineral Processing: Practices (2)	Brien
467 Mineral Process Plant Design (2)	Brien
476 Coal Preparation (2)	Brien
483 Mining Laws (1)	Pifer
485 Industrial Minerals (3)	Brien
520 Seminar (1, maximum 6)	Staff
Lectures and discussions; review of research problems and recent literature.	
521 Metal Mining (*)	Anderson, Pifer
Production methods; mining control; support; 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)	Pifer
Location and design, surface plant, and collar preparation; sinking, support, stations and bottoms, equipment and maintenance; safety and costs; rectangular, square, and circular shafts.	
523 Coal Mining (*)	Pifer
Studies in coal mining and coal preparation with particular reference to the Pacific Northwest. Prerequisite, graduate standing.	
525 Rock Mechanics (3)	Pifer
Physical properties and mechanics of response by rocks under stress; theories of stress distribution around underground structures; dynamic stress in rock fragmentation; application to mine design and operations sequence; strata control. Prerequisite, 425.	
560 Mineral Processing (*)	Brien
Special problems and research.	
561 Advanced Mineral Processing Preparation (*)	Brien
Unit process studies in comminution, sizing, classifying, and auxiliary processes.	
562 Advanced Mineral Processing Laboratory (*)	Brien
Experimental study of theoretical principles of preparation and concentration. Arranged concurrently with 561 and 563 or as required.	
563 Advanced Mineral Processing Theory (*)	Brien
Physics and chemistry of beneficiation.	

564 Advanced Mineral Processing Design (*)	Brien
Plant layout studies, economics, and equipment design.	
571 Cooperative Research with United States Bureau of Mines (6)	Staff
600 Research (*)	Staff
Prerequisite, permission of Executive Officer.	
700 Thesis (*)	Staff

COLLEGE OF FISHERIES

Dean: **RICHARD VAN CLEVE, Fisheries Center**

The College of Fisheries offers courses leading to the degrees of Master of Science and Doctor of Philosophy. Applicants must have completed the equivalent of an undergraduate major in fisheries or an undergraduate major in a related field. A broad training in the basic sciences is desirable.

Candidates will be expected to attain a general knowledge of fisheries in addition to their specialization in specific areas of fisheries biology, or food science. Graduate students may be required to take supporting courses in other selected departments of the University. The graduate program is determined by a supervisory committee in consultation with the student. All graduate students must complete 6 credits (three quarters) in Fisheries 520.

MASTER OF SCIENCE. At least one year of approved study, with the completion of a research project, leads to the master's degree.

A total of not less than 36 credits in course work and thesis must be presented, as well as a certificate of proficiency in one foreign language.

DOCTOR OF PHILOSOPHY. Candidates must complete at least three years of graduate study including a dissertation. Credits earned for a master's degree may be applied toward the doctor's degree.

The candidate must present a certificate of proficiency in two foreign languages (one in addition to the Master of Science requirement).

COURSES IN FISHERIES

301 Anatomy of Fishes (5)	Welander
302 Microbiology of Fisheries (5)	Liston
303 Introduction to Invertebrate Fisheries (5)	Sparks
402 Economically Important Fishes (5)	Welander
405 Economically Important Mollusca (5)	Sparks
406 Economically Important Crustacea (5)	Sparks
425 Migrations and Races of Fishes (5)	De Lacy
426 Early Life History of Marine Fishes (5)	De Lacy
427 Ecology of Marine Fishes (5)	De Lacy
451 Propagation of Salmonoid Fishes (5)	Donaldson
452 Nutrition of Fishes (5)	Donaldson
453 Fresh-Water Fisheries Management: Biological (5)	Donaldson
454 Communicable Diseases of Fishes (5)	Sparks
460 Water Management and Fish Resources (5) (Offered Spring Quarter only.)	M. C. Bell
461 Water Management and Fish Resources (5) (Offered Autumn Quarter only.)	M. C. Bell
465 Problems in Fish Biology (6) (Offered at Friday Harbor Summer Quarter only.)	Staff
480 Introduction to Commercial Fishing Industry (5)	F. H. Bell
495 Introduction to Fisheries and Food Science Literature (2, maximum 6)	Staff
501 On-the-Job Training (1-3, maximum 3 for M.S., maximum 9 for Ph.D.)	Staff
Guided on-the-job training in governmental or industrial fisheries organizations. Prerequisite, permission.	

- 503 Systematic Ichthyology (5)** **Welander**
Principles and procedures of ichthyological taxonomy demonstrated by current problems and research. Prerequisites, 402 and permission.
- 504 Principles of Technological Research in Fisheries and Food (3)** **Liston**
A lecture and laboratory course designed to familiarize graduate students in fisheries with the methods used in technological research. Prerequisite, permission.
- 505 Research Techniques in Shellfish Biology (5)** **Sparks**
A field and laboratory course dealing with research methods in the reproduction, growth, and mortality of oysters and clams.
- 510 Fish Behavior (3)** **Fields**
Behavior related to sensory-motor equipment. Design of experiments emphasized for studies ranging from naturalistic observation to controlled laboratory and field experiments. Prerequisite, permission.
- 511 Fish Behavior Laboratory (2-3, maximum 6)** **Fields**
Prerequisite, 510 or concurrent registration in 510.
- 520 Graduate Seminar (2, maximum 6)** **Staff**
Training in methods of searching fisheries literature.
- 556 Age and Growth of Fishes (5)** **Van Cleve**
Principles of growth; methods of determining age and rates of growth in fresh-water and marine fishes. Prerequisites, 402, and Mathematics 383 or permission.
- 557 Population Enumeration (5)** **Van Cleve**
Methods of enumerating animal populations; availability; dominant age groups; gear selectivity. Prerequisite, 556 or permission.
- 558 Population Dynamics (5)** **Van Cleve**
Influence of natural and artificial factors on variation in abundance and yield from animal populations. Prerequisite, 557 or permission.
- 604 Research (*, maximum 3 for M.S., 10 for Ph.D.)** **Staff**
- 700 Thesis (*)** **Staff**

COURSES IN FOOD SCIENCE

- 481 Introduction to Food Technology (5)** **Liston**
Prerequisite, permission.
- 482 Food Analysis 1 (3)** **Dollar**
Prerequisites, Biochemistry 483 or permission
- 483 Food Analysis 2 (3)** **Dollar**
Prerequisite, 482.
- 484 Principles of Food Processing 1 (5)** **Dollar, Liston**
Prerequisite, 481 or permission.
- 485 Principles of Food Processing 2 (5)** **Dollar, Liston**
Prerequisites, 482, 486 or permission.
- 486 Deteriorative Processes in Foods (5)** **Dollar, Liston**
Prerequisites, 483, 485 or permission.
- 487 Food Analysis 3 (3)** **Dollar, Liston**
Prerequisite, 483.

COLLEGE OF FORESTRY

Dean: GORDON D. MARCKWORTH, 206 Anderson Hall

The objectives of the graduate program of forestry are to make available the best academic guidance, research facilities, and advanced professional education to foresters desiring intensification or specialization beyond the initial professional degree. The research program in forestry provides a medium of education primarily in graduate programs to promote and execute fundamental forestry research.

Students who intend to work toward an advanced degree must apply for admission to the Graduate School and meet the requirements set forth by the Graduate School and the College of Forestry. *Graduate students must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.* The Master of Forestry, Master of Science in Forestry, and Doctor of Philosophy degrees are conferred by the Graduate School through the College of Forestry.

MASTER OF FORESTRY. To qualify for admission to the Master of Forestry degree program the candidate must have a bachelor's degree in forestry. Supporting

course work is taken mainly in the field of forestry. Only 400- and 500-numbered courses, or those listed in the *Graduate School Bulletin*, are acceptable. A foreign language is not required.

MASTER OF SCIENCE IN FORESTRY. To qualify for admission to the Master of Science in Forestry degree program, the candidate must have a bachelor's degree in forestry or equivalent. A minor in science, constituting one third of the required course work, is required in support of the forestry major. Only 400- and 500-numbered courses, or those listed in the *Graduate School Bulletin*, are acceptable. Candidates admitted with a forestry-equivalent bachelor's degree ordinarily require a minimum of two years to complete the degree. A foreign language is not required.

DOCTOR OF PHILOSOPHY. General requirements are listed in preceding sections. Additionally, doctoral candidates in forestry are required to pass the language examinations for this degree within the first academic year beyond the master's degree, or two academic years beyond the baccalaureate degree; whichever has preceded the doctoral candidacy.

COURSES

310 General Forest Soils (4)	Gessel
401 Safety Practices in Forest Industries (2)	Pearce
403 Timber Physics (3)	Bryant
404 Timber Physics (5)	Bryant
406 Microtechnique (3)	Leney
407 Forest Economics (2)	Turnbull
408 Forest Economics and Finance (5)	Turnbull
409 Forest Policy and Administration (3)	Marckworth
410 Advanced Forest Soils (3)	Gessel
423 Application of Silvicultural Methods (3)	Scott
424 Advanced Silviculture (3)	Scott
430 Advanced Forest Fire Control (3)	Schaeffer
440 Construction (4)	Stenzel
441 Forest Engineering (5)	Pearce, Stenzel
442 Logging Engineering (5)	Pearce
446, 447, 448, 449 Logging Engineering Field Studies (3,5,5,3)	Pearce, Stenzel
455 Forest Influences (4)	Gessel, Scott
460 Forest Management (5)	Robertson
461 Forest Management (3)	Robertson
465 Forest Photo Interpretation (3)	Robertson
466, 467, 468, 469 Senior Management Field Studies (5,5,4,2)	Robertson
470 Forest Products Industries (5)	Erickson
471 Timber Design (3)	Bryant
472 Plywood, Lamination, and Glues (5)	Bryant
476 Wool Pulp (6)	Leney
478 Advanced Wood Technology (5)	Bryant, Erickson
481 Milling (5)	Thomas
482 Manufacturing Problems (5)	Thomas
483 Theory and Practice of Kiln Drying (3)	Thomas
484 Forest Products Field Studies (2)	Thomas
485 Forest Products Seminar (2)	Staff
495 Research Methods Seminar (3)	Bryant
500 Graduate Seminar (1, maximum 10) Required of graduate students.	Staff

- 511 Seminar in Forest Soils (2)** **Gessel**
Prerequisites, 410 and permission.
- 512 Soil Morphology and Classification (3)** **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. Prerequisite, permission.
- 513 Methods of Forest Soil Survey (5)** **Gessel**
A course of field studies to acquaint the student with forest soils of the Northwest and with soil classification and survey philosophies and procedures. (Offered alternate years; offered 1961-62.) Prerequisites, 512 and permission.
- 521 Advanced Silvics (3-5)** **Scott**
A consideration of current literature and topics in forest tree ecology and physiology. Prerequisite, permission.
- 522 Advanced Silviculture (3)** **Scott**
A detailed study of the literature dealing with the more recent applications of silviculture in world forestry. Prerequisite, permission.
- 523 Forest Tree Seed (2)** **Campbell, Scott**
The study of forest tree seed, including structure, development, production, collection, provenance, storage, germination, dormancy, and stimulation. Prerequisite, permission.
- 525 Research Methods in Forest Ecology (2)** **Campbell, Gessel, Scott, Turnbull**
Research philosophies and procedures as applied to forest biological problems. Required of all graduate students in forest management. Prerequisite, permission.
- 527 Forest Genetics (3)** **Campbell**
Tree-improvement breeding theory as related to elementary population genetics, variation in plant populations, and natural and artificial selection. Prerequisite, Biology 451 or permission.
- 541 Advanced Forest Engineering (5)** **Pearce**
Logging organization and management; logging cost analysis and budgeting. Prerequisite, permission.
- 542 Advanced Logging Engineering (3)** **Pearce**
Detailed consideration of problems of logging planning and truck road engineering; including the preparation and field layout of logging plans; location, design, and construction of logging truck roads. Prerequisite, permission.
- 571 Advanced Wood Preservation (3)** **Erickson**
Permeability of wood; theory of penetration; treating plants, their equipment and design. Prerequisites, 370 and 371.
- 572 Wood Chemistry and Analysis (3-5)** **Erickson**
Techniques for analyzing the chemical constituents of wood; the relationships between chemical properties and the structural properties and uses of various species of wood. Prerequisites, 307, 470, Chemistry 232, and permission.
- 573 Wood-Moisture Relations (2-3)** **Erickson**
Theories involved in relationships between wood and varying degrees of moisture content, conditions at fiber saturation point and between fiber saturation and zero moisture content. Prerequisites, 307, 404, and permission.
- 574 Wood-Resin Relations (3)** **Bryant**
The technology of synthetic resins as wood adhesives, wood impregnants, binders, overlays, and surface coatings. Prerequisites, 472 and permission.
- 575 Forest Products Economics (3)** **Thomas**
Economic considerations in planning for profitable and complete utilization of the forest resource under a variety of circumstances. Prerequisites, 482 and permission.
- 590 Graduate Studies (1-5)** **Staff**
Study in fields for which there is not sufficient demand to warrant the organization of regular courses.
- 600 Research (*)** **Staff**
- 700 Thesis (*)** **Staff**

Tutorial study designed to meet individual requirements is available to graduate students in the Graduate Studies courses listed below. Such study may include literature review, field, and laboratory work. The courses are offered in all quarters and credits can vary from 1 to 5. Prerequisites include graduate standing and permission of the instructor. Credits are individually arranged for each course.

- 510 Graduate Studies in Forest Soils (1-5)** **Gessel**
- 515 Graduate Studies in Forest Influences (1-5)** **Gessel, Scott**
- 520 Graduate Studies in Silvics and Silviculture (1-5)** **Scott**
- 526 Graduate Studies in Forest Genetics (1-5)** **Campbell**
- 530 Graduate Studies in Forest Fire Control (1-5)** **Schaeffer**
- 540 Graduate Studies in Logging Engineering (1-5)** **Pearce, Stenzel**

550 Graduate Studies in Forest Recreation (1-5)	Brockman
555 Graduate Studies in Wildlife Management (1-5)	Brockman
560 Graduate Studies in Forest History and Policy (1-5)	Marckworth
563 Graduate Studies in Forest Mensuration (1-5)	Turnbull
565 Graduate Studies in Forest Management (1-5)	Robertson
566 Graduate Studies in Forest Photogrammetry (1-5)	Robertson
568 Graduate Studies in Forest Finance and Economics (1-5)	Turnbull
570 Graduate Studies in Forest Products (1-5)	Bryant, Erickson, Leney, Thomas

INTERDISCIPLINARY PROGRAM RADIOLOGICAL SCIENCES

A program leading to the degree of Master of Science in Radiological Science is offered by the interdisciplinary faculty Radiological Science Groups. Candidacy for this degree is open to students having completed bachelor's degrees in physical or biological sciences or in engineering. The curriculum is suitable for holders of AEC Fellowships in Health Physics, but is not limited to these.

Prerequisites for graduate study in Radiological Sciences include Physics 323 (Introduction to Nuclear Physics, or the equivalent), Mathematics 221 (Differential Equations) and a year of general biology at the college level. A student with one deficiency may be accepted for the program provided he removes the deficiency during the first year of graduate study. No credit toward the degree will be allowed for a course used to remove a deficiency.

A minimum of 42 credits, including 9 credits for thesis, must be completed for the degree. The thesis is held to be an important feature of the degree program. Topics for thesis may be chosen in the fields of the radiological sciences or in related fields, subject to approval of the adviser.

For additional information, please communicate with Prof. Max R. Zelle, 104 Fisheries Building.

SCHOOL OF LIBRARIANSHIP

Director: IRVING LIEBERMAN, 111 Library

The program in Librarianship is intended to prepare a selected group of college graduates for a professional career in library work. Programs are offered leading to the degrees of Master of Librarianship and Master of Law Librarianship. The basic professional curriculum is organized around a group of studies designed to provide a sound foundation in the principles and methods of librarianship. These studies are required of all candidates having a degree in librarianship. In addition, the student elects courses which will prepare him for a special field of library service. Programs in special fields of library service are those designed for children and young people's work, school library work, and law librarianship. Other programs may be designed in accordance with the individual needs of the student. The School of Librarianship is accredited by the American Library Association and is a member of the Association of American Library Schools.

ADMISSION. The approval of both the Graduate School and the School of Librarianship is necessary for admission. The full program may be entered in either Autumn or Summer Quarter. *The deadline for submission of application and complete credentials for Autumn Quarter is July 15, and for Summer Quarter, May 15.* It is recommended that candidates for admission write to the School of Librarianship for its *Announcement*, which describes in detail the programs offered and the requirements for admission and the degrees.

SUMMER PROGRAM. The full program for the Master of Librarianship degree is available to Summer Quarter students. Basic required courses are offered every summer, and continuations of these courses are given in alternate summers. Additional course offerings vary from year to year but are planned to enable students to complete requirements for the degree by attendance during summers only.

LIBRARY FACILITIES. The School of Librarianship is in the south wing of the Henry Suzzallo Library.

The book collection of the School contains the essential materials on librarianship, the William E. Henry collection of rare books, an outstanding collection of children's books, and a high school library collection. These materials are supplemented by the University Library with its numerous departmental and research libraries containing more than one million volumes. Students have access to the facilities of the Pacific Northwest Bibliographic Center and to the University's Audio-Visual Services. The Seattle Public Library, the King County Public Library, and many school, college, and special libraries are available for observation and field work.

COURSES

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 451 Children's Books (3) | Peterson, Wheeler |
| 452 Storytelling (3) | Wheeler |
| 460 School Library Administration (3) | Turner |
| 461 School Library Materials (3) | Turner |
| 462 Reading of Young People (3) | Turner |
| 463 Elementary Classification and Cataloging (4) | Peterson, Turner |
| 464 Elements of Technical Processes (3) | Peterson, Turner |
| 470 History of the Book (3) | Bevis |
| 500 Libraries, Librarians, and Society (2) | Lieberman |
| Objectives and principal fields of library services. Major trends and problems. | |
| 501 Libraries, Librarians, and Society (2) | Bevis |
| Continuation of 500. Prerequisite, 500. | |
| 502 Library Organization and Administration (3) | Staff |
| 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. | |
| 509 Directed Field Work (2-4) | Bevis, Lieberman |
| Four weeks of professionally supervised field work in various types of libraries. | |
| 510 Evaluation of Library Materials (4) | 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) | Bevis, Turner |
| 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) | Bevis |
| Continuation of 511. Prerequisite, 510. | |
| 513 Government Publications (2) | Bevis |
| Government publications of the United States and foreign countries, their acquisition, organization, and use. (Offered Summer Quarter only.) | |
| 514 The Library and Audio-Visual Materials (3) | Lieberman |
| 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. | |
| 520 Organization of Library Materials: Theory and Principles (4) | 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) | Peterson |
| Cataloging practices and methods employed to meet varying needs. Prerequisite, 530. | |
| 532 Organization of Library Materials: Advanced Problems (2) | Peterson |
| Cataloging of special materials; maps, music, microfilm, and rare books; special classification schemes. Prerequisite, 531. | |

- 540 Advanced Legal Bibliography (2)** **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 (4)** **Gallagher**
Aids to selection, processing, microphotography of legal material, etc.
- 542 Legal Reference and Research (5)** **Gallagher**
Bibliographical lists, law reference questions, briefing, and annotations. (Offered Summer Quarter only.)
- 543 Law Library Administration (5)** **Gallagher**
Staff, patrons and public relations, circulation, architecture, book arrangements, equipment, rules, publicity, publications, budgets, reports, professional societies, regional service.
- 550 Introduction to Library Service for Children (3)** **Wheeler**
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)** **Wheeler**
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 cooperation with the schools. Includes actual practice in conducting library lessons and book talks. Prerequisite, 550.
- 554 Children's Literature (3)** **Wheeler**
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, 451 or 550.
- 599 Methods of Research in Librarianship (2)** **Staff**
A survey of problems and methods.
- 600 Research (*)** **Staff**
Systematic investigation under faculty direction of a special project approved by the Director and the instructors concerned.
- 700 Thesis (*)** **Staff**
- 702 Degree Final (0)** **Staff**
Limited to students completing a nonthesis degree program.

SCHOOL OF MEDICINE

Dean: GEORGE N. AAGAARD, C304 Health Sciences Building

In accordance with the general requirements of the Graduate School, the School of Medicine, as an integral part of the Division of Health Sciences, offers programs leading to the degrees of Master of Science and Doctor of Philosophy in the Departments of Anatomy, Biochemistry, Microbiology, Pharmacology, and Physiology and Biophysics. In the Department of Surgery, a program leading to the degree of Master of Science is offered. Students who intend to work toward one of these degrees should confer with the executive officer of the department in which they intend to major.

Several other departments of the School offer courses which may be of interest to graduate students in related fields, and these are listed below. The *School of Medicine Bulletin* contains more complete descriptions of courses numbered below 500.

ANATOMY

Executive Officer: N. B. EVERETT, G511 Health Sciences Building

The Department of Anatomy offers courses leading to the degrees of Master of Science and Doctor of Philosophy. It is desirable that candidates for graduate work in anatomy have a broad and well-correlated knowledge of the general fields of biology, chemistry, physics, and mathematics.

Graduate work in anatomy does not rest upon any rigid or specific list of courses; the program will depend primarily on the applicant's field of interest. In addition to the usual courses in gross and microscopic anatomy, specialized training is offered in the fields of electron microscopy, X-ray diffraction, tracer

biology, experimental cytology, cytochemistry, polarization microscopy, and microspectrometry.

COURSES

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| 301 General Anatomy (4) | Staff |
| 328, 329 Gross Anatomy (6,4) | Bodemer, Staff |
| 330 Microscopic Anatomy (4) | Wood |
| 331 Neuroanatomy (2) | Bodemer, Everett, Rieko |
| 350-351 Human Function and Structure (6-6) (See Conjoint Courses, page 206.) | |
| 401-402-403 Gross Anatomy (8-4-4) | Bassett |
| 404 Human Embryology (3) | Blandau |
| 405-406 Microscopic and Submicroscopic Anatomy (4-4) | Luft, Roosen-Runge |
| 409 Basis of Neurology (3,5, or 8) (See Conjoint Courses, page 206.) | |
| 440 Special Topics in Dissection (2, maximum 6) | Bassett, Staff |
| Prerequisite, permission. | |
| 505 Advanced General Histology (3) | Roosen-Runge, Wood |
| Comparative study of tissues in selected phyla of vertebrates and invertebrates. Prerequisites, 330, 405, or permission. | |
| 510 Cytochemistry (4) | Luft |
| The finer distribution of chemical substances in cells and tissues; methods of cytochemistry and their theoretical basis and validity. Prerequisite, permission. | |
| 515 Biological X-ray Structure Analysis (3) | Jensen |
| Theory of X-ray diffraction, with emphasis on applications to biological systems. Prerequisite, permission. | |
| 518 Developmental Neurology (2) | Bodemer |
| Detailed consideration of the problems of development, growth, and regeneration of the nervous system and its functions. Prerequisites, Zoology 456 or equivalent, and permission. | |
| 521 Seminar in Molecular and Submicroscopic Anatomy (2) | Luft, Wood |
| The molecular and micellar basis of bodily structure. Prerequisite, permission. | |
| 525 Brain Dissection (2) | Everett |
| Laboratory work in dissection of the human brain, supplemented by lectures emphasizing developmental and functional aspects of neurology. Prerequisite, permission. | |
| 530 Biological Tracer Techniques (2) | Everett |
| Techniques of using radioactive isotopes as tracers in biological research. Prerequisite, permission. | |
| 531, 532, 533 Electron Microscopy (2-5,2-5,2-5) | Luft, Wood |
| Theoretical and practical aspects of electron microscopy of biological material, including electron diffraction. Prerequisites, 405-406 or permission. | |
| 540 Embryology of the Heart (2) | Blandau |
| A detailed study of the embryology of the heart and great vessels during the first eight weeks of life. Prerequisite, 404 or permission. | |
| 550 Biological Polarization Microscopy (4) | Staff |
| Theory, technique, and application of polarization microscopy in biological studies. Prerequisite, permission. | |
| 555 Mammalian Reproduction (3) | Blandau, Greenwald, Roosen-Runge |
| Fundamental processes of reproductive anatomy and physiology of laboratory animals. Prerequisite, permission. | |
| 557 Seminar (1-3, maximum 9) | Staff |
| Prerequisite, permission. | |
| 585 Surgical Anatomy (2-4, maximum 12) (See Conjoint Courses, page 206.) | |
| 600 Research (*) | Staff |
| Prerequisite, permission. | |
| 700 Thesis (*) | Staff |

BIOCHEMISTRY

Executive Officer: HANS NEURATH, C408 Health Sciences Building

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 aca-

demic 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 a degree of Master of Science or Doctor of Philosophy must present a bachelor's degree with a major in chemistry or its equivalent, and should have some background in biology

COURSES

- 361 Biochemistry (3)** **Staff**
- 362 Biochemistry Laboratory (3)** **Staff**
- 363 Biochemistry Laboratory (2)** **Staff**
- 401, 402 Biochemistry (5,3)** **Staff**
- 403 Biochemistry Laboratory (3)** **Staff**
Required for first-year medical students; open to a limited number of students with allied interests. Prerequisites, 401 and 402, or permission.
- 481, 482, 483 Biochemistry (3,3,3)** **Staff**
Recommended for advanced undergraduate or graduate students of chemistry, biochemistry, and various biological sciences. Prerequisites, Chemistry 337 for 481; 481 or permission for 482; 482 or permission for 483; introductory physical chemistry is recommended.
- 484 Biochemistry Laboratory (3)** **Staff**
Laboratory projects and conferences. For students of biochemistry, chemistry, and various biological sciences. Prerequisites, 481 and 482; the latter course to be taken concurrently.
- 520 Seminar (1-3, maximum 9)** **Staff**
Prerequisite, permission.
- 562 Physical Biochemistry (2)** **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 interest are considered. (Offered 1963-64.) Prerequisites, 563, 564, and Chemistry 357, or permission.
- 563, 564 Proteins (2,2)** **Neurath, Wilcox**
The chemistry and biological activity of proteins and naturally occurring protein structures are 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. (Offered 1963-64.) Prerequisites, 483 or permission for 563; 563 for 564.
- 565, 566, 567 Enzymes and Enzyme Action (2,2,2)** **Fischer, Huennekens**
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. (Offered 1961-62.) Prerequisites, 482 and Chemistry 357, or permission for 565; 565 for 566; 566 for 567.
- 568 Biochemistry of Lipides (2)** **Hanahan**
The structure and metabolism of sterols, steroids, fatty acids, and the complex lipides will be treated on an advanced level. (Offered Autumn Quarter, 1962.) Prerequisite, 402 or 483, or permission.
- 569 Biochemistry of Nucleic Acids (2)** **Gordon**
Chemistry and structure of nucleic acids, enzymes active on nucleic acids, and the biosynthesis and metabolism of the components of nucleic acids are considered. Current concepts of the replication of nucleic acids, information transfer, and the biological functions of nucleic acids including the infectivity of viruses will be discussed. (Offered 1962-63.) Prerequisite, 402 or 483, or permission.
- 570 Topics in Mammalian Biochemistry (2)** **Krebs**
An advanced treatment of topics related to metabolism in the intact animal: organ function, body pools, hormonal control, energy balance, nitrogen balance, and nutrition. Biochemical changes in certain diseases are discussed. (Offered 1962-63.) Prerequisite, 402 or 483, or permission.
- 583 Advanced Biochemistry Laboratory (3)** **Staff**
Biochemical preparations and investigations of physical and chemical properties by special techniques, including spectrophotometry, polarimetry, ultracentrifuge, electrophoresis, isotope tracer applications, etc. Prerequisites, 483 and permission.
- 600 Research (*)** **Staff**
Prerequisite, permission.
- 700 Thesis (*)** **Staff**

MICROBIOLOGY

Executive Officer: CHARLES A. EVANS, G305 Health Sciences Building

The Department of Microbiology offers courses leading to the degrees of Master of Science and Doctor of Philosophy. Candidates for these degrees may specialize in general and medical bacteriology, immunology, parasitology, medical mycology, virology, and physiology of bacteria. Course requirements vary according to the field chosen.

COURSES

301 General Microbiology (5)	Staff
320 Media Preparation (*, maximum 5)	Duchow
322 Applied Bacteriology (5)	Staff
400 Fundamentals of Bacteriology (*, maximum 6)	Douglas, Ordal
430 Industrial Microbiology (3 or 5)	Douglas
441-442 Medical Bacteriology, Virology, and Immunology (*, maximum 5-, -*, maximum -5) Evans, Groman, Henry, Sherris, Weiser	
443 Medical Mycology (*, maximum 2)	Henry
444 Medical Parasitology (*, maximum 4)	Groman
510 Physiology of Bacteria (3) Fundamental physiological and metabolic processes of bacteria. (Offered alternate years; offered 1961-62.) Prerequisite, permission of instructor.	Douglas, Ordal, Whiteley
520 Seminar (1)	Staff
530 Comparative Morphology and Physiology of the Higher Bacteria (4) Enrichment, isolation, and comparative morphology and physiology of selected representatives of the following groups of bacteria: Nitrobacteriaceae, Rhodobacteriaceae, Caulobacteriaceae, Actinomycetales, Myxobacteriales, Chlamydoxanthales, Caryophanales, and Borcelomycetaceae. (Offered alternate years; offered 1961-62.) Prerequisite, permission.	Ordal
540 Virology (*, maximum 4) (Offered alternate years; offered 1961-62.) Prerequisites, at least one quarter of general microbiology and permission.	Evans, Groman, Holland
550 Advanced Immunology (*, maximum 4) (Offered alternate years; offered 1962-63.) Prerequisites, 441- and permission.	Weiser
600 Research (*)	Staff
700 Thesis (*)	Staff

PATHOLOGY

Executive Officer: EARL P. BENDITT, D505 Health Sciences Building

The Department of Pathology offers programs leading to the degree of Doctor of Philosophy in the field of experimental pathology. Graduate work in pathology is designed to give the candidate a sound basis in modern quantitative biology for future research in experimental pathology. Candidates must have at least a bachelor's degree with a major in physical or biological science. Course requirements will vary with the background of the candidate. Specialized approaches to problems of experimental pathology include histo-chemical and cyto-chemical, electron microscopic, immunologic, and others. Candidates may concentrate research activities in such areas as cardiovascular disease, cancer, inflammation at the cellular and molecular level, and neuro-pathological processes.

COURSES

321 Medical Technology (5) (Offered Summer Quarter only.)	Staff
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- 322-323-424-425, 426 Medical Technology (6-6-6-6, 16)** **Staff**
- 441- General Pathology (6-)** **Staff**
Prerequisite, permission.
- 442-443 Special Pathology (-5-5)** **Staff**
Prerequisite, 441- or equivalent.
- 446-447 Laboratory Procedures (4-2) (See Conjoint Courses, page 206.)**
- 470 Surgical Pathology (*)** **Staff**
- 476 Clinical Pathological Conference (*)** **Staff**
- 500 Principles of Pathology (4 or 6)** **Staff**
The material covered is concerned primarily with the fundamental alterations in tissues and organs in disease processes and the results of these changes. This course is open to selected graduate students in the biological sciences. Prerequisite, permission.
- 503 Enzymatic Histochemistry (2-3)** **Bonditt**
Development of basic concepts with technical and experimental applications. Elective open to medical students and graduate students by permission. Limited to six students.
- 520 Seminar (2, maximum 10)** **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)** **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 (2-5, maximum 20)** **Staff**
Assignments depend upon the background and interest of the individual. Problems may be concerned with animal experimentation or with specimens obtained from human beings. Special techniques and 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 (2-5, maximum 20)** **Staff**
A study of the principles and techniques of the usual clinical chemical procedures or of the tests used to study diseases of the hematopoietic system. The control of precision and accuracy is stressed, as is the interpretation of the results obtained. The work in either biochemistry or hematology may be taken in the appropriate sequence. For graduate students and fellows who are assigned to the laboratory in clinical biochemistry.
- 553 Pediatric Pathology (*, maximum 10)** **Staff**
Assignments according to need and background. By arrangement, for fellows and graduate students.
- 600 Research (*)** **Staff**
Selected problems arranged in accordance with the student's needs. Prerequisite, permission of Executive Officer.
- 700 Thesis (*)** **Staff**

PHARMACOLOGY

Executive Officer: JAMES M. DILLE, F421 Health Sciences Building

The Department of Pharmacology offers courses leading to the degrees of Master of Science and Doctor of Philosophy. Students who intend to work toward one of these degrees must present a bachelor's degree with a major in one of the sciences, such as zoology, chemistry, physics, pharmacy, psychology, or physiology.

COURSES

- 442-443 General Pharmacology (5-4)** **Staff**
- 507 Journal Seminar (*, maximum 6)** **Staff**
Presentation of comprehensive reports on recent medical and scientific literature in fields of current importance. Prerequisites, -443 and permission.
- N508 Research Seminar (0)** **Staff**
Research progress reports and reports on results of completed research. Prerequisites, -443 and permission.
- 509 Pharmacology Laboratory Methods (*)** **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, -443 and permission.

525, 526, 527 Advanced Pharmacology (2,2,2)**Staff**

An advanced treatment of basic concepts of pharmacology, both theoretical and methodological. Subject matter will be varied from quarter to quarter and course may be repeated for credit. Prerequisite, permission.

600 Research (*)**Staff**

Participation in research projects already set in progress by members of the Department staff. Directed experience in research investigation. Prerequisites, -443 and permission.

700 Thesis (*)**Staff**

PHYSIOLOGY AND BIOPHYSICS

Executive Officer: T. C. RUCH, G405 Health Sciences Building

The Department of Physiology and Biophysics offers courses leading to the degree of Master of Science and Doctor of Philosophy.

Physiology is based upon zoology, physics, chemistry, and mathematics. It interlocks closely with the other basic medical sciences—anatomy, biochemistry, pharmacology, and pathology—and with psychology. For this reason, physiology appeals to students with quite diverse backgrounds and goals. In the organization of the graduate program in physiology and biophysics, several specializations within the broad field of physiology are recognized, and the requirements and curricula are different for each, although there is considerable overlapping. The areas of specialization may be described as (1) mammalian and pathological physiology, (2) biophysics, for which undergraduate mathematics and physics are prerequisites, (3) physiology of behavior, in which undergraduate psychological training is a prerequisite. For students wishing a more equal distribution of time between physiology and psychology a conjoint Ph.D. degree program in these subjects is offered.

Biophysics emphasizes the physical aspects of organs and control systems, studied by the instruments and methods of thinking used by physicists. A bachelor's degree in physical science or equivalent is required.

The basic graduate courses in physiology and biophysics include 401-402 and Conjoint 409 (Basis of Neurology).

Graduate students in physiology and biophysics with a medical degree will have their curricula adjusted in accordance with their training.

Students who intend to work toward a degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. Students with a bachelor's degree in zoology, psychology, chemistry, engineering, physics, or with an M.D. degree are acceptable as candidates for M.S. and Ph.D. degrees.

COURSES

350-351 Human Function and Structure (6-6) (See Conjoint Courses, page 206.)

401-402 Advanced Human Physiology (7-7)

Ruch, Staff

409 Basis of Neurology (3,5 or 8) (See Conjoint Courses, page 206.)

411 Introductory Biophysics (4)

Brown, Woodbury, Young

416 Biophysics (5)

Woodbury, Young

424 Introductory Membrane Potentials (3)

Woodbury

484 Endocrinological Reaction to Stress (*)

Patton, Staff

491 Medical Physics (2)

Brown, Young

492 Selected Topics in Physiology and Biophysics (2)

Staff

493 Techniques in Cardiopulmonary Diagnosis (2)

Carlson, Rushmer, Staff

494 Neurological Study Unit (2) Physiology, Neuroanatomy, Neurology, Neuropathology, Neurosurgery, and Psychiatry Staff

- 515-516-517 Physiological Proseminar (5-5-5) Staff**
A guided survey of the experimental literature of major topics in physiology. Course conducted as seminar with oral analysis of assigned papers and topics. Prerequisites, 401-402, Conjoint 409, and permission.
- 520 Physiology Seminar (2-5) Staff**
Selected topics in physiology.
- 521 Biophysics Seminar (2-5) Young**
Selected topics in biophysics.
- 522 Biophysics of External Respiration (2-5) Young**
Viscous and elastic properties of chest-lung system; flow of gases in tubes. Generalized alveolar air equations. Principle of infrared absorption and emission type of rapid gas analyzers. Prerequisite, permission.
- 523 Heat Transfer and Temperature Regulation (2-5) Young**
Prerequisite, B.S. in physical science or permission.
- 524 Advanced Membrane Potentials (3) Woodbury**
Quantitative analysis of electrical activity in nerve. Active sodium-potassium transport. Ionic flux equations. Conductance changes. Calculation of the action potential. Prerequisite, permission.
- 525, 526, 527 Advanced Mammalian and Clinical Physiology (*,*,*) 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.
- 528 Physiological Control Systems (2-5) Young**
Theories of nonlinear mechanics and their applications to physiological control systems. Prerequisite, B.S. in physical science or permission.
- 529 Motoneuron Physiology (4) Towe, Woodbury**
Electrical properties of surface membrane; excitatory and inhibitory reactions and their ionic mechanisms; properties of the spike potential; interaction of synaptic responses. Prerequisites, 515-516-517, 424, and permission.
- 530 Synapse and Reflex Seminar (4) Staff**
A guided survey of the literature pertaining to reflex and synaptic physiology. Course is conducted as seminar with students giving oral reports on assigned topics. Prerequisite, 401-402, 515-516-517, and permission.
- 532-533 Basic Principles of Physiological Instrumentation (4-4) Young**
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.
- 534 Applied Physiological Instrumentation (2-5) Staff**
Study and use of research instruments applicable to the nervous system (stimulators, amplifiers, and oscilloscopes), the cardiovascular system (cinéfluorograph, electro- and stetho-cardiograph, oximeter, strain gauge manometers, etc.), and respiratory and metabolic activity (flow meters, minute volume integrator, infrared and paramagnetic gas analyzers, cardi tachometer, thermocouples, gradient calorimeter). Prerequisites, 532 and permission.
- 535 Operative Techniques in Neurophysiology (2-5) Patton, Smith**
Deafferentation, decerebration and Sherrington reflex preparation; osteoplastic bone flap, Horsley-Clarke apparatus, implanted electrodes, and reconstruction of lesions; primate colony and operating room management. Prerequisite, permission.
- 536 Behavioral Techniques in Neurophysiology (2-3) Smith, Towe, Staff**
Study and use of behavioral methods applicable to nervous system studies, quantification of activity and physiological variables, interpretation of neural lesions and chronic electrode implants. Prerequisite, permission.
- 550 Cortical Potentials (4) Towe**
Properties of continuous and evoked cortical potentials and their interactions. Relationship of cortical unit activity to cortical potentials. Prerequisites, 424, 515-516-517, and permission.
- 600 Research (*) Staff**
Prerequisite, permission.
- 700 Thesis (*) Staff**

PREVENTIVE MEDICINE

Executive Officer: J. THOMAS GRAYSTON, B506 Health Sciences Building

COURSES

- 323 Introduction to Public Health Principles and Practice (3) Wilkey**
- 420 Introduction to Epidemiology and Biostatistics (3) Alexander, Bennett**

422	Introduction to Environmental Health (3)	Vavra
424	Public Health Problems (3)	Vavra
440	Water and Waste Sanitation (4)	Hatlen
441	Milk and Food Sanitation (4)	Hatlen
442	Vector Control and General Sanitation (3)	Hatlen
450	Measurement and Control of Air Pollution	Breysse
453	Industrial Hygiene Techniques (3)	Breysse
460J	Field Training in Health Education (5) Offered jointly with the College of Education. (Offered Summer Quarter only.)	Vavra
461	School and Community Health Programs (5)	Mills, Reeves
463	Community Organization for Health Education (3)	Vavra
464	Community Health Education Techniques (3)	Vavra
470	Introduction to Biometry (3)	Bennett
472	Applied Statistics in Health Sciences (2-4)	Bennett
476	Sample Survey Techniques (3-5)	Staff
477	Statistical Methods in Biological Assay (3)	Bennett
478	Practice of Epidemiology (3)	Staff
479	Industrial Medicine (3)	Staff
480	Public Health Problems (*, maximum 6)	Staff
482	Field Practice in Public Health (2-6)	Staff
483	Field Practice in Public Health (6)	Staff
484	Field Practice in Public Health (3)	Staff
485J	School Health Problems (3) Offered jointly with the School of Nursing.	Christian, Vavra
490	Public Health Administration (3)	Alexander, Peterson
492J	Problems in International Health (2) Offered jointly with the School of Nursing.	Staff
502J	Applied Group Development Principles (3) A study of the factors that contribute to productive group effort with application of group development principles for professional health personnel. Offered jointly with the School of Nursing. Prerequisites, permission, Speech 332 or equivalent, and background in the health field.	Murray, Vavra

CONJOINT COURSES

Conjoint courses are offered cooperatively by departments in the School of Medicine. They are designed to integrate 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

- 350-351 Human Function and Structure (6-6)** Skahen, Staff
For master's degree candidates in psychology and other students not majoring in anatomy or physiology. Offered by the Departments of Anatomy and Physiology. Prerequisite, permission.
- 409 Basis of Neurology (3,5, or 8)** Everett, Patton, Ruch
Offered by the Departments of Anatomy and Physiology. Prerequisite, permission for graduate students.
- 446-447 Laboratory Procedures (4-2)** Staff
Offered by the Departments of Pathology and Medicine. Prerequisite, permission for graduate students.

- 496 Concept of the Child (3)** **Delsher, Jensen, Staff**
Offered by the Departments of Pediatrics and Preventive Medicine. For nonmedical students. Prerequisite, permission.
- 585 Surgical Anatomy (2-4, maximum 12)** **Staff**
An intensive course devoted to one region of the body each quarter, i.e., thorax, abdomen, upper extremity, head, and neck. Offered by the Departments of Anatomy and Surgery. Prerequisite, permission.

PEDIATRICS

Executive Officer: ROBERT A. ALDRICH, BB807 University Hospital

COURSES

- 496 Concept of the Child (3)** (See Conjoint Courses, page 206.)
- 505 Physical Growth of the Well Child (2)** **Jensen, 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

The Department of Psychiatry offers courses designed to help students in medicine, nursing, psychology, social work, education, and others concerned with human problems to attain a scientific grasp of psychiatric principles. Using these principles, students will be able to evaluate interpersonal relationships and use to the greatest advantage their potentialities for understanding and dealing with personality reactions.

COURSES

- 450 Principles of Personality Development (2)** **Kaufman**
Not open to students who have taken 267.
- 451 Principles of Personality Development (2)** **Heilbrunn**
Continuation of 450. Not open to students who have taken 267. Prerequisite 450 or permission.
- 452 Clinical Psychiatry (2)** **Schwartz**
Not open to students who have taken 457 or 557. Prerequisite, 267 or 451, or permission.
- 553 Psychodynamics and Psychopathology (2)** **Heilbrunn**
Heredity, constitution, physical changes, and family and social relationships as determinants in psychodynamics are discussed. Attention is paid to defense mechanisms such as anxiety, depression, resentment, evasion, withdrawal, repression, projection, and overcompensation as commonly encountered in psychopathology. Prerequisite, 267 or 451, or permission.
- 558 Seminar: Interviewing (2)** **Staff**
Case studies are presented by individual students for discussion of the psychodynamics and methods of dealing with personality problems. For graduate students who are having practical experience in interviewing. Prerequisite, permission.
- 559 Child Psychiatry (2)** **Kaufman**
Series of discussions and lectures dealing with psychopathology of children. Prerequisite, 267 or 451, or permission.
- 565 Biological Foundations of Psychiatry (2)** **Heilbrunn**
Anatomical and physiological factors involved in various forms of psychopathology. Prerequisite, permission.

SURGERY

Executive Officer: HENRY N. HARKINS, BB477 University Hospital

The Department of Surgery offers courses leading to the degree of Master of Science. The purpose of this program is not to train students in the art of surgery or in surgical techniques, but to encourage basic science research in surgical problems on a graduate level.

Departmental requirements for candidacy include an M.D. degree from an approved medical school and preferably a year of internship in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association.

Candidates must earn a minimum of 45 credits, including not less than 15 credits of course work, exclusive of research, in surgery and allied graduate courses. A minor is to be taken in one of the basic medical sciences—anatomy, biochemistry, microbiology, pathology, pharmacology, or physiology and biophysics. The thesis must be based upon research carried out under the supervision of a member of the full-time teaching staff. The student must appear at an oral examination in which his thesis is defended and knowledge of his major and minor fields is demonstrated.

The examiners will consist of a committee appointed by the Department of Surgery.

COURSES

- 520 General Surgery Seminar (5)** **Harkins, Merendino, Nyhus, Stevenson**
Conferences, seminars, and round-table discussions of advanced surgical topics and recent literature in the field.
- 521 Orthopedic Research Seminar (*)** **Clawson, Andrews, Anderson**
Each week a current laboratory topic is discussed with members of the attending and resident staff. Active participation of the student is required. Prerequisite, graduate student.
- 522 Orthopedic Seminar (*)** **Clawson, Staff**
Seminar in current topics of orthopedic interest. Prerequisite, senior medical student or graduate student.
- 585 Surgical Anatomy (2-4, maximum 12) (See Conjoint Courses, page 206.)**
- 590 Surgical Experimental Techniques (5)** **Harkins, Merendino, Nyhus, Stevenson**
Basis for graduate research and advanced thesis work.
- 598 Seminar in Urology (*)** **Ansell, 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 (*)** **Harkins, Ansell, Merendino, Ward, Staff**
- 700 Thesis (*)** **Staff**

SCHOOL OF NURSING

Dean: MARY S. TSCHUDIN, C303 Health Sciences Building

The School of Nursing offers courses leading to the degrees of Master of Arts and Master of Nursing. Programs of study provide for advanced professional preparation and research in a selected clinical area, in teaching or administration in schools of nursing, or in nursing services in hospitals or public health agencies. They are designed to develop superior professional competence, and to prepare the graduate for positions of administrative, teaching, or advanced clinical responsibility.

Each student's background and goals are considered individually in the planning of the program.

The patterns outlined below are the usual ones for the master's degrees.

MASTER OF ARTS. The requirements for the Master of Arts are:

	CREDITS
Course work in major field	18
Nursing 521	2
Education 591	3
Thesis	10
Course work in minor field	12
	<hr/> 45

The minor may be chosen in a field such as sociology, education, social work, business administration, psychology, psychiatry, history, or creative writing.

MASTER OF NURSING. The Master of Nursing is a professional degree with emphasis on advanced preparation and background in the field of specialization.

	CREDITS
Course work in major field.....	18
Nursing 521	2
Education 591	3
Thesis	10
Supporting courses from allied fields.....	12
	<hr/>
	45

The supporting courses may be chosen in fields such as sociology, business administration, journalism, or anthropology.

There is no foreign language requirement for this degree.

POST-MASTER'S STUDY. Students who hold the master's degree in nursing may enroll for an additional period of study. Individual programs are planned to include advanced work in supporting sciences, advanced clinical field work, and independent research in nursing.

The School of Nursing offers a minor on the doctoral level for those students who are matriculated in another discipline. The minor in nursing should total 35 credits in courses offering graduate credit, of which at least half must be at the 500 level. The recommended sequence of courses for each student is determined in the light of her previous work.

COURSES

430 Advanced Nursing Field Work (3)	Staff
431 Advanced Nursing Field Work (2)	Staff
435 Practice Supervision in Nursing (3)	Staff
436 Practice Teaching in Nursing (3)	Staff
454 Administration in Nursing (2)	Smith
455 Administration of Schools of Nursing (3)	Hoffman
456 Nursing Service Administration (3)	Smith
462 Teaching in Schools of Nursing (3)	Mansfield
463 Personnel Guidance in Nursing (3)	Batey
464 The Nurse in Mental Health (3)	Batey
466 In-Service Education in Nursing (3)	Smith
467 Evaluation of Performance in Nursing (3)	Olcott
481 The Nurse in School Vision Programs (2)	Christian
485J School Health Problems (3) Offered jointly with the Department of Preventive Medicine.	Christian, Vavra
486 Occupational Health Programs, Nursing Implications (3)	Klutas
492J Problems in International Health (2) Offered jointly with the Department of Preventive Medicine.	Leahy
498 Methods of Supervision in Public Health Nursing (3)	Leahy
501 Development of Nursing Procedures (2) Nursing procedures as a basis for nursing service planning and as a teaching tool. Procedures analyzed against selected criteria. Development of procedures according to clinical needs.	Giblin
502J Applied Group Development Principles (3) A study of the factors that contribute to productive group effort with application of group development principles for professional health personnel. Offered jointly with the Department of Preventive Medicine. Prerequisites, permission, Speech 332 or equivalent, and background in the health field.	Murray

- 504 Seminar in Occupational Health Nursing (2)** **Klutas**
Intensive analysis of selected problems in occupational health nursing.
- 505 Seminar in Administration of Schools of Nursing (3)** **Hoffman, Tschudin**
Discussion and analysis of situations in administration of schools of nursing. Prerequisite, 455 or equivalent.
- 506 Seminar in Nursing Service Administration (3)** **Smith**
Discussion and analysis of situations in administration of nursing services. Prerequisite, 456 or equivalent.
- 507 Seminar in Nursing Problems in Mental Health (2)** **Nehren**
Mental health problems in family relationships, with emphasis on psychiatric concepts in the nurse's therapeutic role in the family milieu. Prerequisites, 508 and permission.
- 508 Seminar in Advanced Psychiatric Nursing (2)** **Batey**
Exploration of interpersonal relations; emphasis upon the nurse's therapeutic role with the psychiatric patient and in the total milieu. To be taken concurrently with 430.
- 509 Seminar in School Nursing (3)** **Christian**
The application of public health nursing concepts, principles, and research findings in the analysis and solution of school nursing problems.
- 510 Curriculum Development in Nursing Education (5)** **Hoffman, 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 Psychosomatic Nursing (3)** **Nehren**
Seminar and clinical experiences centered on problems of interrelationships of physical and emotional aspects of illness. Prerequisite, basic psychiatric nursing or permission.
- 512 Advanced Fields in Psychiatric Nursing (3)** **Batey**
Practicum devoted to the solution of nursing problems in psychiatric situations. Emphasis on specific interpersonal and intraprofessional relationships in the care of mental patients. Prerequisite, permission.
- 513 Field Experience in Mental Health Nursing (3)** **Nehren**
Selected experience in the identification and analysis of mental health problems in family relationships, with emphasis on utilizing psychiatric concepts to develop therapeutic nursing relationships within the family milieu. Concurrent with 507.
- 515 Special Fields in Public Health Nursing (3)** **Leahy**
Investigation of public health nursing responsibilities in special fields. Emphasis varies with interest and needs of the students. Prerequisite, permission.
- 521 Methods of Research in Nursing (2)** **Hoffman**
Methods of research applied to the solution of problems in all fields of nursing.
- 530 Advanced Concepts in Maternal and Child Health and Implications for Nursing (3)** **Murray**
Consideration of changing philosophy in maternal and child care; factors influencing health; ways of meeting health needs; role of the nurse in solution of related problems. Prerequisite, permission.
- 542 Seminar in Cardiovascular Nursing (3)** **Giblin**
Analysis of nursing problems of patients with cardiovascular conditions from the standpoint of the potential pathophysiology and the physical and emotional factors involved. Prerequisites, 430 (medical-surgical), 464, or permission.
- 570 Seminar in Clinical Research in Nursing (3)** **Hoffman**
Philosophy, problems of design; use of criterion measures in terms of patient care. Prerequisite, permission.
- 600 Research (*)** **Hoffman, Staff**
- 700 Thesis (*)** **Hoffman, Staff**

COLLEGE OF PHARMACY

Dean: JACK E. ORR, 102 Bagley Hall

The College of Pharmacy offers a program of graduate study encompassing a thorough education in the fundamentals and theories of the disciplines necessary for specialization in one of the pharmaceutical sciences; and a broad education in allied supporting sciences which will qualify the graduate to assume a place in teaching, research, manufacturing, or hospital pharmacy. The degrees of Master of Science and Doctor of Philosophy are offered.

The College of Pharmacy is accredited by the American Council on Pharmaceutical Education and is a member of the American Association of Colleges of Pharmacy.

Basic requirements for admission to graduate study in the pharmaceutical sciences are met by an undergraduate degree in pharmacy. Students with undergraduate majors in the biological or physical sciences may also be admitted, but they will be required to complete courses basic to their chosen field of study during their graduate careers. Applicants must demonstrate above-average scholastic ability and promise.

Undergraduates who have decided to pursue graduate work may expedite their programs by selection of pertinent electives. Although the choice of electives will vary with the identity of the student's selected field in the pharmaceutical sciences, it should be emphasized that graduate studies in the College of Pharmacy require adequate preparation in the physical and biological sciences, in mathematics, and in foreign language. Students who have not completed certain desired courses during their undergraduate work may be permitted to do so during their graduate programs.

Specialization is offered in pharmaceutical chemistry, pharmacognosy, pharmacy, and hospital pharmacy. Graduate study toward an advanced degree in pharmacology is directed by the Department of Pharmacology of the School of Medicine. The hospital pharmacy program may include a hospital pharmacy internship or residency if desired by the student.

Graduate programs of study vary with the specialization selected, and although they are flexible and are adapted to the needs of the individual student, certain general recommendations may be made. For majors in pharmacy and pharmaceutical chemistry, courses in physical chemistry (calculus is a prerequisite), biochemistry, qualitative organic chemistry, and statistical methods are basic to all programs, in addition to courses in the major fields. These may be supplemented by advanced courses in the physical or biological sciences.

For hospital pharmacy majors, courses in the basic health sciences including biochemistry, microbiology, and pharmacology are necessary in addition to the specialized courses in hospital pharmacy and manufacturing pharmacy.

For pharmacognosy majors, courses in organic chemistry, biochemistry, and plant physiology are basic to most programs. These are generally best supplemented in the biological areas by courses in plant anatomy, taxonomy, microbiology, and mycology. In the physical area, specialized courses in organic chemistry, analytical chemistry, and physical chemistry are utilized.

All graduate students are encouraged to pursue additional courses in the pharmaceutical sciences other than their fields of specialization. Specific recommendations based upon individual interests and information concerning courses may be obtained from the chairman of the department concerned or from the Dean, College of Pharmacy.

MASTER OF SCIENCE. The candidate must present at least 27 credits of course work, exclusive of thesis and nonthesis research. He must complete a research project, prepare an acceptable thesis (unless specifically excepted in a particular program), and pass a final examination. He must present a certificate of proficiency in one foreign language.

DOCTOR OF PHILOSOPHY. The candidate must present a minimum total of 56 credits of course work, exclusive of thesis and nonthesis research. The credits earned for the master's may be applied toward the doctor's degree. The candidate must pass a General Examination for admission to candidacy for the doctor's degree, complete a research project, prepare an acceptable thesis, and pass a Final Examination. The research for the doctor's degree must be done at the University of Washington (this does not apply to candidates beginning their graduate studies prior to September, 1958). The candidate must present a certificate of proficiency in two foreign languages (one in addition to the Master of Science requirement).

COURSES**PHARMACEUTICAL CHEMISTRY**

- 430 Inorganic Medicinal Products (3)** McCarthy, Orr
- 440, 441, 442 Organic Medicinal Products (3,3,3)** Fischer
- 480 Advanced Organic Medicinal Products Laboratory (3)** Huitric
- 497 Toxicology (3)** Fischer
- 511, 512, 513 Advanced Pharmaceutical Chemistry (3,3,3)** Krupski
pH determination and buffer systems, fluorometry, chromatography, ion exchange, and the use of various instruments for scientific investigations and vitamin determinations. (Offered every third year; offered 1961-62.)
- 520 Seminar (1, maximum 5)** Staff
Graduate students must attend seminars and make one formal presentation per year while in residence; 1 credit per year is allowed.
- 521, 522 Advanced Organic Medicinal Products (3,3)** Huitric
Application of integrated data from the physical and biological sciences to problems of chemotherapy, including transport of drugs to site of action, biotransformation of drugs, interaction of drugs with enzyme systems and recent advances in drug design. Prerequisites, Chemistry 357, 531, and Biochemistry 482, or permission. (Offered every other year; offered 1962-63.)
- 531, 532, 533 Plant Chemistry (3,3,3)** McCarthy
Alkaloids, volatile oils, steroids, and glycosides, including methods of isolation, proof of structure and configuration, and synthesis, with emphasis on materials of pharmaceutical interest. (Offered every third year; offered 1962-63.)
- 600 Research (*)** Staff
- 700 Thesis (*)** Staff

PHARMACOGNOSY

- 405 Advanced Pharmacognosy (3)** Tyler
- 406 Medicinal Plants (2)** Tyler
- 411 Hormones and Glandular Products (2)** Brady
- 412 Immunological Agents (2)** Brady
- 520 Seminar (1, maximum 5)** Staff
Graduate students must attend seminars and make one formal presentation per year while in residence; 1 credit per year is allowed.
- 581 Topics in Pharmacognosy (1, maximum 2)** Tyler
Discussions and readings of topics of current interest in the field of pharmacognosy. Subject matter changes from year to year. Prerequisite, reading knowledge of German.
- 600 Research (*)** Staff
- 700 Thesis (*)** Staff

PHARMACY AND PHARMACY ADMINISTRATION

- 420 Manufacturing Pharmacy (3)** Plein
- 473 Cosmetic Manufacturing (3)** Rising
- 483 Hospital Pharmacy (3-5)** Plein
- 520 Seminar (1, maximum 5)** Staff
Graduate students must attend seminars and make one formal presentation per year while in residence; 1 credit per year is allowed.
- 540 Pharmaceutical Emulsions (2)** Rising
Problems in the preparation of emulsions in pharmaceutical manufacturing. Prerequisites, Pharmaceutical Chemistry 239 and Chemistry 357, or equivalent.
- 550 Solvents and Solvent Extraction (2)** Plein
Theories of solvent extraction and the use of solvents applied to pharmaceutical manufacturing. Prerequisite, permission.
- 600 Research (*)** Staff
- 700 Thesis (*)** Staff

SCHOOL OF PUBLIC ADMINISTRATION

Acting Director: JOSEPH L. McCARTHY, 3 Administration Building

A graduate program of study and research intended to prepare selected groups of college graduates for professional careers in public administration and public affairs, and leading to the degree of Master of Public Administration, is offered through the School of Public Administration. Faculty members representing a variety of contributing academic disciplines cooperate in conducting the program.

Students wishing to pursue study and research in the School of Public Administration must be officially admitted to the Graduate School and to the School itself. A broad undergraduate education, emphasizing the basic, social sciences, is desirable preparation for the program of the School, which is directed toward the development of the generalist in administration and public affairs, rather than of the research or technical specialist. Primary emphasis in instruction is upon policy formation, administration theory, the sociology of organizations, public management, the economics of public activity, and public law. For students interested in local government administration, a special field of local affairs is offered. These students may also gain valuable experience through participation in the activities of the Institute of Public Affairs, the Bureau of Government Research and Services, and other units of the University. The program for the Master of Public Administration degree is two years in duration, with a summer internship between the first and second years.

For additional information please communicate with Prof. George A. Shipman, 208B Smith Hall.

SCHOOL OF SOCIAL WORK

Dean: VICTOR I. HOWERY, 102 Social Work Hall

The School of Social Work offers a two-year, six-quarter program leading to the professional degree of Master of Social Work. The professional program is accredited by the Council on Social Work Education. It provides an educational experience which has been designed to prepare students:

- a. To help individuals, groups, or communities with what are to them unsatisfying social situations, or with what are to society unsatisfactory social situations. These are social situations where:
 - (1) An individual, group, or community is dissatisfied with his or its performance.
 - (2) An individual, group, or community violates explicitly stated requirements of society.
- b. To expand the knowledge upon which social work practice is based.
- c. To record and impart social work knowledge pertinent to social welfare.

During the course of study, students may emphasize an interest in social case work, social group work, social community organization, social agency administration, or social research. Among the areas of practice for which students are prepared by completion of the course of study are: adoptions, foster home care, institutional care, child protection, child guidance, family counseling, probation and parole, medical social work, school social work, public assistance service, community planning, community center work, and social group work programs.

MASTER OF SOCIAL WORK. Requirements for the degree include completion of the prescribed curriculum, a minimum of three quarters of residence at this School, the equivalent of field work in six quarters, and completion of either an individual thesis or a research project.

COURSES

- 300 Survey of Social Service Programs (3)** **Lawrence, Staff**
- 391 Supervised Study (2-6, maximum 6)** **Lawrence**
- 400 Field of Social Welfare (5)** **Lawrence, Parsons**
- 401 Principles of Interviewing (2)** **Lawrence, Reiss**
- 502 Social Welfare Organization (2)** **Parsons, Smith**
Historical origins of concepts, policies, and social welfare institutions, critical analysis of current public and private programs at all jurisdictional levels; use of social welfare concepts in planning.
- 503 Social Welfare Organization (2)** **Parsons, Smith**
Historical origins of concepts, policies, and social welfare institutions, critical analysis of current public and private programs at all jurisdictional levels; use of social welfare concepts in planning.
- 504 Social Welfare Organization (2)** **Parsons, Smith**
Historical origins of concepts, policies, and social welfare institutions, critical analysis of current public and private programs at all jurisdictional levels; use of social welfare concepts in planning.
- 508 Basic Values and Concepts in Social Work Method (2)** **Abrahamson, Maier**
An identification and analysis of basic value concepts and principles underlying social case work, social group work, and social community organization practice.
- 509 Readings in Social Work (*, maximum 6)** **Staff**
Prerequisite, permission.
- 510 Social Case Work (2)** **Abrahamson, Gronewold, Reiss**
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 (2)** **Abrahamson, Gronewold, Reiss**
Continuation of generic case-work theory, with emphasis on diagnosis and case-work treatment. Prerequisite, 510.
- 512 Social Case Work (2)** **Abrahamson, Gronewold, Reiss**
Elaboration and intensification of basic case-work concepts and their application in practice to various types of agencies. Prerequisite, 511.
- 515 Field Instruction (4-8, maximum 12)** **C. Macdonald, Staff**
Prerequisite, permission.
- 520 Seminar (*, maximum 6)** **Staff**
Prerequisite, permission.
- 521 Social Group Work (2)** **Maier, Walter**
Professional social group work as a method and process; objectives, techniques, skills, and media of group work method, and criteria for evaluation of results. Prerequisite, permission.
- 522 Social Group Work (2)** **Maier, Walter**
Continuation of social group work study with emphasis on process in groups and identification of group goals.
- 523 Social Group Work (2)** **Maier**
Continuation of study in social group work with emphasis on method, skill, and analysis of the professional role.
- 524 Advanced Social Group Work (2)** **Maier, Walter**
Continued intensive study on social group work method with emphasis on the utilization of program media and the concept of program planning process.
- 525 Advanced Social Group Work (2)** **Maier, Walter**
Continued intensive study on social group work method with emphasis on structuring group situations, and application of the method to institutional settings.
- 526 Advanced Social Group Work (2)** **Maier, Walter**
Continued intensive study of social group work method with emphasis on the integration of prerequisite course content and the analysis of issues and trends in social group work practice.
- 530 Advanced Social Case Work (2)** **Abrahamson, Hunt, Reiss**
Intensive study of the case-work process to deepen and broaden the caseworker's knowledge and understanding of the dynamics of human behavior and to enable him to develop greater skill in interviewing. Prerequisite, permission.
- 531 Advanced Social Case Work (2)** **Abrahamson, Hunt, Reiss**
Continuation of intensive study of case material, with emphasis on sound direction in case-work treatment. Prerequisite, 530.

- 532 Advanced Social Case Work (2)** **Abrahamson, Hunt, Reiss**
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.
- 533 Trends in Social Case Work (2)** **Abrahamson, Hunt, Reiss**
Generic and differential factors in understanding and utilizing various administrative settings in social case-work practice. Study of developments and trends in social case-work practice. Prerequisite, permission.
- 534 Trends in Social Case Work (2)** **Abrahamson, Hunt, Reiss**
Continuation of 533. Prerequisite, permission.
- 535 Advanced Field Instruction (4-8, maximum 12)** **C. Macdonald, Staff**
Prerequisite, 515.
- 556 Social Aspects of Illness and Disability (2)** **R. Macdonald**
Physical growth and change of the individual as correlated with factors of emotional and social development; consideration of specific medical problems. Prerequisite, permission.
- 557 Social Work with Sick, Disabled, or Handicapped Persons** **R. Macdonald**
Application of select behavioral science concepts to social work practice with persons who are ill, handicapped, or disabled. Prerequisite, 556.
- 570 Administration of Social Agencies (2)** **Parsons**
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 Social Community Organization (2)** **Walter**
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.
- 573 Social Welfare Planning Process (2)** **Walter**
An examination of the process of promoting and sustaining an adjustment between social welfare resources and social welfare needs. Analysis of personal and social factors in specific community organization efforts and the nature of the professional worker's participation in them. Discussion based upon records of specific community situations. Prerequisite, 572.
- 580 Public Welfare (2)** **Parsons**
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.
- 586 Statistics in Social Work (2)** **Staff**
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 Welfare (2)** **Gronewold**
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.
- 590 Social Work Research (2)** **Northwood, Stutsman**
Methods used in the study of social work practice, program evaluation, and community needs and resources. Study of current social work research field practice through group research projects. Presentation and evaluation of research projects currently carried by students in the research program. Prerequisite, second-year graduate standing.
- 591 Social Work Research (2)** **Northwood, Stutsman**
Continuation of study of research methods. Prerequisite, 590.
- 592 Social Work Research (2)** **Northwood, Stutsman**
Continuation of study of research methods. Prerequisite, 591.
- 593-594-595 Field Practice in Research (2-2-2)** **Staff**
Field practice in a group project in lieu of an individual thesis. Includes development of research design, collection of data, tabulation and analysis, and report writing. Prerequisite, 590 or its equivalent.
- 700 Thesis (*)** **Staff**
- 702 Degree Final (0)**
Limited to students completing a nonthesis degree program.

BULLETIN • UNIVERSITY OF WASHINGTON



**CENTER FOR
GRADUATE STUDY AT HANFORD**
RICHLAND, WASHINGTON
1961-62

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes three general bulletins; bulletins of the colleges and schools; two Summer Quarter bulletins; the bulletin of the Center for Graduate Study at Hanford; and bulletins of the Division of Correspondence Study and the Division of Evening Classes.

INTRODUCTION TO THE UNIVERSITY, one of the general bulletins, is especially prepared for new and prospective students. It lists all the University curricula, with their admission requirements, and presents information on other phases of student life, including services for students, student activities, and expenses. UNIVERSITY RULES AND REGULATIONS, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as registered students. HANDBOOK OF SCHOLARSHIPS, the third general bulletin, lists the various scholarships available.

Curricula, courses, and scholarship requirements in each field of study are described in the college and school bulletins. Each of these bulletins also discusses services, organizations, and expenses as they relate to students in the particular college or school.

Requests for copies of any of the bulletins should be addressed to the Addressograph Service.

General Bulletins

HANDBOOK OF SCHOLARSHIPS (RESTRICTED DISTRIBUTION)

INTRODUCTION TO THE UNIVERSITY

UNIVERSITY RULES AND REGULATIONS (FOR REGISTERED STUDENTS ONLY)

Bulletins of the Colleges and Schools

COLLEGE OF ARCHITECTURE AND URBAN PLANNING

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF BUSINESS ADMINISTRATION

SCHOOL OF DENTISTRY

COLLEGE OF EDUCATION

COLLEGE OF ENGINEERING

COLLEGE OF FISHERIES

COLLEGE OF FORESTRY

GRADUATE SCHOOL

SCHOOL OF LAW

SCHOOL OF MEDICINE

SCHOOL OF NURSING

COLLEGE OF PHARMACY

SCHOOL OF SOCIAL WORK

Other Bulletins

SUMMER QUARTER SPECIAL FEATURES

SUMMER QUARTER

CENTER FOR GRADUATE STUDY AT HANFORD

CORRESPONDENCE STUDY

EVENING CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON

General Series No. 969

August, 1961

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CALENDAR

AUTUMN, WINTER, AND SPRING QUARTERS
(Autumn Quarter, 1961, through Summer Quarter, 1962)

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

AUTUMN QUARTER, 1961

REGISTRATION PERIOD

SEPT. 5-9 Registration *by appointment only* for all students. See page 13 for further information on registration.

ACADEMIC PERIOD

SEPT. 11 Instruction begins
Nov. 23 Thanksgiving holiday
DEC. 1 Instruction ends

WINTER QUARTER, 1962

REGISTRATION PERIOD

DEC. 4-9 Registration *by appointment only* for all students. See page 13 for further information on registration.

ACADEMIC PERIOD

DEC. 11 Instruction begins
DEC. 25-29 Christmas holiday
MARCH 9 Instruction ends

SPRING QUARTER, 1962

REGISTRATION PERIOD

MARCH 12-17 Registration *by appointment only* for all students. See page 13 for further information on registration.

ACADEMIC PERIOD

MARCH 19 Instruction begins
MAY 30 Memorial Day holiday
JUNE 8 Instruction ends

SUMMER QUARTER, 1962

REGISTRATION PERIOD

JUNE 11-16 Registration *by appointment only* for all students. See page 13 for further information on registration.

ACADEMIC PERIOD

JUNE 18 Instruction begins
JULY 4 Independence Day holiday
AUG. 17 Instruction ends

ADMINISTRATION

BOARD OF REGENTS

JOSEPH DRUMHELLER, <i>President</i>	Spokane
MRS. A. SCOTT BULLITT, <i>Vice-President</i>	Seattle
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DON H. WAGEMAN, <i>Treasurer</i>	

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FREDERICK P. THIEME, Ph.D.	<i>Provost of the University</i>
GLENN H. LEGGETT, Ph.D.	<i>Vice-Provost of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
HAROLD A. ADAMS, M.S.	<i>Director of Admissions</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>

GRADUATE SCHOOL ADMINISTRATION

JOSEPH L. MCCARTHY, Ph.D., <i>Dean of the Graduate School</i>
HENRIETTA WILSON, M.A., <i>Assistant to the Dean</i>
KERMIT B. BENGTSON, Ph.D., <i>Director of the Center for Graduate Study</i> <i>(at Richland)</i>
HELEN BRINCK, <i>Administrative Assistant to the Director (at Richland)</i>

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JOSEPH L. MCCARTHY, <i>Chairman</i>	FRED J. MUELLER, <i>Accounting and</i> <i>Finance</i>
EDWARD E. BOSTETTER, <i>English</i>	BLAKE D. MILLS, <i>Mechanical</i> <i>Engineering</i>
BARNET BASKERVILLE, <i>Speech</i>	ALLEN M. SCHER, <i>Physiology and</i> <i>Biophysics</i>
WILLIAM T. SIMPSON, <i>Chemistry</i>	SAUL SCHLUGER, <i>Dentistry</i>
J. RICHARD HUBER, <i>Economics</i>	

HANFORD INTER-UNIVERSITY COMMITTEE

JOSEPH L. MCCARTHY, <i>Chairman, Dean of the Graduate School, University</i> <i>of Washington</i>
DONALD S. FARNER, <i>Dean of the Graduate School, Washington State University</i>
HENRY P. HANSEN, <i>Dean of the Graduate School, Oregon State University</i>

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CARL B. ALLENDOERFER, <i>Mathematics</i>	W. RYLAND HILL, <i>Electrical Engineering</i>
ALBERT L. BABB, <i>Chemical Engineering</i>	B. T. MCMINN, <i>Mechanical Engineering</i>
PAUL C. CROSS, <i>Chemistry</i>	RALPH W. MOULTON, <i>Chemical Engineering</i>
AUSTIN V. EASTMAN, <i>Electrical Engineering</i>	DRURY A. PIFER, <i>Mineral Engineering</i>
RONALD GEBALLE, <i>Physics</i>	KERMIT B. BENGTSON, <i>Director of the Center for Graduate Study (at Richland) (ex officio)</i>

FACULTY OF THE CENTER FOR GRADUATE STUDY

The date following the name indicates the beginning of service at the Center.

- Alkire, George (1951)
B.S., 1942, Walla Walla College; M.S., 1944, Oregon; Ph.D., 1948, Ohio State
- Allen, Carol Wesley (1959)
B.S., 1953, M.S., 1955, Ph.D., 1958, Purdue
- Bair, William J., Jr. (1955)
B.A., 1949, Ohio Wesleyan; Ph.D., 1954, Rochester
- Batch, John Martin (1959)
B.S., 1949, M.S., 1950, Montana State; Ph.D., 1955, Purdue
- Bierlein, Theo Karl (1959)
B.S., 1945, Ph.D., 1950, Washington
- Brouns, Richard John (1952)
B.S., 1942, St. John's (Minnesota); M.S., 1944, Ph.D., 1948, Iowa State
- Burger, Leland Leonard (1950)
B.A., 1939, Wyoming; Ph.D., 1948, Washington
- Bush, Spencer Harrison (1954)
B.S., 1948, M.S., 1950, Ph.D., 1953, Michigan
- Carter, John Lemuel, Jr. (1955)
B.A., 1941, Baylor; M.Sc., 1943, Brown; Ph.D., 1953, Cornell
- Dean, Robert Yost (1952)
B.A., 1942, Willamette; M.S., 1946, Ph.D., 1952, California Institute of Technology
- Finnigan, Jerome Woodruff (1959)
B.S., 1950, Northwestern; M.S., 1953, Idaho; Ph.D., 1958, Oregon State
- Foster, Duncan Graham, Jr. (1957)
B.A., 1951, Swarthmore College; Ph.D., 1956, Cornell
- Fryar, Robert Marshall (1950)
B.S., 1947, Idaho; M.S., 1948, Ph.D., 1950, Purdue
- Fullmer, George Clinton (1960)
B.S., 1947, Washington
- Harvey, Roland Arthur (1954)
B.S., 1950, Oregon State
- Heacock, Harold Wendall (1961)
B.S., 1950, M.S., 1958, Oregon State
- Jaech, John Lewis (1954)
B.A., 1952, M.S., 1953, Washington

- Johnson, Benjamin Martineau, Jr. (1957)
B.Ch.E., 1952, Cornell; Ph.D., 1956, Wisconsin
- Lang, Linton William (1956)
B.S., 1941, Washington; M.S., 1953, Idaho
- Leggett, Robert Dean (1960)
B.S., 1952, M.S., 1952, Ohio State; Ph.D., 1959, Carnegie Institute (Pennsylvania)
- Lindenmeier, Charles William (1961)
B.S., 1952, Colorado State; Ph.D., 1960, Cornell
- Locke, Gardner Lincoln (1955)
A.B., 1942, A.M., 1947, Stanford
- Love, William Junior (1953)
B.S., 1944, M.S., 1948, Colorado; Ph.D., 1952, Illinois
- Ludwick, Jimmy Donald (1961)
B.S., 1953, College of Idaho; M.S., 1956, Ph.D., 1958, Purdue
- Merckx, Kenneth Ring (1956)
B.S., 1950, Northwestern; M.S., 1951, Ph.D., 1953, Stanford
- Minor, James Ernest (1959)
B.S., 1941, Washington State; Ph.D., 1950, Washington
- Morrell, Dwight Lyman (1957)
B.S., 1954, M.S., 1956, Brigham Young
- Morrey, John Rolph (1960)
B.A., 1954, Brigham Young; Ph.D., 1958, Utah
- Myers, Ira Thomas (1960)
B.S., 1948, M.S., 1952, Ph.D., 1958, Washington State
- Nichols, Paul Frothingham (1959)
B.S., 1953, College of William and Mary; Ph.D., 1958, Duke
- Nicholson, Wesley Lathrop (1956)
B.A., 1950, M.A., 1952, Oregon; Ph.D., 1955, Illinois
- Nielsen, Julian Moyes (1955)
B.S., 1942, Wyoming; M.A., 1947, Stanford; Ph.D., 1951, Southern California
- Nightingale, Richard Edwin (1956)
B.A., 1949, Whitman; Ph.D., 1953, Washington State
- Nilson, Roy (1959)
B.A., 1950, Whitman; M.S., 1952, Ph.D., 1956, Illinois
- Paul, Ronald Stanley (1952)
B.S., 1947, M.S., 1949, Ph.D., 1951, Oregon
- Platt, Allison M. (1952)
B.S., 1942, Carnegie Institute of Technology; M.S., 1950, Agricultural and Mechanical College of Texas
- Riches, John William (1954)
B.S., 1947, Washington State; M.S., 1949, Ph.D., 1951, California
- Roesch, William Carl (1951)
B.A., 1945, Miami; Ph.D., 1949, California Institute of Technology
- Schmid, Loren Clark (1961)
B.S., 1953, M.S., 1954, Ph.D., 1958, Michigan
- Schwendiman, Lysle Christian (1960)
B.S., 1939, Idaho
- Tobin, John Charles (1958)
B.S., 1949, M.S., 1950, Ph.D., 1957, Michigan

Triplett, John Roger (1954)

B.S., 1947, M.S., 1948, Kansas

Wickes, Thomas A., Jr. (1957)

B.A., 1952, Montana State; M.S., 1955, Ph.D., 1957, Purdue

Wiggins, Alvin Dennie (1958)

A.B., 1951, M.A., 1953, Ph.D., 1957, California

Wilson, Archie Spencer (1954)

B.S., 1946, Iowa State; M.S., 1950, Ph.D., 1951, Chicago

Wood, Donald Eugene (1959)

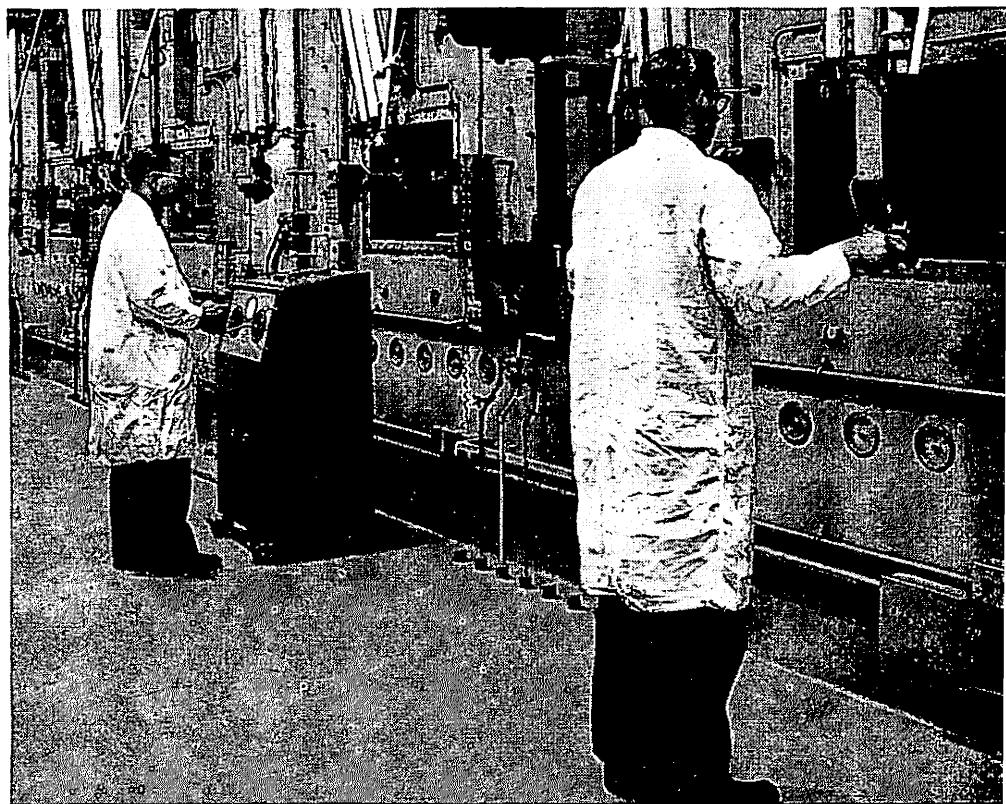
B.S., 1951, Nevada; M.S., 1953, Ph.D., 1956, Northwestern

Members of the University's faculty in Seattle who teach courses in Richland are listed in the bulletin of the appropriate University College or School.

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.



GENERAL INFORMATION

GENERAL INFORMATION

THE GENERAL ELECTRIC COMPANY, under prime contract with the Atomic Energy Commission, operates the facility known as the Hanford Works in Eastern Washington. This World War II development provides employment for about 8,000 persons in the Tri-City (Richland-Kennewick-Pasco) area. To meet the educational needs of this group, a school was established in 1946 known as the General Electric School of Nuclear Engineering. The University of Idaho, Oregon State University, Washington State University, and the University of Washington recognized this school and allowed transfer of earned credits.*

This school was transferred to the administration of the University of Washington as of July 1, 1958, and has since been operated in cooperation with Washington State University and Oregon State University as the Center for Graduate Study at Hanford. While programs offered through the Center are oriented to serve those working toward graduate degrees, it is stressed that enrollment is not contingent upon the intent to secure a degree or a graduate degree and is open to any person, irrespective of employment, who can meet the academic prerequisites for enrollment. Most classes are held after hours and enrollment usually will be inconvenient for persons not having gainful employment in the Tri-City area. Employment at the Hanford Atomic Products Operation generally is unavailable to foreign nationals.

Credits earned at the Center for Graduate Study may be applied, under certain conditions, toward degree programs on the respective campuses of the three participating institutions. *One specific condition is that each student intending to actively pursue a full course of study leading to an advanced degree have his entire educational plan approved by the appropriate institution at an early date. This should be done as soon as a student has formulated definite plans, and must be done prior to completion of 12 quarter credits of course work at the Center.* This bulletin is intended to provide information regarding the Center for Graduate Study only. For information regarding degree requirements, etc., the student should consult the appropriate bulletin of the participating institution of his choice. Such bulletins are available in the Center for Graduate Study Office.

All three participating institutions require that, with certain exceptions, each master's degree candidate spend a minimum of one quarter or one semester in full-time resident study on the home campus. Students working toward the degree of Doctor of Philosophy must plan to fulfill on the home campus of the institution of their choice the residence requirement specified for this degree by that institution.

*The University of Idaho participated in the program until June, 1960.

ENROLLMENT AND ADMISSION

Any student enrolling for credit toward an advanced degree must institute proceedings for admission as a regular graduate student in the participating institution of his choice. Formal admission to a participating institution, except in the case of graduate students in Business Administration and Librarianship, must be obtained prior to completion of a course if credit for that course toward an advanced degree will ever be desired; such credit cannot be granted at a later date for courses completed prior to admission to the graduate school of a participating institution. *Students in Business Administration and Librarianship must be formally admitted to the Graduate School prior to the time of registration. A minimum of one month should be allowed for processing of applications for admission to the Graduate School of the University of Washington. New students in all disciplines are encouraged and advised to complete their admission to the graduate school of the participating institution of their choice prior to the time of actual registration for courses.*

In general, properly qualified students who are graduates of the University of Washington or of other colleges or universities of recognized rank may be admitted to the Graduate School.

The primary criterion for admission to the Graduate School is the applicant's apparent ability, as decided by the University, to progress satisfactorily in a graduate degree program. The applicant's scholastic record is of major importance and, ordinarily, the applicant should have at least a B or a 3.00 grade-point average for the courses taken during the junior and senior years of his undergraduate study. He should also show completion of an undergraduate program appropriate as preparation for graduate study in his chosen field. Consideration will also be given to other evidence which may be available. In some cases, an applicant may give promise of making satisfactory progress in graduate work although his undergraduate grade average may be less than B or 3.00 or his undergraduate preparation may be inadequate; in these cases and other unusual cases an applicant may be admitted to the Graduate School on the favorable written recommendation of the appropriate executive officer with approval by the Dean of the Graduate School. The University will be able to grant admission only if sufficient faculty and facilities are available to provide for the applicant's program.

Admission to the Graduate School provides the opportunity for continuance of graduate study and research only for the period during which the graduate student maintains satisfactory performance and progress toward completion of his graduate degree program. The Dean of the Graduate School may alter the status of a graduate student on the written recommendation of the appropriate executive officer or the chairman of the supervisory committee.

Applications for admission must be substantiated by certain credentials and reports submitted in accordance with University rules and practices. All applicants must submit *two* official transcripts of all undergraduate work and of any graduate work.

It is the student's responsibility to make certain that complete credentials covering all his previous college education are submitted to the University. To be official they must be forwarded by the registrars of institutions previously attended, direct to the Registrar of the University. These records become part of the official file and cannot be returned to the student nor duplicated for any purpose whatsoever, as the University does not issue or certify copies of transcripts from other institutions.

Prospective enrollees desiring to work toward graduate degrees are urged to consult a catalog or bulletin from the appropriate institution in order to be certain of meeting admission requirements.

Enrollment in Center for Graduate Study courses without credit may be permitted provided the prospective enrollee is deemed to have the proper background, and provided no exclusion of students desiring to take the course for credit would

result. Students enrolling without credit will be graded and such enrollment is in every way similar to enrollment with credit except that formal admission on the home campus of one of the participating institutions is not necessary.

Auditors, defined as persons attending lectures but not receiving a grade or participating in any laboratory work, problems, or examinations, will normally be accepted after accommodation of all others.

TUITION

Tuition is at the rate of \$35.00 per quarter per course for all courses. The fee schedule is the same regardless of whether the course is taken for credit, without credit, or audited. Veterans' benefits may be applied, if available to the individual, and a tuition refund plan is available to General Electric employees which provides for refund of half the tuition fee under certain conditions. A similar plan is available to Atomic Energy Commission employees.

REGISTRATION

All registration is taken care of at the Center for Graduate Study Office, located at 1112 Lee Boulevard, Richland (telephones Whitehall 5-6523 or Whitehall 2-1111, Ext. 6-5241).

The Center Office is normally open from 8 a.m. to 12 noon and from 1 to 4:30 p.m. Monday through Friday during the entire year. Registration may be accomplished at the Center Office in person *by appointment only* during special registration weeks designated in the calendar. A limited number of registration appointments are available outside of regular office hours during the special registration weeks for those who find it difficult to arrange for an appointment during regular hours. It is recommended that students who desire counselling or who have other registration problems plan to register in person, but a system of mail registration has been established for the convenience of those whose registration will be routine and its use is recommended. Advance registration without penalty is possible for those who find it necessary to be out of town during a registration week. Registration appointments or material for mail registration may be obtained by writing or calling the Center Office at any time within the three-week period immediately preceding a registration week.

Registration may, in addition, be accomplished during the first week of classes, but a penalty of \$5.00 will be assessed for registration during this time. Registration will be closed after the first week of classes.

Full payment of tuition at the rate of \$35.00 per course is due at the time of registration and must be made before registration is complete. Tuition may be paid by cash or check. All tuition fees for a course will be refunded if a course is cancelled by the Center for Graduate Study because of insufficient registration. All fees will also be refunded if a student officially withdraws from a course at any time prior to the end of the first week of instruction. Fifty per cent of the fees paid will be refunded if a student officially withdraws between the end of the first week and the end of the fourth week of instruction. No refunds will be made after the first four weeks except in the case of entry into military service.

In the case of nonmilitary withdrawals taking place more than four weeks after the start of a quarter, a grade will be issued at the time of withdrawal indicating the progress of the student up to that time, but the grade will not be considered an official course grade.

The normal course load is considered to be 3 quarter credits, but up to 6 quarter credits may be carried with permission of the Director.

TEXTBOOKS

All students are expected to obtain personal copies of the text chosen by the instructor. All textbooks are available locally in Richland. Other texts for reference are kept on the school reference shelf in the Center library.

CONDUCT OF CLASSES

All classes are normally held in the Center for Graduate Study Building, 1112 Lee Boulevard in Richland. Most classes meet one evening a week from 7 to 9:30. The meeting day of each class is announced at registration time, but may be changed by the mutual consent of the instructor, the class, and the Director of the Center.

COURSE INFORMATION

GENERAL

This bulletin has been prepared for use during the academic year 1961-62, but tentative course offerings for an additional two years have also been included in order that students may better plan their programs of study. It must be understood, however, that offerings listed beyond the academic year 1961-62 are tentative and for planning purposes only.

A student enrolled at the Center, who has progressed to the point where he is ready to undertake thesis or other research work, should discuss this need with the executive officer of the appropriate department on the home campus. It is the policy of the University to permit under certain conditions the carrying on of thesis and other research work at Hanford.

COLLEGE OF ARTS AND SCIENCES

CHEMISTRY

- R355 Physical Chemistry (4)** **Burger**
Introduction to quantum mechanics, statistical mechanics, theory of gases, thermodynamics—first and second law. Prerequisites, general chemistry, analytic geometry and calculus, college physics, or permission. (Offered Autumn, 1961.)
- R356 Physical Chemistry (3)** **Morrey**
Thermodynamics—second law, continued: phase equilibria, thermodynamic properties of chemical substances, chemical equilibria, statistical thermodynamics, solutions. Prerequisite, R355. (Offered Winter, 1962.)
- R357 Physical Chemistry (3)** **Burger**
Transport and rate processes, reaction rates in gases, the solid state, atomic and molecular spectra, surface chemistry. Prerequisite, R356. (Offered Spring, 1962.)
- R415 The Chemical Bond (3)** **Wilson**
Electron structure of the elements and the chemical bond, complex ions. Prerequisite, undergraduate physical chemistry or permission. (Offered Autumn, 1961.)
- R416 Inorganic Chemistry (3)** **Wilson**
Chemistry of the elements and their compounds in relation to the periodic system. Prerequisite, R415. (Offered Winter, 1962.)
- R471 Nuclear Chemistry (3)** **Nielson**
History of the study of radioactivity; the atomic nucleus; the production, nature, and energetics of nuclear reactions; and the equations of radioactive decay and growth. Prerequisite, physical chemistry. (Tentatively offered Autumn, 1962.)
- R472 Nuclear Chemistry (3)** **Nielson**
Nuclear states and the systematics of radioactive processes, interactions of radiation with matter, radiation chemistry, hot-atom chemistry, and the chemistry of artificially produced elements. Prerequisite, R471. (Tentatively offered Winter, 1963.)
- R511 Advanced Inorganic Chemistry (2)** **Wilson**
Acid base theory; electron transfer reactions; complex ion reactions and stabilities. Prerequisite, R416 or permission. (Offered Spring, 1962.)

- R512 Advanced Inorganic Chemistry (2)** **Wilson**
Halogens, less familiar metals, chelate, clathrate, interstitial and nonstoichiometric compounds; other selected topics. Prerequisite, R416 or permission. (Offered Autumn, 1962.)
- R514 Radiochemistry (3)** **Ludwick**
Detection and measurement of nuclear radiation, statistical nature of radioactivity measurements, techniques for the study of radionuclides, radioisotopes as chemical tracers, cosmic ray phenomena. Prerequisite, R472. (Tentatively offered Spring, 1963.)
- R525 Advanced Chemical Analysis (3)** **Brouns**
Theory and basic principles of modern chemical analysis. Precipitation reactions, application of organic precipitants, separations by vaporization and extraction, ion exchange methods, electrometric methods, and volumetric analysis. Special topics include isotopic tracer methods and the analysis of gases and organic compounds. Prerequisite, degree in chemistry or chemical engineering, or permission. (Tentatively offered Autumn, 1962.)
- R526 Advanced Instrumental Analysis (3)** **Alkire**
Theoretical principles of instrumental methods used as research tools in the fields of chemistry, physics, biophysics, metallurgy, and engineering. Topics covered include emission and absorption spectroscopy, X-ray fluorescence, magnetic resonance, chromatography, mass spectrometry, and radiation detection. Prerequisite, degree in chemistry, physics, or chemical engineering. (Tentatively offered Winter, 1963.)
- R550, R551, R552 Advanced Physical Chemistry (3,3,3)** **Morroy**
Thermodynamics and statistical mechanics, atomic and molecular structure, kinetic theory, and chemical kinetics. Prerequisite, undergraduate course in physical chemistry. (Offered 1963-64.)
- R562 Chemical Crystallography (3)** **Bierlein, Minor**
Crystals; diffraction of X rays, electrons, and neutrons; determination of structure of crystals. Prerequisite, degree in chemistry, physics, or engineering. (Tentatively offered Winter, 1963.)
- R572 Chemical Crystallography (3)** **Bierlein, Minor**
Texture, growth, and diffraction of crystals; imperfections. Prerequisite, R562. (Tentatively offered Spring, 1963.)
- R575 Electrochemistry (3)** **Burger**
Electrical units and electrolytic conductance, theory of solutions, ion migration, activity coefficients, modern theories of acids and bases, electrolytic deposition and the mechanisms of corrosion, electro-kinetic phenomena. With its widespread application to the use and protection of materials used in process design, this course is pertinent to many problems in engineering as well as in chemistry. Prerequisite, undergraduate thermodynamics or permission. (Tentatively offered Spring, 1963.)
- R576 Solutions, Solvents, and Solvent Extraction (3)** **Burger**
A physical-chemical review of the nature of solutions. Chemical bonds, molecular structure, molecular and ionic complexes, nonaqueous solvents and the distribution between phases. In addition to the thermodynamic approach to solvent extraction, some special problems concerning kinetics and interfacial phenomena will be briefly considered. Prerequisite, permission. (Offered Winter, 1962.)

MATHEMATICS

- R321, R322 Differential Equations (3,3)** **Wiggins**
Elementary methods of solution, linear differential equations, systems of linear differential equations, solutions in series, some classical equations. Prerequisite, differential and integral calculus. (Offered Autumn, 1961, and Winter, 1962. Tentatively offered Autumn and Winter, 1962, 1963.)
- R324, R325 Advanced Calculus (3,3)** **Nicholson**
Vectors, differential calculus of functions of several variables, vector differential calculus, integral calculus of functions of several variables, vector integral calculus, infinite series. Prerequisite, differential and integral calculus. (Offered Autumn, 1961, and Winter, 1962. Tentatively offered Autumn and Winter, 1962, 1963.)
- R326 Infinite Series and Related Topics (3)** **Nicholson**
Basic concepts of infinite sequences and series, uniform convergence, integration and differentiation of series, power series, infinite products, summation and numerical methods, summability, asymptotic expansions. Prerequisite, R325. (Offered Spring, 1962. Tentatively offered Spring, 1963.)
- R411, R412 Linear Algebra (2,2)** **Nicholson**
Linear vector spaces, linear transformations, matrices, determinants, linear products, spectral theory and diagonalization, quadratic forms. Prerequisite, differential and integral calculus. (Offered Autumn, 1961, and Winter, 1962.)
- R427, R428, R429 Topics in Applied Analysis (3,3,3)** **Wiggins**
R427: Elementary complex variable. Prerequisite, R325. (Offered Autumn, 1961. Tentatively offered Autumn, 1962.)
R428: Laplace transforms, boundary value problems, Fourier series, Bessel functions. Prerequisites, R321, R325. (Offered Winter, 1962. Tentatively offered Winter, 1963.)
R429: Legendre functions, curvilinear coordinates, calculus of variations. Prerequisite, R428. (Offered Spring, 1962. Tentatively offered Spring, 1963.)

- R485, R486, R487 Calculus of Probabilities (2,2,2)** **Wiggins**
 Fundamental concepts, combinatorial analysis, conditional probability, random variables, mathematical expectation, law of large numbers, important types of distributions, random walks, central limit theorem, discrete valued stochastic processes. Prerequisite, R412. (Offered 1961-62.)
- R491, R492, R493 Mathematical Statistics (2,2,2)** **Jaech**
 Fundamental concepts, sampling distributions, counted data, 1 and 2 population normal distribution statistics, linear regression, correlation, multiple regression, analysis of variance and covariance, inefficient statistics, non-parametric, sequential analysis. Prerequisite, R412 or permission. (Tentatively offered 1962-63.)
- R494, R495, R496 Design of Experiments (2,2,2)** **Jaech**
 Basic concepts, reduction of experimental error, randomization, Latin squares, randomized blocks, factorials, balanced incomplete designs, confounding, response surfaces. Prerequisite, R493. (Offered 1961-62.)
- R537, R538, R539 Methods of Mathematical Physics (2,2,2)** **Dean**
 Linear vector spaces, linear functionals, linear operators, Banach and Hilbert Spaces, introduction to spectral theory of operators, Green's functions, symbolic functions and operations, eigenvalue problems of ordinary and partial differential equations, integral equations. Prerequisites, R412, R427, R428, R429. (Tentatively offered 1962-63.)

PHYSICS

- R321 Introduction to Modern Physics (3)** **Paul**
 This course is primarily to introduce engineering graduates and graduates of scientific disciplines other than physics to the field of atomic, molecular, and nuclear phenomena. Brief review of classical physics, elementary kinetic theory, atomic structure of matter and electricity, introduction to quantum effects, and the nuclear atom. Prerequisites, college physics, and differential and integral calculus. (Offered Autumn, 1961. Tentatively offered Autumn, 1962.)
- R322 Introduction to Modern Physics (3)** **Paul**
 Physical foundations and interpretations of quantum mechanics, the wave mechanics description of the hydrogen atom and more complex atoms, molecular spectra, solid-state physics, relativity theory, and quantum electrodynamics. Prerequisite, R321. (Offered Winter, 1962. Tentatively offered Winter, 1963.)
- R323 Introduction to Modern Physics (3)** **Paul**
 Natural radioactivity, radioactive decay laws, Alpha decay, Beta decay, Gamma emission, nuclear fission and nuclear reactors, fusion reactions, cosmic radiation, high-energy particles, and nuclear force theories. Prerequisite, R322. (Offered Spring, 1962. Tentatively offered Spring, 1963.)
- R461 Introduction to Atomic and Nuclear Physics (3)** **Nilson**
 These courses (R461, R462, R463) are intended for physics majors and graduates in fields other than physics who require a rigorous treatment of this subject as preparation for more advanced graduate study in physics, particularly in nuclear physics and reactor theory. The first quarter covers the theory of relativity through a brief introduction to the general theory, basic postulates of quantum mechanics with examples from the free-particle and one-electron problems, radiation and radiative transitions, and the Pauli principle and atomic structure. Prerequisites, differential equations, undergraduates course in electricity and magnetism, or permission. (Tentatively offered Autumn, 1962.)
- R462 Introduction to Atomic and Nuclear Physics (3)** **Nilson**
 Atomic and molecular spectroscopy, quantum statistics, solid state physics, X rays, and basic nuclear properties. Prerequisite, R461. (Tentatively offered Winter, 1963.)
- R463 Introduction to Atomic and Nuclear Physics (3)** **Nilson**
 Radioactivity and nuclear stability, nuclear reactions, nuclear forces and structure, particles, cosmic radiation, and stellar energy. Prerequisite, R462. (Tentatively offered Spring, 1963.)
- R481, R482, R483 Introduction to Mathematical Physics (3,3,3)** **Lindenmeier**
 Linear vector algebra and vector calculus; continuum theory of solids and fluids; statistical mechanics and kinetic theory; boundary value problems in classical field theory; multipole series and Green's functions; special relativity and elementary quantum mechanics. Prerequisites, undergraduate courses in electricity and magnetism and properties of matter, or equivalent. (Offered 1961-62.)
- R505, R506 Advanced Mechanics (3,3)** **Triplott**
 Dynamics of a particle and of rigid bodies; generalized coordinates and Lagrangian theory; variational principles. Hamilton's equations of motion, vibration, and normal coordinates; relativistic dynamics. Prerequisites, Mathematics R427, R428, R429, or permission. (Tentatively offered Winter and Spring, 1963.)
- R513, R514, R515 Electricity and Magnetism (4,4,4)** **Foster**
 The properties of electric and magnetic fields as boundary value problems; applications of harmonic functions and conformal transformations; electrodynamics and electromagnetic waves in empty space and material media and in the presence of conducting boundaries; relativistic mechanics and the covariant four-dimensional formulation of electrodynamics; radiation, scattering, and dispersion. Prerequisite, R483 or permission. (Offered 1961-62.)

- R517, R518, R519 Quantum Mechanics (4,4,3)** **Carter**
 Historical and postulational foundations of quantum theory; quantization of simple systems; spin, perturbation theory, scattering, and relativistic quantum theory of particles. Prerequisite, R506 or permission. (Tentatively offered 1963-64.)
- R576 Selected Topics in Experimental Physics (*, maximum 6)**
 Prerequisite, permission.
- R578 Selected Topics in Theoretical Physics (*, maximum 6)**
 Prerequisite, permission.
- R581, R582, R583 Advanced Reactor Physics (3,3,3)**
 Advanced methods for the design analysis of nuclear reactors, with particular reference to mathematical and computational techniques. The course covers linear operator equations, variational principles, perturbation theory, machine computation, and numerical methods; the transport equation, slowing down, and diffusion models; and applications to lattice parameters, reactor dynamics, and fuel cycle analysis. Prerequisites, Nuclear Engineering R506 and Mathematics R428, or equivalent. (Tentatively offered 1963-64.)

COLLEGE OF BUSINESS ADMINISTRATION

The graduate program in Business Administration is staffed largely by members of the University faculty in Seattle who travel to Richland each week to conduct their classes. Students contemplating work toward a Master of Business Administration degree should apply for admission to the Graduate School as far in advance as possible of the quarter in which they wish to begin their studies in order to permit the Center and the College of Business Administration to take their backgrounds into consideration when scheduling Richland courses.

ACCOUNTING

- R522 Seminar in Cost Accounting (3)** **Storey†**
 Critical examination of theories of managerial accounting. Differentiation of objectives of managerial and financial accounting, joint costs, absorption costing, direct costing, standard costing, distribution costing, techniques of analysis of cost data, including differential cost analysis. Prerequisite, 330 and permission. (Offered Summer, 1962.)
- R592 Seminar in Administrative Controls (3)** **Berg†, Storey†**
 The use of accounting and statistics by management in the exercise of its planning and controlling functions; e.g., forecasting, budgets, standard costs, analysis of cost variations. Controllership as a function in the business enterprise. Prerequisites, 230 and permission. (Offered Autumn, 1961, and Summer, 1962.)

FINANCE

- R300P Business Finance (5)**
 The role of financial institutions in meeting short-, intermediate-, and long-term credit needs of businesses and individuals. An accelerated course, for graduate students only, to remove background deficiency in 320 and 350. Prerequisites, postgraduate standing with a senior year grade-point average of 3.00 and permission. (Offered Autumn, 1961.)
- R521 Seminar in Money Markets (3)** **Johnson†**
 Supply and demand for funds in short-term and long-term money markets; analysis of the influence of the money supply, bank reserves, legal restrictions, institutional portfolio policies, and changing needs and instruments of corporation finance. An objective of this seminar is to develop ability to analyze and appraise current money market developments. Prerequisite, permission. (Offered Winter, 1962.)
- R522 Seminar in Corporation Finance (3)** **Mueller†**
 Emphasizes selected contemporary problems and methods, internal and external, in solving corporate financial problems and indicating financial trends. Extensive reading and discussion is required in designated areas. Prerequisite, permission. (Offered Spring, 1962.)

MARKETING

- 522 Advanced Marketing Concepts (3)**
 The interdisciplinary exchange of ideas related to marketing is studied. New marketing theories and evolving concepts of marketing management are examined and critically appraised. Prerequisites, 520 or 521, and permission. (Offered Spring, 1962.)

†Member of the University faculty in Seattle.

POLICY AND ADMINISTRATION

- R575 Human Aspects of Administration (3)** **Barnowe†**
An examination of present-day thinking, points of view, and developing research with a major stress on the human aspects of administration. Various areas are developed by extensive reading, case discussion, and individual reports on special projects and research. Prerequisite, permission. (Offered Autumn, 1961.)
- 586 Seminar in Administrative Organization (3)** **Rosenzweig†**
Examination of organization concepts and theories, aimed at developing working principles and an organized philosophy of management. Reading and discussion of the classical and current literature of the field, including an examination of the philosophy of organization of various outstanding business leaders. Prerequisite, permission. (Offered Winter, 1962.)

COLLEGE OF ENGINEERING

CHEMICAL ENGINEERING

- R486 Chemical Engineering Analysis (3)** **Finnigan**
An engineering course designed to increase the student's facility in solving problems with the aid of mathematics. The emphasis is placed on expressing physical problems in mathematical language and following through to obtain numerical solutions. Only a minimum time will be spent on methods of solving differential equations. Problems will be taken from fields of chemical engineering interest such as diffusional processes, heat transfer, fluid flow, thermodynamics, and kinetics. Prerequisites, graduate standing in chemical engineering with mathematics at least through a course in differential equations. (Offered Autumn, 1961. Tentatively offered Autumn, 1962.)
- R570 Introduction to Transport Phenomena (3)** **Johnson**
Derivation of general differential equations for transport of heat, mass, and momentum; kinetic theory of fluids and its application to transport phenomena based on molecular motion; methods for estimating transport coefficients in fluids. Prerequisite, undergraduate course in unit operations, or permission. (Offered Autumn, 1961. Tentatively offered Autumn, 1962.)
- R571 Heat Transfer I (3)** **Batch**
Steady and unsteady state conduction with emphasis on numerical methods. Radiation, design theory background and application to furnace design, convection, introductory concepts, methods for predicting coefficients, recent developments in theory, heat-exchanger design. Prerequisite, R570. (Offered Winter, 1962.)
- R573 Absorption and Extraction (3)** **Johnson**
A study of mass transfer, primarily in gaseous and liquid systems. From the basic theoretical principles of diffusion are developed the working equations of mass transfer which are subsequently used to obtain exact solutions to several types of diffusion problems of interest to the chemical engineer. The basic principles are next applied to obtaining an understanding of several diffusion processes such as absorption, extraction, ion exchange, and thermal diffusion. Prerequisites, R486 and R570. (Offered Winter, 1962.)
- R574 Fluid Mechanics (3)** **Fryar**
Mechanism of fluid flow. Total energy balance and Bernoulli's Theorem. Integration of the differential equations for motion of a fluid. Poiseuille, Fanning, and other equations. Turbulent flow and boundary-layer relationships. High velocity flow. Introductory design calculations. Prerequisites, undergraduate course in fluid mechanics or hydraulics, and R570. (Tentatively offered Winter, 1963.)
- R575 Advanced Chemical Engineering Thermodynamics (3)** **Platt**
Principles of thermodynamics. Applications to unit operations and to prediction of phase equilibria and chemical equilibria. Prerequisites, undergraduate course in chemical engineering thermodynamics and graduate standing, or permission. (Tentatively offered Winter, 1963.)
- R576 Heat Transfer II (3)** **Batch**
Continuation of R571. Prerequisites, R571 and R574. (Offered Spring, 1962.)
- R581 Kinetics and Catalysis (3)** **Platt**
Kinetics of homogeneous and heterogeneous systems, with emphasis on application of chemical engineering principles applied to the design of industrial development and production reactors. Prerequisite, R575. (Tentatively offered Spring, 1963.)
- R582 Advanced Topics in Mass Transfer (3)** **Johnson**
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, R573 or permission. (Tentatively offered Spring, 1962.)
- R583 Advanced Topics in Chemical Engineering (1-3)** **Batch, Fryar**
Discussions and readings of topics of current interest in the field of chemical engineering unit operations. Prerequisites, R574, R576, or permission. (Tentatively offered Spring, 1963.)

†Member of the University faculty in Seattle.

CIVIL ENGINEERING

- R571 Advanced Strength of Materials (3)** **Merckx**
 Stresses and deflection of curved bars, beams on elastic foundation, beams with axial forces, shear center, stresses and deflection of thin plates, stresses in thick cylinders. This course accomplishes two goals: (1) the methods of solving the above problems, (2) the use of homogeneous solutions to account for boundary condition and of the methods of superposition to solve for stress conditions in composite structures. Prerequisites, undergraduate course in strength of materials, ordinary differential equations, and graduate standing. (Tentatively offered Autumn, 1963.)
- R572 Theory of Elasticity (3)** **Merckx**
 This course provides the background for the rigorous methods of solution used on more advanced problems. It also provides the physical background for the understanding of plastic yielding criteria. Prerequisite, R571. (Offered Winter, 1962.)
- R575 Plastic Design of Structures (3)** **Merckx**
 Plastic (inelastic) behavior of structural materials. Applications to the design of structural members and systems. Principles of upper and lower bound. Limitations and economy of the procedure. Prerequisite, R572. (Offered Spring, 1962.)
- R591 Mechanical Analysis with Inelastic Continuum (3)** **Merckx**
 The use of material models to represent material behavior, simple analyses of bar and beam structures and the use of thermodynamics to provide the unifying connection between various models. Prerequisite, R572. (Tentatively offered Spring, 1963.)

*ELECTRICAL ENGINEERING

- R478- Fundamentals of Automatic Control (0-)** **Allen**
 No credit allowed for R478- until R479 has been completed satisfactorily. An introductory course presenting the basic methods of analysis of linear feedback systems. Subjects covered are: the Laplace Transform, transfer functions, frequency response, Root locus, stability criteria, and transient solutions. Prerequisite, degree in engineering, or permission. (Tentatively offered Autumn, 1962.)
- R479 Fundamentals of Automatic Control (-4)** **Allen**
 Intermediate subjects in the field of feedback system analysis and synthesis. The subjects included are: performance criteria, synthesis to meet design criteria, the analysis of multi-loop systems, the relationship of frequency response to transient response, introduction to nonlinear systems and nonlinear analysis, and current topics. Prerequisite, R478-. (Tentatively offered Winter, 1963.)

MECHANICAL ENGINEERING

- R412 Engineering Economics (3)** **Lang**
 A composite study of theoretical engineering economy presented in two categories. The first part covers economic principles and elementary accounting and corporate investment procedures including studies of money equivalents; amortization practices within present tax structure; capital requirements for process plants; and the relationship of costs, earnings, profits, and returns. The second part of the course will illustrate the techniques of applying these principles with emphasis on comparative annual costs, earning ratios, pay-out times, economic balance, and investment principles. Prerequisites, degree in engineering or permission. (Offered Autumn, 1963.)
- R521 Thermodynamics (3)** **Fryar**
 An introductory course in graduate level thermodynamics. The course is designed to give the student an appreciation of classical thermodynamics and is taught primarily from the scientific rather than the engineering approach. Fundamentals, logic, and mathematics are stressed. This course will establish the principles for R522. Prerequisite, undergraduate course in thermodynamics or permission. (Tentatively offered Autumn, 1962.)
- R522 Thermodynamics (3)** **Fryar**
 Thermodynamics of chemical reactions including the third law and equilibrium conversion. Analysis of the thermodynamics of fluid flow, heat transfer, and certain other processes. Prerequisite, R521. (Tentatively offered Winter, 1963.)
- R523 Thermodynamics (3)** **Fryar**
 Analysis of heat power cycles including steam turbine cycle design, optimization of parameters, and effect of operational variables. The application of nuclear reactors as the heat source of the steam turbine cycle is covered in some detail. Prerequisite, R522. (Tentatively offered Spring, 1963.)
- R568 Vibrations (3)** **Merckx**
 Single degree of freedom, including free vibrations undamped, free vibrations damped, forced vibrations (harmonic forcing); multidegree of freedom, including free vibrations (natural frequencies), forced vibrations of multidegree of freedom systems; use of energy techniques, including approximations of continuous systems (natural frequency). Prerequisite, senior standing or permission. (Tentatively offered Autumn, 1962.)

* Course offerings in Electrical Engineering for academic years succeeding 1961-62 are to be arranged.

- R569 Advanced Vibrations (3)** **Merckx**
Vibration of continuous systems, natural frequency of a string, rod, etc., natural frequency of a beam, vibration of circular membrane; phase plane methods, transient solutions, non-linear solutions, forced vibrations (limit cycles), nonharmonic forcing; integral techniques (Green functions); introduction to variational methods (classical mechanics). Prerequisite, R568. (Tentatively offered Winter, 1963.)
- R570 Wave Motion (3)** **Merckx**
Shock waves in fluids; plane waves, phase and group velocity; spherical waves; spectrum analysis (use of transform); elastic waves (bars, beams, and plates). Prerequisite, R569. (Tentatively offered Spring, 1963.)
- R577 Mechanical Analysis Principles (3)** **Merckx**
Special emphasis is given to determining localized stresses due to displacement incompatibilities. Membrane theory of shells, symmetrical bending of thin cylindrical shells, circular plate theory, and twisting of circular rings. Prerequisites, undergraduate course in strength of materials, Mathematics R322, and graduate standing. (Tentatively offered Autumn, 1963.)
- R578 Mechanical Analysis Principles (3)** **Merckx**
Introduction to the concepts of energy methods of solution, the elastic approach, and elastic stability. Energy methods applied to the problems of thin-curved beams or thermal stress in piping, thin-walled curved tubes or elbows, and tube sheets. Elastic approach used on thick-walled cylinders, stress concentrations, and thermal stress problems. Prerequisite, R577. (Tentatively offered Winter, 1964.)
- R579 Mechanical Analysis Principles (3)** **Merckx**
Consideration of real material behavior, material failure criteria for stress rupture, fatigue, brittle fracture, and low cycle fatigue. Analysis of multiaxial stress and strain conditions. Examples of plastic analyses, creep analyses, and thermal ratcheting. Prerequisites, undergraduate course in strength of materials, Mathematics R322, and graduate standing. (Offered Autumn, 1961.)

METALLURGICAL ENGINEERING

- *R361 Physical Metallurgy (4)** **Bush, Tobin, Leggett**
An introduction to the fundamentals of physical metallurgy: classification of metals, the periodic table, atomic structure and interatomic relationships, crystallography of metals including Miller indices, single crystals, and polycrystals; alloys and alloying binary equilibrium diagrams, substitutional and interstitial solid solutions, and intermetallic compounds; the applications of the phase rule. Prerequisites, undergraduate physics. Graduate credit only toward a minor degree. (Offered Autumn, 1961.)
- *R362 Physical Metallurgy (4)** **Bush, Tobin, Leggett**
The physical metallurgy of iron and steel, preparation, atomic nature and allotropic change in iron; metastable binary phase diagrams, alloying behavior of iron, iron-graphite and iron-Fe₃C phase diagrams; equilibrium relations in plain carbon steels, the metallurgy of cast iron, reaction kinetics of phase transformations in steels, the mechanism of formation of subcritical substances; alloy steels; hardenability and hardenability concepts. Prerequisites, R361 or engineering metallurgy. (Offered Winter, 1962.)
- *R363 Physical Metallurgy (4)** **Bush, Leggett, Tobin**
Metallurgical phenomena of industrial importance: casting and solidification, heat and cold working, surface treatment of metals, joining, machining and powder metallurgy; equilibrium and non-equilibrium structures and phases; diffusion and diffusion dependent mechanisms such as recovery, recrystallization growth, aging and precipitation hardening; gases in metals; metal failure analysis. Prerequisite, R362. (Offered Spring, 1962.)
- R447 Nuclear Metallurgy (3)** **Bush, Leggett, Tobin**
The behavior of fissionable and nonfissionable metals in a reactor environment, including the fundamental mechanisms for irradiation behavior of U. Prerequisite, course in elements or fundamentals of metallurgy, or permission. (Offered Autumn, 1961.)
- R544 Irradiation Effects in Metals and Alloys (3)** **Bush, Leggett, Tobin**
Review of neutron induced damage in fissionable and nonfissionable metals and alloys. Influence of crystal structure, impurity atoms, phases on physical and mechanical properties based on current damage theories and empirical data. Interpretation of damage and understanding of damage mechanisms. Prerequisites, R569, Mathematics R322. (Tentatively offered Autumn, Winter, 1964.)
- R547 Advanced Nuclear Metallurgy (3)** **Bush, Leggett, Tobin**
Damage mechanisms in nonfissionable metals as related to crystallographic structure and other significant properties. Prerequisite, R447. (Offered Spring, 1964.)
- R567, R568, R569 Advanced Physical Metallurgy (3, 3, 3)** **Bush**
Electron theory of metals; statistical thermodynamic approach to solid state reactions—order, disorder, phase transformations, diffusion, nucleation, and growth; theory of alloys (Hume-Rothery); metal interfaces; dislocation theory. Prerequisite, degree in metallurgical engineering or permission. (Tentatively offered 1962-63.)

*Subject to approval of University Curriculum Committee.

NUCLEAR ENGINEERING

- R384 Nuclear Engineering Survey (0)** **Fullmer**
For those desiring qualitative concepts of the nuclear fuel-reactor separations field. Physics of the pile reaction—nuclear reactions, elementary reactor physics; heat transfer and fluid flow; reactor materials—structural and fuel; reactor control and safety; transuranic and isotope chemistry—separations plant design and operation. Prerequisite, degree in engineering or science, or permission. (Offered Autumn, 1961. Tentatively offered Autumn, 1962; Autumn, 1963.)
- R484 Introduction to Nuclear Engineering (3)** **Weeks**
A course in nuclear engineering for seniors, graduate students, and practicing engineers; covering elements of reactor nuclear physics; elementary nuclear reactor theory; radiation shielding; materials of construction. Prerequisites, Mathematics R322, Physics R323. (Offered Spring, 1962. Tentatively offered Spring, 1963; Spring, 1964.)
- R485 Nuclear Instruments (3)** **Paul**
A lecture and laboratory course devoted to the basic design and operation of the instruments used in nuclear engineering, such as badges, dosimeters, Geiger counters, proportional counters, survey meters, scalars, radiation monitors, scintillation spectrometers, etc. Experiments will demonstrate the characteristics of nuclear instruments and associated circuitry. Safety practices will be emphasized throughout the course. Prerequisite, R484. (Offered Winter, 1962. Tentatively offered Autumn, 1962.)
- R486 Nuclear Power Plants (3)** **Heacock**
The design, operation, and maintenance of the nuclear power plant, architectural layouts, basic heat-power cycle components, and essential auxiliary equipment. A critical survey of existing, or proposed, nuclear power plants covering the range of power applications and reactor types with emphasis on those generating commercial electrical power. The effects of such specific requirements as capital costs, fuel cycle, space and weight on plant design, and equipment arrangement. Prerequisite, R484 or permission. (Offered Spring, 1963.)
- R501 Nuclear Reactor Theory Laboratory (3)** **Wood**
A laboratory course in reactor physics using exponential piles, the Hanford Standard Pile, and analog computers. Experiments will include measurement of diffusion length, material buckling, and effective pile size; calibration of foils and neutron sources with an introduction to scintillation counting techniques; analog computer studies of reactor kinetics and control; measurement of danger coefficients and lattice parameters; and selected experiments according to class interests. Prerequisite, R506. (Offered Spring, 1962. Tentatively offered Spring, 1963.)
- *R502-R503 Nuclear Engineering Laboratory (3-3)** **Schmid**
An advanced laboratory course centered around a 100-watt graphite reactor. Experiments will be performed utilizing the steady-state and dynamic characteristics of the reactor. Some experiments will also be performed employing the reactor as a source of radiation. Training in reactor startup and shutdown procedures and in instrumentation checkout and calibration is included in the course. Prerequisite, R501 or permission. (Offered Autumn, 1961 and Winter, 1962.)
- R505, R506 Nuclear Reactor Theory (3,3)** **Wood**
A lecture course in nuclear reactor physics covering neutron production, reactions, and cycles; diffusion and slowing down of neutrons; theory of criticality of homogeneous and heterogeneous systems; reactor kinetics and control theory; and elements of perturbation theory. Prerequisites, R484, Mathematics R428 (Mathematics R427 and R429 recommended, but not required), and Physics R323. (Offered Autumn 1961, Winter, 1962. Tentatively offered Autumn, 1962, Winter, 1963.)
- R510 Nuclear Reactor Engineering (3)**
An advanced course in engineering analysis of nuclear reactor systems. The course covers core design methods, heat generation and distribution in nuclear reactor systems, the removal and utilization of heat for power production, fuel cycles and processing of irradiated reactor fuels, shielding of nuclear radiations. Prerequisite, R506. Offered Spring, 1963.)
- R539 Nuclear Reactor Design (3)** **Locke**
A design laboratory course involving the synthesis of reactor theory, engineering analysis, material specifications, and economics to meet the design specifications for a complete nuclear reactor facility. Emphasis upon cycle analysis, hazards, arrangements, and requirements peculiar to nuclear reactor plants. Prerequisite, R510. (Offered Spring, 1962.)
- R559 Control of Radioactive Wastes (3)** **Schwendiman**
Sources of radioactive wastes in nuclear plants and other installations, permissible limits, safe methods for disposal, methods for reducing volumes and concentrations, sampling and analysis techniques, air and liquid stream monitoring, site selection as influenced by waste disposal criteria, release and consequence of radioactive isotopes during disastrous incidents. Prerequisite, Physics R323 or permission. (Tentatively offered Winter, 1963.)

SCHOOL OF LIBRARIANSHIP

- R510 Evaluation of Library Materials (4)**
Sources of information about books; criteria of evaluation for selection; evaluation of general reference materials; procedures of reader's services. (Offered Autumn, 1961.)
- R511 Library Materials in the Humanities and Social Sciences (3)**
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, R510. (Offered Winter, 1962.)
- R512 Library Materials in Science and Technology (3)**
Continuation of R511. Prerequisite, R510. (Offered Spring, 1962.)

SCHOOL OF MEDICINE**RADIOLOGY**

- R400 Radiobiology (3)** **Bair**
This course requires only a minimum background in chemistry and does not presume any prior study of biology. Chemical, biological, and genetic effects of irradiation on unicellular and multicellular organisms, tolerance and dosage limits, effect of internal emitters, radiological ecology. Prerequisites, degree in science or engineering, Physics R323, or permission. (Tentatively offered Spring, 1963.)
- R485 Radiation Dosimetry (4)** **Roesch, Myers**
The measurement of radiation energy loss relationships in gases and solids; detection techniques and circuits; units; consideration of human exposure limits. Prerequisite, permission. (Offered Winter, 1962.)

BULLETIN • UNIVERSITY OF WASHINGTON



CENTER FOR
GRADUATE STUDY AT HANFORD
RICHLAND, WASHINGTON
1962-63

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes three general bulletins; bulletins of the colleges and schools; Summer Quarter Bulletin; the bulletin of the Center for Graduate Study at Hanford; and bulletins of the Division of Correspondence Study and the Division of Evening Classes.

INTRODUCTION TO THE UNIVERSITY, one of the general bulletins, is especially prepared for new and prospective students. It lists all the University curricula, with their admission requirements, and presents information on other phases of student life, including services for students, student activities, and expenses. UNIVERSITY RULES AND REGULATIONS, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as registered students. HANDBOOK OF SCHOLARSHIPS, the third general bulletin, lists the various scholarships available.

Curricula, courses, and scholarship requirements in each field of study are described in the college and school bulletins. Each of these bulletins also discusses services, organizations, and expenses as they relate to students in the particular college or school.

Requests for copies of any of the bulletins should be addressed to the Addressograph Service.

General Bulletins

HANDBOOK OF SCHOLARSHIPS (RESTRICTED DISTRIBUTION)

INTRODUCTION TO THE UNIVERSITY

UNIVERSITY RULES AND REGULATIONS (FOR REGISTERED STUDENTS ONLY)

Bulletins of the Colleges and Schools

COLLEGE OF ARCHITECTURE AND URBAN PLANNING

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF BUSINESS ADMINISTRATION

SCHOOL OF DENTISTRY

COLLEGE OF EDUCATION

COLLEGE OF ENGINEERING

COLLEGE OF FISHERIES

COLLEGE OF FORESTRY

GRADUATE SCHOOL

SCHOOL OF LAW

SCHOOL OF MEDICINE

SCHOOL OF NURSING

COLLEGE OF PHARMACY

SCHOOL OF SOCIAL WORK

Other Bulletins

SUMMER QUARTER

CENTER FOR GRADUATE STUDY AT HANFORD

CORRESPONDENCE STUDY

EVENING CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 984
July, 1962

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CALENDAR

AUTUMN, WINTER, AND SPRING QUARTERS
(Autumn Quarter, 1962, through Summer Quarter, 1963)

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

AUTUMN QUARTER, 1962

REGISTRATION PERIOD

Aug. 23-Sept. 6 Registration *by appointment only* for all students. See page 13 for further information on registration.

ACADEMIC PERIOD

SEPT. 10	Instruction begins
Nov. 22	Thanksgiving holiday
Nov. 30	Instruction ends

WINTER QUARTER, 1963

REGISTRATION PERIOD

DEC. 3-8 Registration *by appointment only* for all students. See page 13 for further information on registration.

ACADEMIC PERIOD

DEC. 10	Instruction begins
DEC. 24-28	Christmas holiday
MARCH 8	Instruction ends

SPRING QUARTER, 1963

REGISTRATION PERIOD

MARCH 11-16 Registration *by appointment only* for all students. See page 13 for further information on registration.

ACADEMIC PERIOD

MARCH 18	Instruction begins
MAY 30	Memorial Day holiday
JUNE 7	Instruction ends

SUMMER QUARTER, 1963

REGISTRATION PERIOD

JUNE 17-22 Registration *by appointment only* for all students. See page 13 for further information on registration.

ACADEMIC PERIOD

JUNE 24	Instruction begins
JULY 4	Independence Day holiday
AUG. 23	Instruction ends

ADMINISTRATION

BOARD OF REGENTS

MRS. A. SCOTT BULLITT, <i>President</i>	Seattle
ALBERT B. MURPHY, M.D., <i>Vice-President</i>	Everett
JOSEPH DRUMHELLER	Spokane
JOHN L. KING	Seattle
HERBERT S. LITTLE	Seattle
HAROLD S. SHEFELMAN	Seattle
ROBERT J. WILLIS	Yakima
HELEN E. HOAGLAND, <i>Secretary</i>	
DON H. WAGEMAN, <i>Treasurer</i>	

OFFICERS OF ADMINISTRATION

CHARLES E. ODEGAARD, Ph.D.	<i>President of the University</i>
FREDERICK P. THIEME, Ph.D.	<i>Provost of the University</i>
GLENN H. LEGGETT, Ph.D.	<i>Vice-Provost of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
HAROLD A. ADAMS, M.S.	<i>Director of Admissions</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>

GRADUATE SCHOOL ADMINISTRATION

JOSEPH L. MCCARTHY, Ph.D., <i>Dean of the Graduate School</i>
HENRIETTA WILSON, M.A., <i>Assistant to the Dean</i>
GEORGE W. FARWELL, Ph.D., <i>Associate Dean of the Graduate School</i>
KERMIT B. BENGTSON, Ph.D., <i>Director of the Center for Graduate Study</i> (at Richland)
HELEN BRINCK, <i>Administrative Assistant to the Director (at Richland)</i>

EXECUTIVE COMMITTEE OF THE GRADUATE SCHOOL

JOSEPH L. MCCARTHY, <i>Chairman</i>	ALICE H. HAYDEN, <i>Education</i>
ARNOLD S. STEIN, <i>English</i>	BLAKE D. MILLS, <i>Mechanical</i> <i>Engineering</i>
BARNET BASKERVILLE, <i>Speech</i>	EDMOND H. FISCHER, <i>Biochemistry</i>
J. HOOVER MACKIN, <i>Geology</i>	SAUL SCHLUGER, <i>Dentistry</i>
J. RICHARD HUBER, <i>Economics</i>	

HANFORD INTER-UNIVERSITY COMMITTEE

JOSEPH L. MCCARTHY, <i>Chairman, Dean of the Graduate School, University of Washington</i>
DONALD S. FARNER, <i>Dean of the Graduate School, Washington State University</i>
HENRY P. HANSEN, <i>Dean of the Graduate School, Oregon State University</i>

- Roesch, William Carl (1951)
B.A., 1945, Miami; Ph.D., 1949, California Institute of Technology
- Schmid, Loren Clark (1961)
B.S., 1953, M.S., 1954, Ph.D., 1958, Michigan
- Schwendiman, Lysle Christian (1960)
B.S., 1939, Idaho
- Tobin, John Charles (1958)
B.S., 1949, M.S., 1950, Ph.D., 1957, Michigan
- Vitro, Robert Edward (1961)
B.C.S., 1957, Seattle University; M.B.A., 1960, Washington
- Wiggins, Alvin Dennie (1958)
A.B., 1951, M.A., 1953, Ph.D., 1957, California
- Wilburn, Norman Patrick (1959)
B.S., 1953, M.S., 1954, Ph.D., 1958, California Institute of Technology
- Wilson, Archie Spencer (1954)
B.S., 1946, Iowa State; M.S., 1950, Ph.D., 1951, Chicago
- Wood, Donald Eugene (1959)
B.S., 1951, Nevada; M.S., 1953, Ph.D., 1956, Northwestern

Members of the University's faculty in Seattle who teach courses in Richland are listed in the bulletin of the appropriate University College or School.

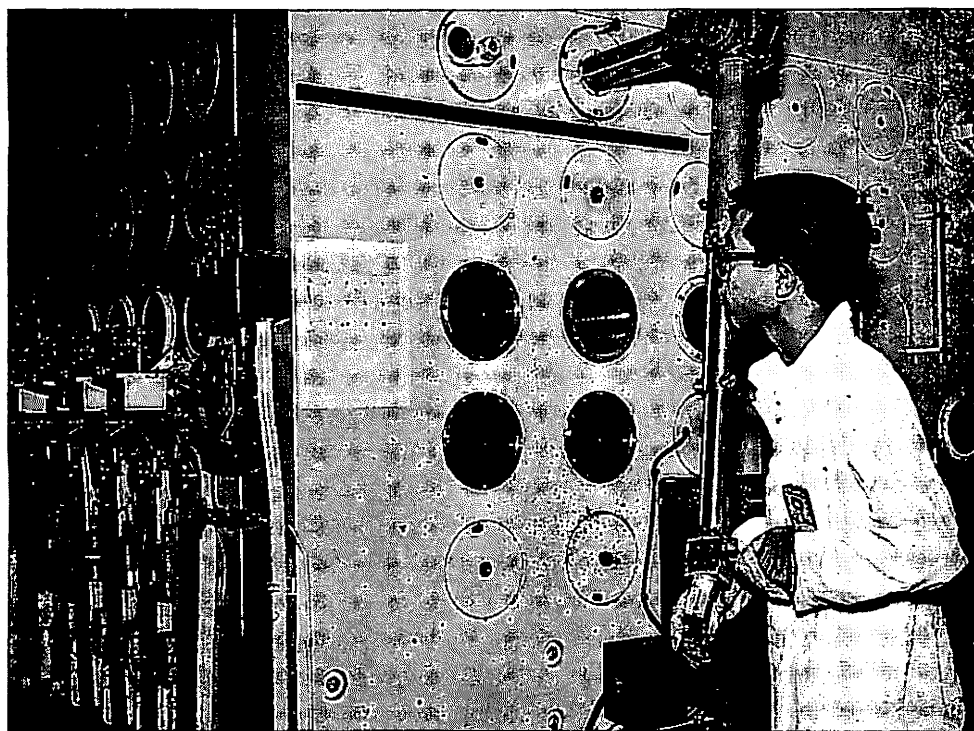
OBSERVANCE OF UNIVERSITY RULES AND REGULATIONS

It is the University's expectation that a student will follow University rules and regulations as they are stated in the Bulletins. In instances where no appeal procedure is spelled out and the student is persuaded that a special set of circumstances makes appeal reasonable, he may appeal the application of specific rules or regulations to the Office of the Dean of the School or College in which he is enrolled in the case of an academic matter, or to the Office of the Dean of Students in the case of a nonacademic matter. These offices will either render a decision on the appeal or refer the student to the proper office for a decision.

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.



GENERAL INFORMATION

GENERAL INFORMATION

The Center for Graduate Study at Hanford was created primarily to provide for the continuing educational needs of professional persons employed on the Hanford Project by the Atomic Energy Commission and its contractors. It came into existence on July 1, 1958. The Center, in fulfilling this need, replaces the former General Electric School of Nuclear Engineering originally established in 1946.

The Center is administered by the University of Washington in cooperation with Washington State University and Oregon State University. Programs offered through the Center are oriented to serve those working toward graduate degrees, but it is stressed that enrollment is not contingent upon the intent to secure a degree or a graduate degree and is open to any person, irrespective of employment, who can meet the academic prerequisites for enrollment. Most classes are held after hours, and enrollment usually will be inconvenient for persons not having gainful employment in the Tri-City area. Employment at the Hanford Atomic Products Operation generally is unavailable to foreign nationals.

Classroom space and administrative offices of the Center are located at 1112 Lee Boulevard in downtown Richland, Washington. Atomic Energy Commission owned laboratory facilities, which are a part of the Hanford Project and which are operated by the General Electric Company, are used in connection with class or research work where the use of such facilities may be necessary and available.

PHILOSOPHY AND OBJECTIVES

The Center was created to make it possible for locally-employed, professional persons interested in continuing their formal education to do so within the framework of a University organization, to increase the amount of contact possible between regular University faculty and local professional people, and to encourage University-Hanford Project cooperation in research activities. In accomplishing these purposes, the Center may be regarded as an agent of the three Universities participating in its operation. Its basic philosophy and objectives therefore are essentially those of the participating Universities. Students at the Center must elect to affiliate with one of the three participating Universities and, after the election is made, are governed by the philosophy of the chosen University. This Bulletin therefore is intended to provide information regarding the Center for Graduate Study only. For information regarding degree requirements, etc., the student should consult the appropriate bulletin of the participating institution of his choice. Such bulletins are available in the Center for Graduate Study Office.

It is a part of the philosophy of all three participating institutions that, with certain exceptions, each Master's degree candidate spend a minimum of one quarter or one semester in full-time resident study on the home campus. Students working toward the degree of Doctor of Philosophy must plan to fulfill on the home campus of the institution of their choice the residence requirement specified for this degree by that institution. Each student intending actively to pursue a full course of study leading to an advanced degree is also required to have his entire educational plan approved by the appropriate institution at an early date in the course of his study. *This should be done as soon as the student has formulated definite plans and must be done prior to completion of twelve quarter credits of course work at the Center. Failure to comply with this requirement may result in refusal by the participating University to accept for credit toward graduate degrees courses completed at the Center.*

It is the policy of all three participating Universities to permit, on an individual approval basis and subject to certain general restrictions, the performance of thesis research work within the boundaries of the Hanford Project.

ENROLLMENT AND ADMISSION

Any student enrolling for credit toward an advanced degree must institute proceedings for admission as a regular graduate student in the participating institution of his choice. Formal admission to a participating institution, except in the case of graduate students in Business Administration and Librarianship, must be obtained prior to completion of a course if credit for that course toward an advanced degree will ever be desired; such credit cannot be granted at a later date for courses completed prior to admission to the graduate school of a participating institution. *New students in all disciplines are encouraged and advised to complete their admission to the graduate school of the participating institution of their choice prior to the time of actual registration for courses.*

The requirements for admission listed below pertain only to the Graduate School of the University of Washington. Requirements for admission to the Graduate School of Washington State University or Oregon State University are generally equivalent, but prospective enrollees in affiliation with either of these Universities should consult an appropriate bulletin for detailed admission requirements in order to be certain they qualify.

In general, properly qualified students who are graduates of the University of Washington or of other colleges or universities of recognized rank may be admitted to the Graduate School of the University of Washington.

The primary criterion for admission to the Graduate School is the applicant's apparent ability, as decided by the University, to progress satisfactorily in a graduate degree program. The applicant's scholastic record is of major importance and, ordinarily, the applicant should have at least a B or a 3.00 grade-point average for the courses taken during the junior and senior years of his undergraduate study. He should also show completion of an undergraduate program appropriate as preparation for graduate study in his chosen field. Consideration will also be given to other evidence which may be available. In some cases, an applicant may give promise of making satisfactory progress in graduate work although his undergraduate grade average may be less than B or 3.00, or his undergraduate preparation may be inadequate; in these cases and other unusual cases, an applicant may be admitted to the Graduate School on the favorable written recommendation of the appropriate department chairman with approval by the Dean of the Graduate School. The University will be able to grant admission only if sufficient faculty and facilities are available to provide for the applicant's program.

Admission to the Graduate School provides the opportunity for continuance of graduate study and research only for the period during which the graduate student maintains satisfactory performance and progress toward completion of his graduate

degree program. The Dean of the Graduate School may alter the status of a graduate student on the written recommendation of the appropriate department chairman or the chairman of the supervisory committee.

Applications for admission must be substantiated by certain credentials and reports submitted in accordance with University rules and practices. All applicants must submit *two* official transcripts of all undergraduate work and of any graduate work.

It is the student's responsibility to make certain that complete credentials covering all his previous college education are submitted to the University. To be official they must be forwarded by the registrars of institutions previously attended, direct to the Registrar of the University. These records become part of the official file and cannot be returned to the student nor duplicated for any purpose whatsoever, as the University does not issue or certify copies of transcripts from other institutions. *Students in Business Administration must be formally admitted to the Graduate School prior to the time of registration. A minimum of one month should be allowed for processing of applications for admission to the Graduate School of the University of Washington.*

Enrollment in Center for Graduate Study courses without credit may be permitted provided the prospective enrollee is deemed to have the proper background, and provided no exclusion of students desiring to take the course for credit would result. Students enrolling without credit will be graded and such enrollment is in every way similar to enrollment with credit except that formal admission on the home campus of one of the participating institutions is not necessary.

Auditors, defined as persons attending lectures but not receiving a grade or participating in any laboratory work, problems, or examinations, will normally be accepted after accommodation of all others.

TUITION

Tuition is at the rate of \$35.00 per quarter per course for all courses. The fee schedule is the same regardless of whether the course is taken for credit, without credit, or audited. Veterans' benefits may be applied, if available to the individual, and a tuition refund plan is available to General Electric employees which provides for refund of half the tuition fee under certain conditions. A similar plan is available to Atomic Energy Commission employees.

REGISTRATION

All registration is taken care of at the Center for Graduate Study Office, located at 1112 Lee Boulevard, Richland (telephones WHitehall 5-6523 or WHitehall 2-1111, Ext. 6-5241).

The Center Office is normally open from 8 a.m. to 12 noon and from 1 to 4:30 p.m. Monday through Friday during the entire year. Registration may be accomplished at the Center Office in person *by appointment only* during special registration weeks designated in the calendar. A limited number of registration appointments are available outside of regular office hours during the special registration weeks for those who find it difficult to arrange for an appointment during regular hours. It is recommended that students who desire counselling or who have other registration problems plan to register in person, but a system of mail registration has been established for the convenience of those whose registration will be routine and its use is recommended. Advance registration without penalty is possible for those who find it necessary to be out of town during a registration week. Registration appointments or material for mail registration may be obtained by writing or calling the Center Office at any time within the three-week period immediately preceding a registration week.

Registration may, in addition, be accomplished during the first week of classes, but a penalty of \$5.00 will be assessed for registration during this time. Registration will be closed after the first week of classes.

Full payment of tuition at the rate of \$35.00 per course is due at the time of registration and must be made before registration is complete. Tuition may be paid by cash or check. All tuition fees for a course will be refunded if a course is cancelled by the Center for Graduate Study because of insufficient registration. All fees will also be refunded if a student officially withdraws from a course at any time prior to the end of the first week of instruction. Fifty per cent of the fees paid will be refunded if a student officially withdraws between the end of the first week and the end of the fourth week of instruction. No refunds will be made after the first four weeks.

In the case of withdrawals taking place more than four weeks after the start of a quarter, a grade will be issued at the time of withdrawal indicating the progress of the student up to that time, but the grade will not be considered an official course grade.

The normal course load is considered to be 3 quarter credits, but up to 6 quarter credits may be carried with permission of the Director.

TEXTBOOKS

All students are expected to obtain personal copies of the text chosen by the instructor. All textbooks are purchased by mail order. Other texts for reference are kept on the school reference shelf in the Center library.

CONDUCT OF CLASSES

All classes are normally held in the Center for Graduate Study Building, 1112 Lee Boulevard in Richland. Most classes meet one evening a week from 7 to 9:30. The meeting day of each class is announced at registration time, but may be changed by the mutual consent of the instructor, the class, and the Director of the Center.

COURSE INFORMATION

GENERAL

This bulletin has been prepared for use during the academic year 1962-63, but tentative course offerings for an additional two years have also been included in order that students may better plan their programs of study. It must be understood, however, that offerings listed beyond the academic year 1962-63 are tentative and for planning purposes only.

A student enrolled at the Center who has progressed to the point where he is ready to undertake thesis or other research work should discuss this need with the chairman of the appropriate department on the home campus. It is the policy of all three participating Universities to permit under certain conditions the carrying on of thesis and other research work at Hanford.

COLLEGE OF ARTS AND SCIENCES CHEMISTRY

- | | | |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| R415 | The Chemical Bond (3)
Electron structure of the elements and the chemical bond, complex ions. Prerequisite, undergraduate physical chemistry or permission. (Offered on demand.) | Wilson |
| R416 | Inorganic Chemistry (3)
Chemistry of the elements and their compounds in relation to the periodic system. Prerequisite, R415. (Offered on demand.) | Wilson |
| R455 | Physical Chemistry (4)
Introduction to quantum mechanics, statistical mechanics, theory of gases, thermodynamics—first and second law. Prerequisites, general chemistry, analytic geometry and calculus, college physics, or permission. (Offered on demand.) (Formerly R355.) | Burger |
| R456 | Physical Chemistry (3)
Thermodynamics—second law, continued; phase equilibria, thermodynamic properties of chemical substances, chemical equilibria, statistical thermodynamics, solutions. Prerequisite, R455. (Offered on demand.) (Formerly R356.) | Burger |
| R457 | Physical Chemistry (3)
Transport and rate processes, reaction rates in gases, the solid state, atomic and molecular spectra, surface chemistry. Prerequisite, R456. (Offered on demand.) (Formerly R357.) | Burger |
| R471 | Nuclear Chemistry (3)
History of the study of radioactivity; the atomic nucleus; the production, nature, and energetics of nuclear reactions; and the equations of radioactive decay and growth. Prerequisite, physical chemistry. (Tentatively offered Autumn, 1963.) | Nielsen |
| R472 | Nuclear Chemistry (3)
Nuclear states and the systematics of radioactive processes, interactions of radiation with matter, radiation chemistry, hot-atom chemistry, and the chemistry of artificially produced elements. Prerequisite, R471. (Tentatively offered Winter, 1964.) | Nielsen |
| R511 | Advanced Inorganic Chemistry (2)
Acid base theory; electron transfer reactions; complex ion reactions and stabilities. Prerequisite, R416 or permission. (Offered on demand.) | Keder |
| R512 | Advanced Inorganic Chemistry (2)
Halogens, less familiar metals, chelate, clathrate, interstitial and nonstoichiometric compounds; other selected topics. Prerequisite, R416 or permission. (Offered Autumn, 1962.) | Keder |

- R514 Radiochemistry (3)** **Ludwick**
Detection and measurement of nuclear radiation, statistical nature of radioactivity measurements, techniques for the study of radionuclides, radioisotopes as chemical tracers, cosmic ray phenomena. Prerequisite, R472. (Tentatively offered Spring, 1964.)
- R525 Advanced Chemical Analysis (3)** **Brouns**
Theory and basic principles of modern chemical analysis. Precipitation reactions, application of organic precipitants, separations by vaporization and extraction, ion exchange methods, electrometric methods, and volumetric analysis. Special topics include isotopic tracer methods and the analysis of gases and organic compounds. Prerequisite, degree in chemistry or chemical engineering, or permission. (Offered Autumn, 1962.)
- R526 Advanced Instrumental Analysis (3)** **Alkire**
Theoretical principles of instrumental methods used as research tools in the fields of chemistry, physics, biophysics, metallurgy, and engineering. Topics covered include emission and absorption spectroscopy, X-ray fluorescence, magnetic resonance, chromatography, mass spectrometry, and radiation detection. Prerequisite, degree in chemistry, physics, or chemical engineering. (Offered Winter, 1963.)
- R550, R551, R552 Advanced Physical Chemistry (3,3,3)** **Morrey**
Thermodynamics and statistical mechanics, atomic and molecular structure, kinetic theory, and chemical kinetics. Prerequisite, undergraduate course in physical chemistry. Tentatively offered 1963-64.)
- R553 Theory of Rate Processes (3)** **Morrey**
Historical developments up to and including the absolute theory of rate processes; quantum mechanics necessary in development of Heitler-London equation, and statistical approach. Use of potential energy surfaces in theoretical predictions. Gas phase, solution, and surface mechanisms. Treatment of viscosity and diffusion. Prerequisite, R552 or permission. (Offered on demand.)
- R562 Chemical Crystallography (3)** **Bierlein, Minor**
Crystals; diffraction of X rays, electrons, and neutrons; determination of structure of crystals. Prerequisite, degree in chemistry, physics, or engineering. (Offered Winter, 1963.)
- R572 Chemical Crystallography (3)** **Bierlein, Minor**
Texture, growth, and diffraction of crystals; imperfections. Prerequisite, R562. (Offered Spring, 1963.)
- R575 Electrochemistry (3)** **Burger**
Electrical units and electrolytic conductance, theory of solutions, ion migration, activity coefficients, modern theories of acids and bases, electrolytic deposition and the mechanisms of corrosion, electro-kinetic phenomena. With its widespread application to the use and protection of materials used in process design, this course is pertinent to many problems in engineering as well as in chemistry. Prerequisite, undergraduate thermodynamics or permission. (Offered Spring, 1963.)
- R576 Solutions, Solvents, and Solvent Extraction (3)** **Burger**
A physical-chemical review of the nature of solutions. Chemical bonds, molecular structure, molecular and ionic complexes, nonaqueous solvents and the distribution between phases. In addition to the thermodynamic approach to solvent extraction, some special problems concerning kinetics and interfacial phenomena will be briefly considered. Prerequisite, permission. (Offered on demand.)

ECONOMICS

- R200 Introduction to Economics (5)**
Organization, operation, and control of the American economy; consideration of problems of inflation, unemployment, taxation, the public debt, monopoly, trade unions, and international trade. American capitalism compared with communism and socialism. (Offered on demand.)

FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE

(No credit is given toward an advanced degree for the following lower-division Russian courses.)

RUSSIAN

- R106 Scientific Russian (3)** **Pahn†**
Introduction to written Russian as a research tool for science students. Readings in chemistry and physics, etc. (Closed to Russian majors. Prerequisite, permission. (Offered on demand.)
- R108 Scientific Russian (3)** **Pahn†**
Reading and translation of material mainly from chemistry and physics. Discussion of grammatical structure and composition. Prerequisite, R106 or permission. (Offered on demand.)
- R109 Scientific Russian (3)** **Pahn†**
Reading and translation of scientific materials with concentration on chemistry, physics, and mathematics. Discussion of grammar and composition. Prerequisite, R108 or permission. (Offered on demand.)
- R205 Scientific Russian (3)** **Pahn†**
Intermediate reading of Russian scientific literature in various fields. Discussion of grammar and composition. Prerequisite, R109 or permission. (Offered on demand.)

†Member of the University of Washington faculty in Seattle.

- R485, R486, R487 Calculus of Probabilities (2,2,2)** **Wiggins**
 Fundamental concepts, combinatorial analysis, conditional probability, random variables, mathematical expectation, law of large numbers, important types of distributions, random walks, central limit theorem, discrete valued stochastic processes. Prerequisite, R412. (Offered 1961-62.)
- R491, R492, R493 Mathematical Statistics (2,2,2)** **Jaech**
 Fundamental concepts, sampling distributions, counted data, 1 and 2 population normal distribution statistics, linear regression, correlation, multiple regression, analysis of variance and covariance, inefficient statistics, non-parametric, sequential analysis. Prerequisite, R412 or permission. (Tentatively offered 1962-63.)
- R494, R495, R496 Design of Experiments (2,2,2)** **Jaech**
 Basic concepts, reduction of experimental error, randomization, Latin squares, randomized blocks, factorials, balanced incomplete designs, confounding, response surfaces. Prerequisite, R493. (Offered 1961-62.)
- R537, R538, R539 Methods of Mathematical Physics (2,2,2)** **Dean**
 Linear vector spaces, linear functionals, linear operators, Banach and Hilbert Spaces, introduction to spectral theory of operators, Green's functions, symbolic functions and operations, eigenvalue problems of ordinary and partial differential equations, integral equations. Prerequisites, R412, R427, R428, R429. (Tentatively offered 1962-63.)

PHYSICS

- R321 Introduction to Modern Physics (3)** **Paul**
 This course is primarily to introduce engineering graduates and graduates of scientific disciplines other than physics to the field of atomic, molecular, and nuclear phenomena. Brief review of classical physics, elementary kinetic theory, atomic structure of matter and electricity, introduction to quantum effects, and the nuclear atom. Prerequisites, college physics, and differential and integral calculus. (Offered Autumn, 1961. Tentatively offered Autumn, 1962.)
- R322 Introduction to Modern Physics (3)** **Paul**
 Physical foundations and interpretations of quantum mechanics, the wave mechanics description of the hydrogen atom and more complex atoms, molecular spectra, solid-state physics, relativity theory, and quantum electrodynamics. Prerequisite, R321. (Offered Winter, 1962. Tentatively offered Winter, 1963.)
- R323 Introduction to Modern Physics (3)** **Paul**
 Natural radioactivity, radioactive decay laws, Alpha decay, Beta decay, Gamma emission, nuclear fission and nuclear reactors, fusion reactions, cosmic radiation, high-energy particles, and nuclear force theories. Prerequisite, R322. (Offered Spring, 1962. Tentatively offered Spring, 1963.)
- R461 Introduction to Atomic and Nuclear Physics (3)** **Nilson**
 These courses (R461, R462, R463) are intended for physics majors and graduates in fields other than physics who require a rigorous treatment of this subject as preparation for more advanced graduate study in physics, particularly in nuclear physics and reactor theory. The first quarter covers the theory of relativity through a brief introduction to the general theory, basic postulates of quantum mechanics with examples from the free-particle and one-electron problems, radiation and radiative transitions, and the Pauli principle and atomic structure. Prerequisites, differential equations, undergraduates course in electricity and magnetism, or permission. (Tentatively offered Autumn, 1962.)
- R462 Introduction to Atomic and Nuclear Physics (3)** **Nilson**
 Atomic and molecular spectroscopy, quantum statistics, solid state physics, X rays, and basic nuclear properties. Prerequisite, R461. (Tentatively offered Winter, 1963.)
- R463 Introduction to Atomic and Nuclear Physics (3)** **Nilson**
 Radioactivity and nuclear stability, nuclear reactions, nuclear forces and structure, particles, cosmic radiation, and stellar energy. Prerequisite, R462. (Tentatively offered Spring, 1963.)
- R481, R482, R483 Introduction to Mathematical Physics (3,3,3)** **Lindenmeier**
 Linear vector algebra and vector calculus; continuum theory of solids and fluids; statistical mechanics and kinetic theory; boundary value problems in classical field theory; multipole series and Green's functions; special relativity and elementary quantum mechanics. Prerequisites, undergraduate courses in electricity and magnetism and properties of matter, or equivalent. (Offered 1961-62.)
- R505, R506 Advanced Mechanics (3,3)** **Triplott**
 Dynamics of a particle and of rigid bodies; generalized coordinates and Lagrangian theory; variational principles. Hamilton's equations of motion, vibration, and normal coordinates; relativistic dynamics. Prerequisites, Mathematics R427, R428, R429, or permission. (Tentatively offered Winter and Spring, 1963.)
- R513, R514, R515 Electricity and Magnetism (4,4,4)** **Foster**
 The properties of electric and magnetic fields as boundary value problems; applications of harmonic functions and conformal transformations; electrodynamics and electromagnetic waves in empty space and material media and in the presence of conducting boundaries; relativistic mechanics and the covariant four-dimensional formulation of electrodynamics; radiation, scattering, and dispersion. Prerequisite, R483 or permission. (Offered 1961-62.)

- R517, R518, R519 Quantum Mechanics (4,4,3)** **Carter**
 Historical and postulational foundations of quantum theory; quantization of simple systems; spin, perturbation theory, scattering, and relativistic quantum theory of particles. Prerequisite, R506 or permission. (Tentatively offered 1963-64.)
- R576 Selected Topics in Experimental Physics (*, maximum 6)**
 Prerequisite, permission.
- R578 Selected Topics in Theoretical Physics (*, maximum 6)**
 Prerequisite, permission.
- R581, R582, R583 Advanced Reactor Physics (3,3,3)**
 Advanced methods for the design analysis of nuclear reactors, with particular reference to mathematical and computational techniques. The course covers linear operator equations, variational principles, perturbation theory, machine computation, and numerical methods; the transport equation, slowing down, and diffusion models; and applications to lattice parameters, reactor dynamics, and fuel cycle analysis. Prerequisites, Nuclear Engineering R506 and Mathematics R428, or equivalent. (Tentatively offered 1963-64.)

COLLEGE OF BUSINESS ADMINISTRATION

The graduate program in Business Administration is staffed largely by members of the University faculty in Seattle who travel to Richland each week to conduct their classes. Students contemplating work toward a Master of Business Administration degree should apply for admission to the Graduate School as far in advance as possible of the quarter in which they wish to begin their studies in order to permit the Center and the College of Business Administration to take their backgrounds into consideration when scheduling Richland courses.

ACCOUNTING

- R522 Seminar in Cost Accounting (3)** **Storey†**
 Critical examination of theories of managerial accounting. Differentiation of objectives of managerial and financial accounting, joint costs, absorption costing, direct costing, standard costing, distribution costing, techniques of analysis of cost data, including differential cost analysis. Prerequisite, 330 and permission. (Offered Summer, 1962.)
- R592 Seminar in Administrative Controls (3)** **Berg†, Storey†**
 The use of accounting and statistics by management in the exercise of its planning and controlling functions; e.g., forecasting, budgets, standard costs, analysis of cost variations. Controllership as a function in the business enterprise. Prerequisites, 230 and permission. (Offered Autumn, 1961, and Summer, 1962.)

FINANCE

- R300P Business Finance (5)**
 The role of financial institutions in meeting short-, intermediate-, and long-term credit needs of businesses and individuals. An accelerated course, for graduate students only, to remove background deficiency in 320 and 350. Prerequisites, postgraduate standing with a senior year grade-point average of 3.00 and permission. (Offered Autumn, 1961.)
- R521 Seminar in Money Markets (3)** **Johnson†**
 Supply and demand for funds in short-term and long-term money markets; analysis of the influence of the money supply, bank reserves, legal restrictions, institutional portfolio policies, and changing needs and instruments of corporation finance. An objective of this seminar is to develop ability to analyze and appraise current money market developments. Prerequisite, permission. (Offered Winter, 1962.)
- R522 Seminar in Corporation Finance (3)** **Mueller†**
 Emphasizes selected contemporary problems and methods, internal and external, in solving corporate financial problems and indicating financial trends. Extensive reading and discussion is required in designated areas. Prerequisite, permission. (Offered Spring, 1962.)

MARKETING

- 522 Advanced Marketing Concepts (3)**
 The interdisciplinary exchange of ideas related to marketing is studied. New marketing theories and evolving concepts of marketing management are examined and critically appraised. Prerequisites, 520 or 521, and permission. (Offered Spring, 1962.)

†Member of the University faculty in Seattle.

istration degree should apply for admission to the Graduate School as far in advance as possible of the quarter in which they wish to begin their studies in order to permit the Center and the College of Business Administration to take their backgrounds into consideration when scheduling Richland courses.

ACCOUNTING

- R200P Managerial Accounting (5)** **Morrell**
Principles of financial statements and the double entry system. Manufacturing, partnership, and corporation accounting. Financial and cost analysis and interpretation. An accelerated course, for graduate students only, to remove background deficiency in R210, R220, and R230. Prerequisites, postgraduate standing with a senior year grade-point average of 3.00 and permission. (Offered on demand.)
- R331 Income Determination Accounting (5)** **Morrell**
Concepts and principles underlying accounting processes. Theory and problems of financial accounting, including financial statement analysis. (Formerly R310.) Prerequisite, basic accounting analysis. (Offered on demand.)
- R592 Seminar in Administrative Controls (3)**
The use of accounting and statistics by management in the exercise of its planning and controlling functions; e.g., forecasting, budgets, standard costs, analysis of cost variations. Controllership as a function in the business enterprise. Prerequisites, R230 and permission. (Offered on demand.)

BUSINESS STATISTICS: QUANTITATIVE ANALYSIS

- R200P Statistical Analysis (3)** **Brosky†**
A survey of the basic elements of descriptive statistics. An accelerated course, for graduate students only, to remove background deficiency in Business Statistics 201. Prerequisites, postgraduate standing with a senior year grade-point average of 3.00 and permission. (Offered Autumn, 1962.)

FINANCE

- R300P Business Finance (5)** **Vitro**
The role of financial institutions in meeting short-, intermediate-, and long-term credit needs of businesses and individuals. An accelerated course, for graduate students only, to remove background deficiency in 320 and 350. Prerequisites, postgraduate standing with a senior year grade-point average of 3.00 and permission. (Offered on demand.)
- R560 Seminar in Investments (3)** **Mueller†**
Selected topics in investments; exploration of new developments in security analysis; intensive student research in chosen areas. Prerequisite permission. (Offered Spring, 1963.)

GENERAL BUSINESS

- R441 Managerial Economics (3)** **Johnson†**
Analysis of factors affecting decisions within business firms. Motivation, inter-firm relationships, cost and pricing policies, are among subjects examined. Prerequisite, Business Statistics R301 or permission. (Offered Winter, 1963.)
- R570 Seminar in Business Research (3)**
Business research methods and techniques. Emphasis is placed on what business research is; how it is done, stressing the scientific method as a research procedure; and who does it. Sources of relevant information are covered. Students will carry out the formulation of a research project; defining the problem, pinpointing sources of information, selecting a method of approach. Prerequisite, permission. (Offered on demand.)
- R571-R572 Business Studies (3-3)**
Independent study in the field of business administration; critical evaluation of business analysis and research methods. Effective communication of ideas is emphasized. Methods and content of independent research studies being completed by the student are subjected to critical evaluation in seminar discussion. Prerequisites, R570 and approved research topic outline for R571-; R571- for -R572; R571-R572 open only to MBA nonthesis students. (Offered on demand.)

HUMAN RELATIONS IN BUSINESS AND INDUSTRY

- R400P Human Relations in Business and Industry (3)**
Cases are used to develop an understanding of human situations in business and industry. Useful skills and concepts are developed as aids in diagnosing and taking action. Prerequisites, postgraduate standing and permission. (This course not applicable to an advanced degree.) (Offered on demand.)

†Member of the University of Washington faculty in Seattle.

MARKETING

R300P Marketing, Transportation, and International Business:

An Integrative Analysis

Wheatley†

Analytical survey of institutions, functions, problems, and policies in the distribution of goods from producer to consumer. An accelerated course, for graduate students only, to remove background deficiency in R301. Prerequisites, postgraduate standing with a senior year grade-point average of 3.00 and permission. (Offered Summer, 1963.)

R522 Advanced Marketing Concepts (3)

Wheatley†

The interdisciplinary exchange of ideas related to marketing is studied. New marketing theories and evolving concepts of management are examined and critically appraised. Prerequisites, R520 or R521, and permission. (Offered Spring, 1963.)

POLICY AND ADMINISTRATION

R575 Human Aspects of Administration (3)

Administration process with primary focus on organizational behavior. Basic contributions of social science and other sources in formulation of administrative-organizational conceptual schemes. Administrative theory in relation to administrative practice. Prerequisite, permission. (Offered on demand.)

R576 Human Aspects of Administration (3)

Barnowe†

Basic contributions to administrative theory and practice made by past and current research, thought, and experience. Typically examines several major research studies, drawing on findings from psychology, sociology, social and cultural anthropology, business administration, government, and other sources. Prerequisite, permission. (Offered Autumn, 1962.)

R586 Seminar in Administrative Organization (3)

A reading, research, and discussion course in organization theory covering concepts of power, authority and influence, objectives and goals, decision and planning, communications, delegation and decentralization, and considerations of values, social issues, and future trends in organization. Research and theories in other fields, such as behavioral sciences and economics, will be related to business organization theory. Prerequisite, permission. (Offered on demand.)

R593, R594 Policy Determination and Administration (3,3)

Rosenzweig†

Analysis of policy problems faced by chief administrative officers of business firms. Determination of objectives; development of policies to achieve objectives; organization of executive personnel to implement policies; coordination of the organization; appraisal and adjustments to changes in environment. The course is intended to give a clearer insight not only into how business decisions are reached, but into the motivation of businessmen in deciding what to do under varying circumstances. Case study seminars with simulation (business gaming) included in R594. (It is recommended that these courses be scheduled toward the end of the student's course work.) Prerequisite, Master of Business Administration candidacy and permission for R593; R593 for R594. (R593 offered Winter, 1963. R594 offered on demand.)

PRODUCTION

R520 Seminar in Production (3)

Newell†

Research readings, and reports on current problems in the field, using a topical approach with emphasis on such areas as product research and development, plant location, equipment policies, materials and quality controls, and production planning and control. Prerequisite, permission.

COLLEGE OF ENGINEERING

CHEMICAL ENGINEERING

R486 Chemical Engineering Analysis (3)

Wilburn

An engineering course designed to increase the student's facility in solving problems with the aid of mathematics. The emphasis is placed on expressing physical problems in mathematical language and following through to obtain numerical solutions. Only a minimum time will be spent on methods of solving differential equations. Problems will be taken from fields of chemical engineering interest such as diffusional processes, heat transfer, fluid flow, thermodynamics, and kinetics. Prerequisite, permission. (Offered Autumn, 1962. Tentatively offered Autumn, 1963.)

R570 Introduction to Transport Phenomena (3)

Johnson

Derivation of general differential equations for transport of heat, mass, and momentum; kinetic theory of fluids and its application to transport phenomena based on molecular motion; methods for estimating transport coefficients in fluids. Prerequisite, undergraduate course in unit operations, or permission. (Offered Autumn, 1962. Tentatively offered Autumn, 1963.)

†Member of the University of Washington faculty in Seattle.

- R571 Heat Transfer I (3)** **Batch**
Steady and unsteady state conduction with emphasis on numerical methods. Radiation, design theory background and application to furnace design, convection, introductory concepts, methods for predicting coefficients, recent developments in theory, heat-exchanger design. Prerequisite, R570. (Offered Winter, 1963.)
- R573 Absorption and Extraction (3)** **Johnson**
A study of mass transfer, primarily in gaseous and liquid systems. From the basic theoretical principles of diffusion are developed the working equations of mass transfer which are subsequently used to obtain exact solutions to several types of diffusion problems of interest to the chemical engineer. The basic principles are next applied to obtaining an understanding of several diffusion processes such as absorption, extraction, ion exchange, and thermal diffusion. Prerequisites, R486 and R570. (Tentatively offered Winter, 1964.)
- R574 Fluid Mechanics (3)**
Mechanism of fluid flow. Total energy balance and Bernoulli's Theorem. Integration of the differential equations for motion of a fluid. Poiseuille, Fanning, and other equations. Turbulent flow and boundary-layer relationships. High velocity flow. Introductory design calculations. Prerequisites, undergraduate course in fluid mechanics or hydraulics, and R570. Offered on demand.
- R575 Advanced Chemical Engineering Thermodynamics (3)** **Platt**
Principles of thermodynamics. Applications to unit operations and to prediction of phase equilibria and chemical equilibria. Prerequisites, undergraduate course in chemical engineering thermodynamics and graduate standing, or permission. (Offered Winter, 1963.)
- R576 Heat Transfer II (3)** **Batch**
Continuation of R571. Prerequisites, R571 and R574. (Offered Spring, 1963.)
- R581 Kinetics and Catalysis (3)** **Platt**
Kinetics of homogeneous and heterogeneous systems, with emphasis on application of chemical engineering principles applied to the design of industrial development and production reactors. Prerequisite, R575. (Offered Spring, 1963.)
- R582 Advanced Topics in Mass Transfer (3)** **Johnson**
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, R573 or permission. (Tentatively offered Spring, 1963.)
- R583 Advanced Topics in Chemical Engineering (1-3)** **Batch**
Discussions and readings of topics of current interest in the field of chemical engineering unit operations. Prerequisites, R574, R576, or permission. (Tentatively offered Spring, 1964.)

CIVIL ENGINEERING

- R584 Plastic Design of Structures (3)** **Merckx**
Concepts of plastic behavior, limit design, and shakedown are presented. Application to frame and shell structures is stressed. Prerequisite, R589. (Tentatively offered Spring, 1964.)
- R588 Analysis of Structures (3)** **Merckx**
Influence coefficients and matrix methods of analysis in analyzing frame types of structures. Castigliano's Theorem is applied to curved members. Prerequisites, Mathematics R322 and graduate standing, or permission. (Tentatively offered Autumn, 1963.)
- R589 Analysis of Structures (3)** **Merckx**
Influence coefficients and matrix methods of analysis applied to axially-symmetric structures. Membrane solutions and bending solutions for circular plates, circular cylinders, axially-symmetric shells, and rings are obtained for the influence coefficients. Prerequisite, R588. (Tentatively offered Winter, 1964.)

ELECTRICAL ENGINEERING

- R441 Linear System Analysis (3)**
Frequency and time domain properties of signals. Fourier methods for determining the response of linear systems. Transform methods and operational properties. Comparison of Fourier and Laplace transform methods. Prerequisite, 311 (Electric Transients) or permission. (Offered Autumn, 1962.)
- R478- Fundamentals of Automatic Control (0-)**
No credit allowed for R478- until -R479 has been completed satisfactorily. An introductory course presenting the basic methods of analysis of linear feedback systems. Subjects covered are: the Laplace Transform, transfer functions, frequency response, Root locus, stability criteria, and transient solutions. Prerequisite, degree in engineering, or permission. (Offered on demand.)
- R479 Fundamentals of Automatic Control (-4)**
Intermediate subjects in the field of feedback system analysis and synthesis. The subjects included are: performance criteria, synthesis to meet design criteria, the analysis of multi-loop systems, the relationship of frequency response to transient response, introduction to nonlinear systems and nonlinear analysis, and current topics. Prerequisite, R478-. (Offered on demand.)

- R505 Analysis of Random Processes (3)**
Probability Theory; discrete and continuous random variables; stochastic processes. Spectral analysis of random signals and noise. Introduction to Markov processes. Prerequisite, R441 or permission. (Offered Winter, 1963.)
- R586 Electrical Computing Methods (4)** **Wilburn**
Study of field models, analog and digital computers, and various special-purpose computers for solving electrical problems. Includes one three-hour laboratory per week. Prerequisite, graduate standing. (Offered Spring, 1963.)

MECHANICAL ENGINEERING

- R412 Engineering Economics (3)** **Lang**
A composite study of theoretical engineering economy presented in two categories. The first part covers economic principles and elementary accounting and corporate investment procedures including studies of money equivalents; amortization practices within present tax structure; capital requirements for process plants; and the relationship of costs, earnings, profits, and returns. The second part of the course will illustrate the techniques of applying these principles with emphasis on comparative annual costs, earning ratios, pay-out times, economic balance, and investment principles. Prerequisites, degree in engineering or permission. (Offered Autumn, 1962.)
- R521 Thermodynamics (3)**
An introductory course in graduate level thermodynamics. The course is designed to give the student an appreciation of classical thermodynamics and is taught primarily from the scientific rather than the engineering approach. Fundamentals, logic, and mathematics are stressed. This course will establish the principles for R522. Prerequisite, undergraduate course in thermodynamics or permission. (Tentatively offered Autumn, 1963.)
- R522 Thermodynamics (3)**
Thermodynamics of chemical reactions including the third law and equilibrium conversion. Analysis of the thermodynamics of fluid flow, heat transfer, and certain other processes. Prerequisite, R521. (Tentatively offered Winter, 1964.)
- R523 Thermodynamics (3)**
Analysis of heat power cycles including steam turbine cycle design, optimization of parameters, and effect of operational variables. The application of nuclear reactors as the heat source of the steam turbine cycle is covered in some detail. Prerequisite, R522. (Tentatively offered Spring, 1964.)
- R568 Vibrations (3)** **Morckx**
Single degree of freedom, including free vibrations undamped, free vibrations damped, forced vibrations (harmonic forcing); multidegree of freedom, including free vibrations (natural frequencies), forced vibrations of multidegree of freedom systems; use of energy techniques, including approximations of continuous systems (natural frequency). Prerequisite, senior standing or permission. (Offered on demand.)

METALLURGICAL ENGINEERING

- R361 Physical Metallurgy I (4)** **Bush, Tobin, Leggett**
An introduction to the fundamentals of physical metallurgy: classification of metals, the periodic table, atomic structure and interatomic relationships, crystallography of metals including Miller indices, single crystals, and polycrystals; alloys and alloying binary equilibrium diagrams, substitutional and interstitial solid solutions, and intermetallic compounds; the applications of the phase rate. Prerequisites, undergraduate physics. Graduate credit only toward a minor degree. (Offered Autumn, 1962.)
- R362 Physical Metallurgy II (4)** **Bush, Tobin, Leggett**
The physical metallurgy of iron and steel, preparation, atomic nature and allotropic change in iron; metastable binary phase diagrams, alloying behavior of iron, iron-graphite and iron-Fe₃C phase diagrams; equilibrium relations in plain carbon steels, the metallurgy of cast iron, reaction kinetics of phase transformations in steels, the mechanism of formation of subcritical substances; alloy steels; hardenability and hardenability concepts. Prerequisites, R361 or engineering metallurgy. (Offered Winter, 1963.)
- R363 Physical Metallurgy III (4)** **Bush, Tobin, Leggett**
Metallurgical phenomena of industrial importance: casting and solidification, heat and cold working, surface treatment of metals, joining, machining and powder metallurgy; equilibrium and non-equilibrium structures and phases; diffusion and diffusion dependent mechanisms such as recovery, recrystallization growth, aging and precipitation hardening; gases in metals; metal failure analysis. Prerequisite, R362. (Offered Spring, 1963.)
- R436 Metallurgical Thermodynamics (3)** **Bush**
Basic concepts of thermodynamics as applied to metallurgy. Particular emphasis will be given to physical metallurgical applications. First, second, and third laws of thermodynamics, fugacity, activity, and the equilibrium constant; thermodynamics of solutions. Prerequisites, undergraduate course in thermodynamics, Mathematics R322, or permission. (Offered on demand.)
- R447 Nuclear Metallurgy (3)** **Bush, Leggett, Tobin**
The behavior of fissionable and nonfissionable metals in a reactor environment, including the fundamental mechanisms for irradiation behavior of U. Prerequisite, course in elements or fundamentals of metallurgy, or permission. (Tentatively offered Autumn, 1963.)

- R450 Light Metals (3)** **Bush, Leggett, Tobin**
The metallurgy of aluminum, magnesium, titanium, and their alloys. Prerequisite, undergraduate courses in physical metallurgy or engineering physical metallurgy, or permission. (Offered on demand.)
- R470 Metallurgical Problems and Their Evaluation (3)** **Bush**
Metal specimens taken from objects that failed during service will be discussed and the samples presented to the student for evaluations. The student will present his evaluation in the form of a technical report. Prerequisites, R536 and R569. (Offered on demand.)
- R536 Advanced Metallurgical Thermodynamics (3)** **Bush**
Phase relations, homogenous and heterogeneous equilibria, free-energy-composition and temperature-pressure diagrams, and the iron carbon systems. Prerequisite, R436. (Offered on demand.)
- R537 Corrosion and Oxidation of Metals (3)** **Bush**
Basic corrosion and oxidation mechanisms for various metals with emphasis on those pertaining to stainless steels. Prerequisite, senior-level course in elements of physical metallurgy or permission. (Offered on demand.)
- R544 Irradiation Effects in Metals and Alloys (3)** **Bush, Leggett, Tobin**
Review of neutron induced damage in fissionable and nonfissionable metals and alloys. Influence of crystal structure, impurity atoms, phases on physical and mechanical properties based on current damage theories and empirical data. Interpretation of damage and understanding of damage mechanisms. Prerequisites, R569, Mathematics R322. (Tentatively offered Spring, 1964.)
- R547 Advanced Nuclear Metallurgy (3)** **Bush, Leggett, Tobin**
Damage mechanisms in nonfissionable metals as related to crystallographic structure and other significant properties. Prerequisite, R447. (Tentatively offered Winter, 1964.)
- R567, R568, R569 Advanced Physical Metallurgy (3, 3, 3)** **Bush**
Electron theory of metals; statistical thermodynamic approach to solid state reactions—order, disorder, phase transformations, diffusion, nucleation, and growth; theory of alloys (Hume-Rothery); metal interfaces; dislocation theory. Prerequisite, degree in metallurgical engineering or permission. (Offered on demand.)

NUCLEAR ENGINEERING

- R484 Introduction to Nuclear Engineering (4)** **Hofmann**
A course in nuclear engineering for seniors, graduate students, and practicing engineers; covering elements of reactor nuclear physics; elementary nuclear reactor theory; radiation shielding; materials of construction. Prerequisites, Mathematics R322, Physics R323. (Offered Spring, 1963. Tentatively offered Spring, 1964.)
- R485 Nuclear Instruments (3)**
A lecture and laboratory course devoted to the basic design and operation of the instruments used in nuclear engineering, such as badges, dosimeters, Geiger counters, proportional counters, survey meters, scalars, radiation monitors, scintillation spectrometers, etc. Experiments will demonstrate the characteristics of nuclear instruments and associated circuitry. Safety practices will be emphasized throughout the course. Prerequisite, R484. (Offered Autumn, 1962.)
- R486 Nuclear Power Plants (3)** **Heacock**
The design, operation, and maintenance of the nuclear power plant, architectural layouts, basic heat-power cycle components, and essential auxiliary equipment. A critical survey of existing, or proposed, nuclear power plants covering the range of power applications and reactor types with emphasis on those generating commercial electrical power. The effects of such specific requirements as capital costs, fuel cycle, space and weight on plant design, and equipment arrangement. Prerequisite, R484 or permission. (Tentatively offered Spring, 1964.)
- R501 Nuclear Reactor Theory Laboratory (3)** **Bennett**
A laboratory course in reactor physics using exponential piles, the Hanford Standard Pile, and analog computers. Experiments will include measurement of diffusion length, material buckling, and effective pile size; calibration of foils and neutron sources with an introduction to scintillation counting techniques; analog computer studies of reactor kinetics and control; measurement of danger coefficients and lattice parameters; and selected experiments according to class interests. Prerequisite, R506. (Offered Spring, 1963. Tentatively offered Spring, 1964.)
- R502-R503 Nuclear Engineering Laboratory (3-3)** **Schmid**
An advanced laboratory course centered around a 100-watt graphite reactor. Experiments will be performed utilizing the steady-state and dynamic characteristics of the reactor. Some experiments will also be performed employing the reactor as a source of radiation. Training in reactor startup and shutdown procedures and in instrumentation checkout and calibration is included in the course. Prerequisite, R501 or permission. (Offered Autumn, 1962 and Winter, 1963.)
- R505, R506 Nuclear Reactor Theory (3,3)** **Nichols**
A lecture course in nuclear reactor physics covering neutron production, reactions, and cycles; diffusion and slowing down of neutrons; theory of criticality of homogeneous and heterogeneous systems; reactor kinetics and control theory; and elements of perturbation theory. Prerequisites, R484, Mathematics R428 (Mathematics R427 and R429 recommended, but not required), and Physics R323 or R483. (Offered Autumn, 1962, Winter, 1963. Tentatively offered Autumn, 1963, Winter, 1964.)

R510 Nuclear Reactor Engineering (3)

An advanced course in engineering analysis of nuclear reactor systems. The course covers core design methods, heat generation and distribution in nuclear reactor systems, the removal and utilization of heat for power production, fuel cycles and processing of irradiated reactor fuels, shielding of nuclear radiations. Prerequisite, R506. (Offered Spring, 1963. Tentatively offered Autumn, 1963.)

R539 Nuclear Reactor Design (3)**Heacock**

A design laboratory course involving the synthesis of reactor theory, engineering analysis, material specifications, and economics to meet the design specifications for a complete nuclear reactor facility. Emphasis upon cycle analysis, hazards, arrangements, and requirements peculiar to nuclear reactor plants. Prerequisite, R510. (Offered on demand.)

R559 Control of Radioactive Wastes (3)**Schwendiman**

Sources of radioactive wastes in nuclear plants and other installations, permissible limits, safe methods for disposal, methods for reducing volumes and concentrations, sampling and analysis techniques, air and liquid stream monitoring, site selection as influenced by waste disposal criteria, release and consequence of radioactive isotopes during disastrous incidents. Prerequisite, Physics R323 or permission. (Offered Winter, 1963. Tentatively offered Winter, 1964.)

SCHOOL OF LIBRARIANSHIP**R510 Evaluation of Library Materials (4)****Orr**

Sources of information about books; criteria of evaluation for selection; evaluation of general reference materials; procedures of reader's services. (Offered on demand.)

R511 Library Materials in the Humanities and Social Sciences (3)**Orr**

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, R510. (Offered on demand.)

R512 Library Materials in Science and Technology (3)**Orr**

Continuation of R511. Prerequisite, R510. (Offered on demand.)

R530 Organization of Library Materials: Theory and Principles (4)**Orr**

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. (Offered Autumn, 1962.)

R531 Organization of Library Materials: Comparative Methods (4)**Orr**

Cataloging practices and methods employed to meet varying needs. Prerequisite, R530. (Offered Winter, 1963.)

R532 Organization of Library Materials: Advanced Problems (2)**Orr**

Cataloging of special materials; maps, music, microfilm, and rare books; special classification schemes. Prerequisite, R531. (Offered Spring, 1963.)

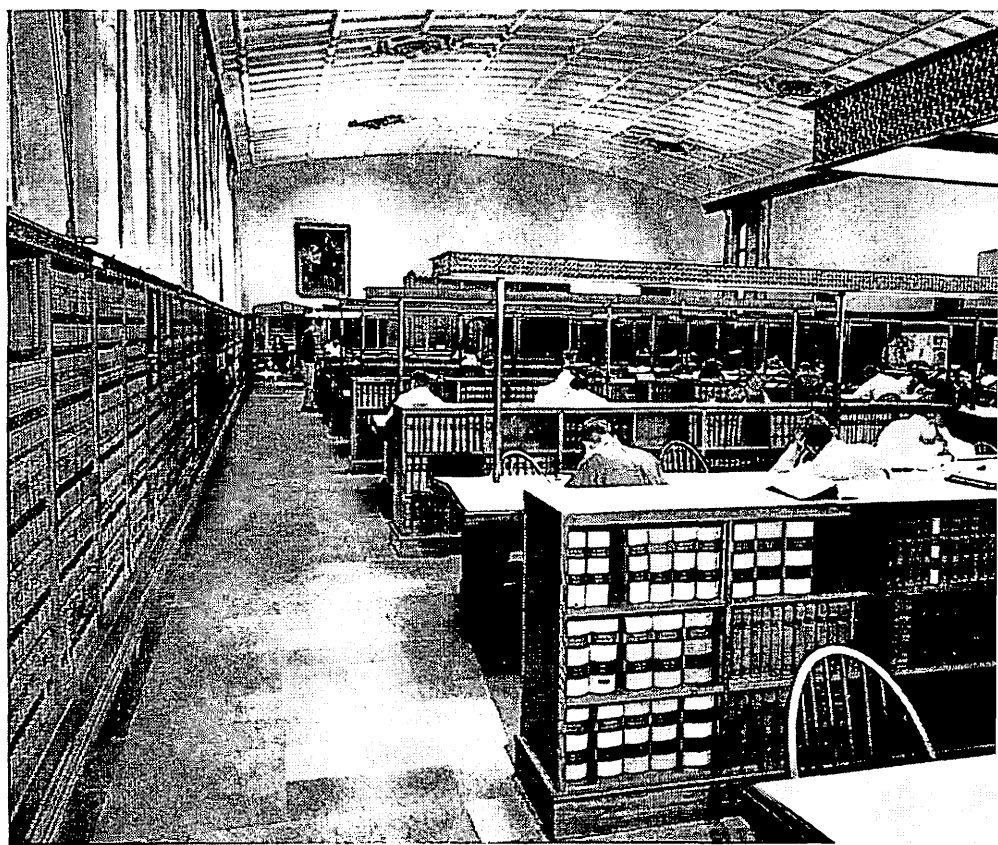
SCHOOL OF MEDICINE**RADIOLOGY****R400 Radiobiology (3)****Bair**

This course requires only a minimum background in chemistry and does not presume any prior study of biology. Chemical, biological, and genetic effects of irradiation on unicellular and multicellular organisms, tolerance and dosage limits, effect of internal emitters, radiological ecology. Prerequisites, degree in science or engineering, Physics R323, or permission. (Offered Autumn, 1962.)

R485 Radiation Dosimetry (4)**Roesch**

The measurement of radiation energy loss relationships in gases and solids; detection techniques and circuits; units; consideration of human exposure limits. Prerequisite, permission. (Offered Winter, 1963.)

BULLETIN • UNIVERSITY OF WASHINGTON



SCHOOL OF LAW

1962-1964

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes three general bulletins; bulletins of the colleges and schools; Summer Quarter Bulletin; the bulletin of the Center for Graduate Study at Hanford; and bulletins of the Division of Correspondence Study and the Division of Evening Classes.

INTRODUCTION TO THE UNIVERSITY, one of the general bulletins, is especially prepared for new and prospective students. It lists all the University curricula, with their admission requirements, and presents information on other phases of student life, including services for students, student activities, and expenses. UNIVERSITY RULES AND REGULATIONS, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as registered students. HANDBOOK OF SCHOLARSHIPS, the third general bulletin, lists the various scholarships available.

Curricula, courses, and scholarship requirements in each field of study are described in the college and school bulletins. Each of these bulletins also discusses services, organizations, and expenses as they relate to students in the particular college or school.

Requests for copies of any of the bulletins should be addressed to the Addressograph Service.

General Bulletins

HANDBOOK OF SCHOLARSHIPS (RESTRICTED DISTRIBUTION)

INTRODUCTION TO THE UNIVERSITY

UNIVERSITY RULES AND REGULATIONS (FOR REGISTERED STUDENTS ONLY)

Bulletins of the Colleges and Schools

COLLEGE OF ARCHITECTURE AND URBAN PLANNING

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF BUSINESS ADMINISTRATION

SCHOOL OF DENTISTRY

COLLEGE OF EDUCATION

COLLEGE OF ENGINEERING

COLLEGE OF FISHERIES

COLLEGE OF FORESTRY

GRADUATE SCHOOL

SCHOOL OF LAW

SCHOOL OF MEDICINE

SCHOOL OF NURSING

COLLEGE OF PHARMACY

SCHOOL OF SOCIAL WORK

Other Bulletins

SUMMER QUARTER

CENTER FOR GRADUATE STUDY AT HANFORD

CORRESPONDENCE STUDY

EVENING CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON

General Series No. 980

April, 1962

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CALENDAR*Dates in this Calendar are subject to change without notice.***SUMMER QUARTER, 1962****REGISTRATION PERIOD**

JUNE 4-JUNE 8 Registration for Summer Quarter

ACADEMIC PERIOD

JUNE 11—MONDAY First term begins
 JULY 4—WEDNESDAY Independence Day holiday
 JULY 18—WEDNESDAY First term ends
 JULY 19—THURSDAY Second term begins
 AUGUST 24—FRIDAY Second term ends

AUTUMN QUARTER, 1962**REGISTRATION PERIOD**

MAY 23-24 Advance Registration only for students in residence Spring Quarter, 1962. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.

JULY 15 Deadline for ALL new students to submit Applications for Admission with complete credentials.

SEPT. 20 All new first-year students must register in person.

SEPT. 21-25 Orientation program for first-year students.

SEPT. 25 In-Person Registration for new transfer students with at least full second-year standing. Also, In-Person Registration for former students not in residence Spring Quarter, 1962, and those attending Spring Quarter, 1962, who failed to complete Advance Registration. Former students may obtain Registration Permits by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Permits is August 15.***ACADEMIC PERIOD**

SEPT. 26—WEDNESDAY Instruction begins
 OCT. 2—TUESDAY Last day to add a course
 NOV. 12—MONDAY State Admission Day holiday
 NOV. 21-26 Thanksgiving recess (5:30 p.m. to 7:30 a.m.)
 DEC. 15—SATURDAY End of examination period

WINTER QUARTER, 1963**REGISTRATION PERIOD**

NOV. 7-9 Advance Registration only for students in residence Autumn Quarter, 1962. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.

JAN. 2-4 In-Person Registration for former students not in residence Autumn Quarter, 1962, and those attending Autumn Quarter, 1962, who failed to complete Advance Registration. Registration Permits may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Permits is December 1.*

ACADEMIC PERIOD

JAN. 7—MONDAY	Instruction begins
JAN. 11—FRIDAY	Last day to add a course
FEB. 22—FRIDAY	Washington's Birthday and Founder's Day holiday
MAR. 23—SATURDAY	End of examination period

SPRING QUARTER, 1963**REGISTRATION PERIOD**

FEB. 5-7	Advance Registration only for students in residence Winter Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
MAR. 26-28	In-Person Registration for former students not in residence Winter Quarter, 1963, and those attending Winter Quarter, 1963, who failed to complete Advance Registration. Registration Permits may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Permits is March 1.</i>

ACADEMIC PERIOD

APR. 1—MONDAY	Instruction begins
APR. 5—FRIDAY	Last day to add a course
MAY 30—THURSDAY	Memorial Day holiday
JUNE 14—FRIDAY	End of examination period
JUNE 15—SATURDAY	Commencement

SUMMER QUARTER, 1963**REGISTRATION PERIOD**

JUNE 10-14	Registration for Summer Quarter
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ACADEMIC PERIOD

JUNE 17—MONDAY	First term begins
JULY 4—THURSDAY	Independence Day holiday
JULY 24—WEDNESDAY	First term ends
JULY 25—THURSDAY	Second term begins
AUGUST 30—FRIDAY	Second term ends

AUTUMN QUARTER, 1963**REGISTRATION PERIOD**

MAY 21-22	Advance Registration only for students in residence Spring Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
JULY 15	Deadline for ALL new students to submit Applications for Admission with complete credentials.
SEPT. 19	All new first-year students must register in person.
SEPT. 20-24	Orientation program for first-year students.

SEPT. 24

In-Person Registration for new transfer students with at least full second-year standing. Also, In-Person Registration for former students not in residence Spring Quarter, 1963, and those attending Spring Quarter, 1963, who failed to complete Advance Registration. Former students may obtain Registration Permits by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Permits is August 15.*

ACADEMIC PERIOD

SEPT. 25—WEDNESDAY

Instruction begins

OCT. 1—TUESDAY

Last day to add a course

NOV. 11—MONDAY

State Admission Day holiday

NOV. 27—DEC. 2

Thanksgiving recess (5:30 p.m. to 7:30 a.m.)

DEC. 14—SATURDAY

End of examination period

WINTER QUARTER, 1964**REGISTRATION PERIOD**

Nov. 5-7

Advance Registration only for students in residence Autumn Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.

DEC. 30—JAN. 2

In-Person Registration for former students not in residence Autumn Quarter, 1963, and those attending Autumn Quarter, 1963, who failed to complete Advanced Registration. Registration Permits may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Permits is December 1.*

ACADEMIC PERIOD

JAN. 6—MONDAY

Instruction begins

JAN. 10—FRIDAY

Last day to add a course

FEB. 22—SATURDAY

Washington's Birthday and Founder's Day holiday

MAR. 21—SATURDAY

End of examination period

SPRING QUARTER, 1964**REGISTRATION PERIOD**

FEB. 4-6

Advance Registration only for students in residence Winter Quarter, 1964. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that Quarter.

MAR. 24-26

In-Person Registration for former students not in residence Winter Quarter, 1964, and those attending Winter Quarter, 1964, who failed to complete Advance Registration. Registration Permits may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Permits is March 1.*

ACADEMIC PERIOD

MAR. 30—MONDAY

Instruction begins

APR. 3—FRIDAY

Last day to add a course

MAY 30—SATURDAY

Memorial Day holiday

JUNE 12—FRIDAY

End of examination period

JUNE 13—SATURDAY

Commencement

ADMINISTRATION**BOARD OF REGENTS**

MRS. A. SCOTT BULLITT, <i>President</i>	Seattle
ALBERT B. MURPHY, M.D., <i>Vice-President</i>	Everett
JOSEPH DRUMHELLER	Spokane
JOHN L. KING	Seattle
HERBERT S. LITTLE	Seattle
HAROLD S. SHEFELMAN	Seattle
ROBERT J. WILLIS	Yakima
HELEN E. HOAGLAND, <i>Secretary</i>	
DON H. WAGEMAN, <i>Treasurer</i>	

OFFICERS OF ADMINISTRATION

CHARLES E. ODEGAARD, Ph.D.	<i>President of the University</i>
FREDERICK P. THIEME, Ph.D.	<i>Provost of the University</i>
GLENN LEGGETT, Ph.D.	<i>Vice-Provost of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
HAROLD A. ADAMS, M.S.	<i>Director of Admissions</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>
GEORGE NEFF STEVENS, S.J.D.	<i>Dean of the School of Law*</i>
LEHAN K. TUNKS, J.S.D.	<i>Dean of the School of Law**</i>
RICHARD B. AMANDES, LL.M.	<i>Assistant Dean of the School of Law</i>

* Until Jan. 1, 1963.

** Effective Jan. 1, 1963.

SCHOOL OF LAW FACULTY

A single date following the name indicates the beginning of service in the University. When two dates are given, the second, in parentheses, is the date of promotion to present academic rank.

- Amandes, Richard B., 1958 (1960), *Assistant Dean; Associate Professor of Law*
(Legal Research and Writing, Appellate Arguments)
A.B., 1950, California (Berkeley); LL.B., 1953, University of California, Hastings College of the Law; LL.M., 1956, New York University. Admitted to practice in California and Washington.
- Cosway, Richard, 1958, *Professor of Law*
(Criminal Law and Procedure, Commercial Transactions, Creditors' Rights, Social Legislation)
A.B., 1935, Denison University; LL.B., 1942, Cincinnati. Admitted to practice in Ohio.
- Cross, Harry M., 1943 (1949), *Professor of Law*
(Property I, Property II, Equitable Remedies, Community Property)
B.A., 1936, Washington State; LL.B., 1940, Washington. Admitted to practice in Washington.
- Fletcher, Robert L., 1956 (1960), *Professor of Law*
(Property II, Constitutional Law, Trusts, Probate Practice)
A.B., 1939, LL.B., 1947, Stanford. Admitted to practice in Washington.

- Gallagher, Marian Could, 1944 (1953), *Professor of Law; Law Librarian*
(Legal Research and Writing)
B.A., 1935, B.A. in L.S., 1939, LL.B., 1937, Washington. Admitted to practice in Washington.
- Gose, J. Gordon, 1944 (1946), *Professor of Law*
(Business Associations, Income Taxation, Wills and Administration, Corporation Finance)
A.B., 1926, Whitman College; LL.B., 1929, Washington; LL.D., 1956, Whitman College. Admitted to practice in Washington.
- Harsch, Alfred, 1930 (1940), *Professor of Law*
(Income Taxation, Estate Planning, Legislation, State and Local Tax, Death and Gift Taxation)
A.B., 1926, LL.B., 1928, Washington; LL.M., 1940, Columbia. Admitted to practice in Washington.
- Henderson, Dan Fenno, 1962, *Research Professor and Director of the Law of Asian Countries Program*
(International Transactions, Comparative Law)
B.A., 1944, Whitman College; B.A., 1945, Michigan; LL.B., 1949, Harvard; Ph.D., 1955, California (Berkeley). Admitted to practice in Washington, California, Japan and Korea.
- Johnson, Ralph W., 1955 (1961) *Professor of Law*
(Property I, Agency, Natural Resources, Conveyancing)
Diploma, 1945, Lehigh; B.S. in Law, 1947, LL.B., 1949, Oregon. Admitted to practice in Oregon and Washington.
- Levy, Ernst, 1937 (1952), *Professor Emeritus of History, Political Science and Law*
LL.D., 1906, Berlin.
- Meisenholder, Robert, 1954, *Professor of Law*
(Agency, Business Associations, Civil Procedure II, Evidence, Federal Jurisdiction)
A.B., 1936, South Dakota; J.D., 1939, S.J.D., 1942, Michigan. Admitted to practice in South Dakota, New York and Ohio.
- Morris, Arval, 1955 (1961), *Professor of Law*
(Criminal Law and Procedure, Constitutional Law, Jurisprudence, Supreme Court Today)
B.A., 1951, Colorado College; M.A., 1952, LL.B., 1955, Colorado; LL.M., 1958, Yale. Admitted to practice in Colorado.
- Mucklestone, Robert S., 1961, *Lecturer in Law*
(Estate Planning)
B.S., 1953, LL.B., 1954, Washington. Admitted to practice in Washington.
- Nottelmann, Rudolph H., 1927 (1961) *Professor Emeritus of Law*
B.A., 1912, LL.D., 1952, Monmouth College; M.A., 1913, Illinois; LL.B., 1922, Yale.
- Peck, Cornelius J., 1954 (1958), *Professor of Law*
(Torts, Administrative Law, Labor Law, Labor Relations)
B.S., 1944, Harvard; Certificate, 1945, Harvard Business School; LL.B., 1949, Harvard. Admitted to practice in Massachusetts and Washington.
- Richards, John W., 1931 (1937), *Professor of Law*
(Torts, Damages, Admiralty, Evidence)
B.A., 1923, Wisconsin; LL.B., 1926, LL.M., 1930, S.J.D., 1931, Harvard. Admitted to practice in Wisconsin.
- Rieke, Luvern V., 1949 (1956), *Professor of Law*
(Contracts, Domestic Relations, Government Regulation of Business)
B.S., 1948, LL.B., 1949, Washington; LL.M., 1953, Chicago; LL.D., 1959, Pacific Lutheran. Admitted to practice in Washington.
- Rombauer, Marjorie Dick, 1960, *Instructor in Law*
(Legal Research and Writing, Appellate Arguments)
B.A., 1958, LL.B., 1960, Washington. Admitted to practice in Washington.
- Shattuck, Warren L., 1935 (1941), *Professor of Law*
(Contracts, Mortgages, Suretyship)
B.A., 1934, LL.B., 1934, Washington; J.S.D., 1936, Yale. Admitted to practice in Washington.

Stevens, George Neff, 1952, *Professor of Law*

(Civil Procedure I, Civil Procedure II, Equitable Remedies, Criminal Procedure Seminar, Office Management and Professional Responsibility)

A.B., 1931, Dartmouth College; LL.B., 1935, Cornell; M.A., 1941, Louisville; S.J.D., 1951, Michigan. Admitted to practice in New York, Kentucky, Ohio, and Washington.

Taylor, Robert L., 1941 (1945), *Professor of Law*

(Agency, Commercial Transactions, Insurance, Corporation Finance)

B.A., 1927, Yale; J.D., 1930, Northwestern. Admitted to practice in Illinois.

Trautman, Philip A., 1956 (1961), *Professor of Law*

(Conflict of Laws, Trial and Appellate Practice, Administrative Law, Community Property, Local Government Law, Problems in Metropolitan Planning)

B.A., 1952, LL.B., 1954, Washington. Admitted to practice in Washington.

Tunks, Lehan K., 1963, *Dean of the School of Law; Professor of Law*

A.B., 1935, Nebraska; J.D., 1938, Northwestern; J.S.D., 1947, Yale. Admitted to practice in Illinois.

ASSOCIATE JUDGES OF THE PRACTICE COURT

Agnew, Henry Clay.....	Judge, King County Superior Court, Seattle
Birdseye, Story.....	Judge, King County Superior Court, Seattle
Cramer, Henry W.....	Judge, King County Superior Court, Seattle
Denney, Charles R.....	Judge, Snohomish County Superior Court, Everett
Gaines, Donald L.....	Judge, King County Superior Court, Seattle
Henry, Edward E.....	Judge, King County Superior Court, Seattle
James, Frank D.....	Judge, King County Superior Court, Seattle
Niles, Donald M.....	Court Commissioner, King County Superior Court, Seattle
Nollmeyer, Edward M.....	Judge, Snohomish County Superior Court, Everett
Revelle, George H.....	Judge, King County Superior Court, Seattle
Royal, Raymond.....	Judge, King County Superior Court, Seattle
Shorett, Lloyd W.....	Judge, King County Superior Court, Seattle
Stiger, Thomas R.....	Judge, Snohomish County Superior Court, Everett
Walterskirchen, F. A.....	Judge, King County Superior Court, Seattle
Wilkins, William J.....	Judge, King County Superior Court, Seattle
Wright, Eugene A.....	Judge, King County Superior Court, Seattle

ASSOCIATE LECTURERS IN ESTATE PLANNING

Alkire, Durward.....	C.P.A., Touche, Niven, Bailey and Smart
Bernbaum, Sanford M.....	C.L.U., Bernbaum Insurance Service
Cooper, John M.....	Attorney, National Bank of Commerce
Ellison, David.....	Trust Officer, Seattle-First National Bank
Graves, Victor.....	Trust Officer, People's National Bank
Kehoe, Adlore R.....	Attorney, Jones, Grey, Kehoe, Hooper and Olsen
Lewis, Robert E.....	Trust Officer, Pacific National Bank of Seattle
Osborn, Charles F.....	Attorney, Bogle, Bogle, and Gates
Rohlf, Marcus.....	Supervisor, Estate and Gift Tax, Internal Revenue Service
Stone, Charles I.....	Attorney, Holman, Mickelwait, Marion, Black, and Perkins
Stull, Franklin.....	C.L.U., Franklin Stull Agency
Williams, DeWitt.....	Attorney, Rosling, Williams, Lanza, and Kastner

OBSERVANCE OF UNIVERSITY RULES AND REGULATIONS

It is the University's expectation that a student will follow University rules and regulations as they are stated in the Bulletins. In instances where no appeal procedure is spelled out and the student is persuaded that a special set of circumstances makes appeal reasonable, he may appeal the application of specific rules or regulations to the Office of the Dean of the School or College in which he is enrolled in the case of an academic matter, or to the Office of the Dean of Students in the case of a nonacademic matter. These offices will either render a decision on the appeal or refer the student to the proper office for a decision.

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.



GENERAL INFORMATION

GENERAL INFORMATION

THE SCHOOL OF LAW

THE SCHOOL OF LAW was established at the University of Washington in 1899. It is presently housed in Condon Hall, named after John T. Condon, the organizer and first dean of the Law School. The building is designed and constructed for the particular needs of a law school.

The School is a member of the Association of American Law Schools and is approved by the Council of the Section of Legal Education and Admissions to the Bar of the American Bar Association.

OBJECTIVES AND METHODS OF INSTRUCTION

The objective of the faculty of the School of Law is to train young men and women for the practice of law anywhere in the United States, whether it be as advocate, counsellor, judge, or law teacher, in accordance with the highest traditions of professional responsibility. The study of law may also serve as the stepping-stone to a career in government, politics, or business. The curriculum and the methods of instruction are designed to develop in the student his highest potential, whatever may have been his reason for entering the school.

Since the problems of the individual litigant or client are at the same time a part of the larger problems of an enormously complex and competitive society, it is necessary in the training of effective practicing lawyers and judges to provide the widest possible perspective of history, economics, social sciences, and philosophy. It is essential that the student see and understand the law, not as a self-contained system designed primarily for the settlement of disputes between individuals, but as a decisive, if not the dominant, factor of social control in a society which is in constant flux. Thus the law is not, and cannot be, static. The man who is "learned in the law," as the old phrase put it, is still the one who has developed the ability to find sound solutions to new problems by developing and using, rather than merely echoing, the teachings of the past.

Methods of instruction vary with the instructor and the course. The basic materials are the actual decisions of appellate courts, supplemented by selected readings from other sources which shed light on the nature of judicial, administrative, and legislative processes. Classroom techniques encourage the student to rely upon his own initiative and to develop his powers of perception and communication.

The first two years of the curriculum are devoted to the study of basic courses and are required of all students. The third year is almost wholly elective, so that the student, in the light of his own developed interests, may delve more deeply into those subjects which he thinks will best suit his needs.

PROGRAM IN THE LAW OF ASIAN COUNTRIES

In the Winter Quarter of 1962, the School of Law established its program in the Law of Asian Countries. Supported by funds from the Ford Foundation, this program will place its initial research emphasis on the legal aspects of foreign investments, licensing, and trade, starting with Japan, and extending in due course to other Asian countries such as the Philippines, India, Malaya, and China.

Courses are offered on various aspects of the legal problems likely to be encountered in dealing with Asian affairs. The research and teaching programs are designed to develop materials not presently available to western legal scholarship and to meet the growing demand for lawyers and scholars trained in such matters.

LAW LIBRARY

The Law School Library contains over 144,000 volumes; included are decisions of all English and American courts of last resort and the reported decisions of all lower courts in the United States. Extensive collections of English, American, and colonial statutes are available, as are copies of all legal periodicals published in English.

In addition, the Law School Library has one of the best collections of Japanese law materials in the United States and other substantial Asian collections which are being augmented rapidly by use of new funds obtained from the Ford Foundation.

STATE AND FEDERAL COURTS

The School of Law is within a convenient distance of federal and state courts sitting in Seattle, and students can witness the trial of actual cases. The United States District Court is in session and tries cases almost continuously. The United States Court of Appeals for the Ninth Circuit holds a session in the city each year. The superior court for King County, the justice courts, the municipal court, and the juvenile court are in session throughout the school year. The Supreme Court of the State of Washington, at Olympia, is also within comparatively easy reach and provides opportunities for students to hear the argument of cases on appeal.



ADMISSION TO THE LAW SCHOOL

ADMISSION TO THE LAW SCHOOL

PRELEGAL EDUCATION

The School of Law does not prescribe a definite prelegal curriculum for its applicants. The wide range of lawyers' tasks and the difference in offerings from school to school preclude such an approach. However, there are certain goals which every prelegal student should keep before him in planning his college program. He should strive to acquire the ability to read, write, and speak the English language well; to gain a critical understanding of values and human institutions, political, economic, and social; and to understand and develop in himself creative power in thinking. Not only memory, but accomplishment in understanding, not just knowing, but knowing why and how, should be the objectives.

College advisers will help students decide what courses in their college or university will best accomplish these ends. The School of Law faculty will be glad to assist in program planning.

Because of the possibility of its being overlooked, we do suggest that a course in the general principles of accounting should be taken as a part of the prelaw work. See the Law School rule under "Accounting Requirement" below.

Since briefs, pleadings, and legal memoranda and other papers which law students are required to prepare and submit must be typewritten, we strongly urge all students to obtain a minimal skill in typing while an undergraduate. Law school and Washington State Bar examinations may be typed by those desiring to do so.

ACCOUNTING REQUIREMENT

An applicant should present evidence that he has successfully completed, with a grade of C or better, and has received college credit for a complete course in the general principles of accounting. Students are encouraged to fulfill this requirement before entering the School of Law. A student who has not successfully completed a course in accounting at the college level prior to admission to Law School must fulfill this requirement before starting his second year in the School.

UNDERGRADUATE DEGREE PROGRAMS FOR NONDEGREE APPLICANTS TO THE SCHOOL OF LAW

Students attending the University of Washington who are interested in entering the School of Law prior to obtaining a degree should make inquiry of the prelaw adviser of the College of Arts and Sciences or of the College of Business Administration as to possible programs which would permit the student to apply first year law courses towards the satisfaction of undergraduate degree requirements.

Students at other institutions should consult their prelegal advisers concerning similar programs in their schools.

The student's prelegal program should be planned with an eye to the Law School Admission requirements listed in the following paragraphs.

ADMISSION TO THE FIRST-YEAR CLASS

To meet the minimum requirements for admission to the first-year class in the School of Law, an applicant must:

Rule 1. Be of good moral character and at least eighteen years of age.

Comment. Good moral character is a requirement for admission to the Bar of every state in the United States. A character investigation is a routine part of the procedure for admission to the Bar. In some jurisdictions a preliminary character investigation is conducted when the applicant begins his work in law school; in other jurisdictions it is not made until the applicant applies for permission to take the Bar examination, or to take the Oath of Attorney.

The age limit is set to comply with the age requirement of most, if not all, jurisdictions for admission to the Bar.

Rule 2. Either (a) hold the degree of Bachelor of Arts or Bachelor of Science from a college or university of recognized standing, or (b) have successfully completed three-fourths of the work required for a bachelor's degree granted on the basis of a four-year period of residence in a college or university of recognized standing, with a scholarship average of at least 2.50 on a 4.00 basis. A nondegree applicant must have the registrar, dean, or department head submit directly to the School of Law a certificate stating that he has successfully completed three-fourths of the requirements for a degree, is in good standing, and is eligible to return.

Comment. This provision is technical. Since it is strictly enforced, an explanation of its exact meaning is in order.

1. *Recognized standing* means a college or university approved or conditionally or provisionally approved by the American Association of Collegiate Registrars and Admissions Officers.

2. *Quantity of prelegal work required.*

- a. *Degree applicants* must present a degree of Bachelor of Arts or Bachelor of Science, based upon a four-year period of residence in a college or university of recognized standing.

Work done in residence means work done in class in a college or university of recognized standing, as defined above. If done off the campus of such college or university, it means work done in a class meeting in regular sessions each week under the personal supervision and instruction of a member of the instructional staff of the college or university.

If the applicant is a degree candidate, a limited amount of correspondence work acceptable by a college or university of recognized standing may be included.

- b. *Nondegree applicants* must have successfully completed three-fourths of the work required for a bachelor's degree granted on the basis of a four-year period of residence in a college or university of recognized standing. Compliance with this requirement must be supported by a certificate stating that the applicant has successfully completed the requirement, is in good standing, and is eligible to return.

To meet this requirement the nondegree applicant must be able to demonstrate, and the officer certifying him to us should be satisfied, that the applicant is ready to advance into his fourth and final year, with nothing left to do but to complete the fourth-year requirements. For example, such an applicant would not meet this requirement unless,

(1) All high-school or other admission deficiencies, if any, had been satisfied.

(2) All lower-division (freshman and sophomore) requirements had been met, whether academic or nonacademic, whether scholastic or extra-curricular (such as ROTC, or physical education, or the like).

(3) All major and/or minor requirements up to and including the third year had been completed.

(4) He could, if he remained, complete the requirements for his bachelor's degree in one more year.

Before qualifying as a nondegree candidate three additional conditions must be met and should be considered by the certifying officer,

(1) The work must be *work done in residence* as defined in 2a, above.

(2) *No correspondence work whatsoever should be considered* in determining whether the applicant has successfully completed three-fourths of the work required for a degree, since we are not permitted to accept correspondence work from nondegree applicants.

(3) Not more than 10 per cent of the credits presented for admission shall be in *nontheory courses* in military science, hygiene, domestic arts, physical education, vocal or instrumental music, or courses without intellectual content of substantial value. This means that if the applicant's first three years are heavily loaded with such nontheory courses and light with respect to the substantive courses required for his major and minors, if any, he might not be able to show compliance with the three-fourths requirement even though he has accumulated three-fourths of the number of credits required for a degree. If a question arises as to whether a particular course is a nontheory course, we would be glad to discuss the matter with the interested college or university officials.

3. *Quality of Prelegal Work Required—Scholarship.*

a. *A degree applicant's* prelegal work must have been passed with a scholastic average at least equal to the average required for graduation from the institution granting the degree. It will be assumed that this requirement has been met upon presentation of evidence that the applicant holds a bachelor's degree from an accredited college or university, as defined above.

b. *The nondegree applicant* must have successfully completed his prelegal studies with at least a 2.50 scholarship average on a 4.00 basis. In testing his work for compliance, we require that the nondegree candidate must have obtained the required 2.50 scholastic average on (1) *all* work undertaken in his undergraduate curriculum, and (2) in addition, on *all* work undertaken excluding nontheory courses in military science, hygiene, domestic arts, physical education, vocal or instrumental music, or courses without intellectual content of substantial value.

For example, a student with a 2.50 or better average on *all* work undertaken by virtue of several high grades in nontheory courses such as physical education or vocal or instrumental music, but less than a 2.50 with such courses excluded, would not be eligible for admission under (b) of Rule 2 above. From the other side, a student with a 2.50 or better average on theory courses alone who has less than a 2.50 average on *all* work undertaken because of poor grades in nontheory courses is equally ineligible. The nondegree applicant must be consistently better than average.

Rule 3. Take the Law School Admission Test administered by the Educational Testing Service. *No application will be processed unless the applicant has taken this test no later than April of the year in which he desires to enter Law School.*

The tests are given at many points throughout the United States on specified dates in November, February, April, and August. Completed applications to take the test must be in the hands of the Educational Testing Service at least two weeks prior to the date set for any particular test. *This means that the applicant who has not taken, or made arrangements to take, this test by mid-March will not be eligible for admission to this Law School during the forthcoming school year.*

Application forms and brochures may be obtained by writing to the Educational Testing Service, Princeton, New Jersey, or may be picked up at the School of Law. The charge for this examination is \$10.00.

An applicant should indicate on the test application form that his score should be reported to the University of Washington School of Law.

No special preparation for this test is necessary. It is designed to measure intellectual and legal aptitudes rather than knowledge of any particular subject matter.

Comment. We urge all students who are considering a legal education to take this test by February of the year in which they plan to enter Law School. Delay in taking the test may jeopardize or eliminate an applicant's chances for admission to this or some other Law School during the next school year.

Rule 4. Have a Law School Prediction Index Score of at least 7 if a degree candidate, or 8 if a nondegree candidate, this score to be based upon the student's grade-point average and his Law School Admission Test score.

Comment. Until changed, and subject to change at any time by Faculty action, the Law School Prediction Index Score will be determined as follows:

The applicant will be given from 1 to 10 points for, and depending upon, his undergraduate grade-point average, and from 1 to 10 points for, and depending upon, his Law School Admission Test score. The two figures so ascertained, when added together, will give the applicant's Law School Prediction Index Score.

In order to determine Prediction Index scores, use the table below.

Law School Admission		Grade-Point Average
Test Score		(on a 4.00 basis)
L.S.A.T.	Points	G.P.A.
609 and above	10	3.32 and above
565 - 608	9	3.09 - 3.31
537 - 564	8	2.90 - 3.08
514 - 536	7	2.77 - 2.89
490 - 513	6	2.65 - 2.76
465 - 489	5	2.55 - 2.64
439 - 464	4	2.46 - 2.54
412 - 438	3	2.32 - 2.45
370 - 411	2	2.18 - 2.31
369 and below	1	2.17 and below

For example, a degree applicant with a grade-point average of 2.36 would earn 3 points. If his Law School Admission Test score was 415 he would earn 3 points. This applicant would not be eligible for admission to this Law School. If his Law School Admission Test had been 439 or higher, he would have earned 4 or more points, and he would be eligible under this rule. So also, had his Law School Admission Test score been 415, but his grade-point average been 2.46 or higher, he would have earned 4 or more points, and would be eligible for admission.

The nondegree candidate is held to a higher requirement. Since he must have at least a 2.50 grade-point average to start with, which will give him at least 4 points, he must score at least 439 on the Law School Admission Test to obtain the additional 4 points needed for eligibility. We are convinced from past experience that this higher requirement is justified. The nondegree applicant runs a greater risk in that if he fails to successfully complete his Law School program he has lost not only a year's time but also the degree which he could have earned had he remained an undergraduate.

Rule 5. 1. The prospective student must submit, before July 15, an application for admission on a form obtained from the University of Washington School of Law, 205 Condon Hall. See Rule 6.

2. Two official transcripts of all college work must be sent by the student's college or university *directly* to the School of Law; however, students applying for admission who last attended, or are attending, the University of Washington need have only one complete transcript forwarded directly to the School of Law. All records become a part of the official file. They will not be returned or duplicated.

3. Each applicant must submit two permanent passport-size facial photographs (approximately 2 x 2 inches) on or before date of registration.

Comment. Students should arrange to have their transcripts sent directly to the Law School. These arrangements should be made as early as possible. *However, we suggest that the student instruct the Registrar to delay mailing the transcripts until all grades and the degree, if any, upon which the applicant is relying for admission, are recorded.*

Rule 6. Time Limits.

To be eligible for consideration for enrollment in the Autumn Quarter:

(1) An application on the official form and complete credentials must be received at the School of Law by 5:00 p.m., July 15.

(2) Applicants whose records are incomplete and who must take summer work or finish work in progress to complete their requirements, if otherwise satisfactory, will be accepted, subject to the successful completion of this work within a time limit to be determined by the facts of the case.

Comment. The applicant should understand that this Rule will be enforced. It will not be waived. Failure to comply in any respect will mean the loss of a year. This rule is not arbitrary. It takes time to process an application. The applicant who is really interested in attending Law School need have no trouble with it. *Apply early.* Applicants who delay, or who come to the University before their credentials have been submitted, or before officially notified of acceptance, *do so at their own risk.*

ADMISSION WITH ADVANCED STANDING IN LAW

To qualify for admission with advanced standing, an applicant must meet the following minimum requirements.

1. Meet all of the requirements for admission to the first-year class in this Law School, except that if the applicant's Prediction Index is less than that required under Rule 4, Admission to the First Year Class, his application may be approved if he ranks in the upper half of the members of his law school class who advanced into the second or third year. If the applicant has not yet taken the Law School Admission Test (see Rule 3, Admission to the First-Year Class), he must do so. If he has taken the test, he should have his test score forwarded to this School by the Educational Testing Service. (See Rule 3.)

2. Be a student in good standing in a Law School which is a member of the Association of American Law Schools. The applicant must have the Dean of the Law School last attended forward *directly* to the School of Law a certification that the applicant is in good standing and eligible to return.

3. Have forwarded *directly* to the School of Law two official transcripts of all law work previously taken, in addition to two transcripts of all prelegal college study.

4. Forward a letter stating why he desires to transfer to this School of Law.

While transfers with advanced standing are accepted, it is generally advisable

for a student to complete his study of law at one school. Where the applicant has completed more than one year of law study, advanced standing will be permitted only in exceptional cases. Even though a student is otherwise acceptable, no credit will be given for courses in which he has received a grade lower than the graduation average required at his school (generally a C grade or its equivalent).

ADMISSION OF SPECIAL STUDENTS

A person who is not working for a degree and who is not planning a career in law may apply for admission as a special student. The applicant must be at least twenty-three years old, and his general education must entitle him to admission to the freshman class at the University of Washington. The number of those who can be granted this privilege is restricted. A special student must make application for admission in the same manner as first-year students.

ACCEPTANCE

All applicants whose application papers are complete will be notified by letter of the action taken on their applications. If accepted, they will be given an appointment date for their registration.

See Rule 6(2) above.

MEDICAL EXAMINATION

A student entering the University for the first time, or returning to the University after an absence of more than one calendar year, or who has previously attended Summer Quarter classes but is entering regular University classes for the first time, is required to submit to the Student Health Service (Hall Health Center) a form containing his health history and a report of a physical examination by a physician. The form will be sent to new students by the Office of Admissions and to returning former students by the Registrar. This examination, which is required before a student may register, is taken at the student's expense. A chest X ray, also required of the above students, is given at the Student Health Service without charge.

With the exception of Canadian students, who will follow the above instructions, foreign students must take the required physical examination at the Student Health Service when they arrive on campus.

VETERANS INFORMATION

ADMISSION OF VETERANS

Veterans and children of deceased veterans should meet the general admission criteria and follow the general procedures outlined for all applicants. Applications for and questions about government aid should be addressed to the Veterans Administration Regional Office.

WORLD WAR I OR II VETERANS

Under certain conditions a veteran of World War I or II who is not eligible for Veterans Administration benefits is fully or partly exempt from tuition charges. See information under Fees, Extra Service Charges, and Rentals.

KOREAN VETERANS

A Korean veteran under Public Law 550 should obtain admittance to the University prior to making application for a Certificate for Education and Training, thus eliminating the chance of obtaining a certificate valid for an incorrect degree. If the veteran has any questions regarding application for a certificate, he should consult the Veterans Division, Safety Division Building. Educational allowance

payments are made directly to the veteran by the Veterans Administration after the veteran and institution submit a monthly attendance certification.

KOREAN CERTIFICATE

Application for this certificate should be made at least four weeks prior to the beginning of University instruction. If the veteran is eligible, the Veterans Administration will issue him a Certificate for Education and Training which must be presented, along with his Program of Studies, to the Veterans Division, Safety Division Building, as soon as registration is completed. A Korean veteran should be prepared to meet all his own expenses, as well as the cost of tuition, fees, and supplies for at least two months, because allowances are not made until after a full month's attendance has been established.

QUARTERLY CREDIT REQUIREMENTS FOR LAW STUDENTS (PUBLIC LAW 550)

12 credits.....	Full subsistence
8 to 11 credits.....	Three-fourths subsistence
6 to 7 credits.....	One-half subsistence
5 credits or less.....	Established tuition and fees or credits ÷ 14 × \$110.00, whichever is the lesser

Veterans planning to attend Law School during the summer should consult with the Veterans Division, Safety Division Building, regarding the credit requirements for subsistence.

TERMINATION OF TRAINING

A veteran *eligible* under Public Law 550 must complete his training by *eight* years after his release from active service, or by January 31, 1965, whichever is earlier.

DISABLED VETERANS

A veteran with a disability under Public Law 894 should contact a training officer in the nearest Veterans Administration Office approximately four weeks prior to registration.

CHILDREN OF DECEASED VETERANS

Public Law 634 grants federal benefits to children of deceased veterans of World War I, World War II, or the Korean Conflict who died as a result of injury or disease incurred or aggravated while in the service. Information regarding eligibility under this law should be requested from a Veterans Administration Regional Office.

The Certificate for Education and Training issued to those eligible persons by the Veterans Administration is to be presented, along with the Program of Studies, to the Veterans Division, Safety Division Building, as soon as registration is completed.

Credit requirements for monthly subsistence for Public Law 634 students are the same as those listed for Public Law 550 students, however, Public Law 634 students may not be authorized for less than half-time subsistence.

FEES, EXTRA SERVICE CHARGES, AND RENTALS

All fees, extra service charges, and rentals are payable in United States dollars at the time of registration except that new students must submit a \$50.00 advance payment of fees at the time they are admitted to the University. This advance payment is applied against the total tuition and fees collected from the student. The University reserves the right to change any of its fees and charges without notice.

The fee schedules for resident and nonresident students, appearing on pages 24 and 25, apply to the academic year (Autumn, Winter, and Spring Quarters).

EXEMPTIONS**Veterans of World Wars I or II**

Exemption from tuition charges is granted resident students who either (1) served in the United States Armed Forces during World War I and received honorable discharges; or (2) served in the United States Armed Forces during World War II at any time after December 6, 1941, and before January 1, 1947, and received honorable discharges, but are no longer entitled to federal educational benefits; or (3) are United States citizens who served in the armed forces of governments associated with the United States during World Wars I or II and received honorable discharges. Nonresident students who meet one of these requirements pay one-half of the nonresident tuition. This exemption is not granted to Summer Quarter or Evening Classes students.

Proof of eligibility should be met as follows:

- (1) World War I veterans should present copy of discharge papers to Comptroller's Office, 203 Administration Building.
- (2) World War II veterans with Korean service or who have suffered disability should present a letter from the Veterans Administration Regional Office to the Veterans Division, Safety Division Building, stating they are no longer eligible for any federal educational benefits. (Excepted are those veterans who have had both World War II benefits and Korean benefits and have expired those benefits at the University of Washington.)
- (3) World War II veterans who have not suffered any disability or served in the Korean Conflict should present an 8½-inch x 11-inch photostat of discharge papers to the Veterans Division, Safety Division Building.

Exemption must be cleared prior to student's appointment day for reistration in order to prevent personal payment.

EXTRA SERVICE CHARGES

A registration service charge of \$15.00 is assessed those students: (1) eligible for Advance (mail) Registration who fail to participate; or (2) who, after the established application deadline, are granted Appointments or Permits to register by In-Person Registration by action of the Registration Appeal Board. A late registration charge of \$15.00 is assessed any student granted permission to register after the last registration day before the opening of Autumn, Winter, or Spring Quarters

FEES FOR RESIDENT STUDENTS

A resident is one who has been domiciled in Washington for at least a year immediately prior to registration.

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

Type of Registration	Tuition Fee	Incidental Fee	ASUW Fee* Autumn, Winter, and Spring Quarters	Total Fees Autumn, Winter, and Spring Quarters
Full-time students**	\$35.00	\$56.50	\$8.50	\$100.00
Auditors		39.00	†	39.00
Part-time (max. 6 credits exclusive of ROTC)§	35.00	39.00	†	74.00
Ex-service personnel of World Wars I and II† (Chapter 46, Laws of 1945)				
Full-time		56.50	8.50	65.00
Part-time (max. 6 credits)§		39.00	†	39.00

* Athletic admission ticket is optional for ASUW members. Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.

** A \$25.00 uniform rental is paid by students in Army and Air Force ROTC, refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.

† 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 above to determine eligibility.

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

by action of the Registration Appeal Board. A charge of \$5.00 is made Autumn, Winter, and Spring Quarters 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 Ticket (optional for ASUW members) 3.50-6.50
Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.

Military Uniform Rental 25.00
Paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.

Transcripts 1.00
One transcript is furnished without charge; the charge, payable in advance, is made for each additional copy.

Graduation Exercises Diploma 10.00
(If this is a second University of Washington bachelor's degree, the graduation exercises diploma is \$5.00.)

Physical Education Activities
(Per quarter: bowling, \$5.00; canoeing, \$3.00; golf instruction, \$1.50.)

REFUND OF FEES, CHARGES, AND RENTALS

All fees will be refunded in full if complete withdrawal is made during the first three calendar days of the quarter; one-half the amount will be refunded if withdrawal is made during the first thirty calendar days. Refunds are not made to students withdrawing under discipline.

FEES FOR NONRESIDENT STUDENTS

Prospective students are classified as nonresidents when their credentials come from schools outside Washington. If they believe they are residents, they may petition the Residence Classification Office, 205A Administration Building, for a change of classification.

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

Type of Registration	Tuition Fee	Incidental Fee	ASUW Fee*	Total Fees
			Autumn, Winter, and Spring Quarters	Autumn, Winter, and Spring Quarters
Full-time students**	\$105.00	\$86.50	\$8.50	\$200.00
Auditors		39.00	†	39.00
Part-time (max. 6 credits exclusive of ROTC)§	105.00	69.00	†	174.00
Ex-service personnel of World Wars I and II†				
(Chapter 46, Laws of 1945)				
Full-time	52.50	86.50	8.50	147.50
Part-time (max. 6 credits)§	52.50	69.00	†	121.50

* Athletic admission ticket is optional for ASUW members. Autumn, Winter and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.

** A \$25.00 uniform rental is paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.

† 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 on page 24 to determine eligibility.

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

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

At least two weeks must elapse between payment and refund, if payment was made by check.

ESTIMATE OF YEARLY EXPENSES

Tuition, Incidental, and ASUW Membership Fees

Resident students	\$300.00
Nonresident students	600.00

<i>Accident and Health Insurance (optional)</i>	17.75
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<i>Books and Supplies</i>	115.00
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Board and Room

Double room and meals in Men's Residence Halls	720.00
Room and meals in Women's Residence Halls	660.00-765.00
Room and meals in fraternity or sorority house (Including dues and social fees.)	670-760.00

Initial cost of joining a fraternity or sorority is not included; this information may be obtained from the Interfraternity or Panhellenic Councils.

<i>Personal Expenses</i>	300.00
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SCHOLARSHIPS, LOANS, PRIZES, AND AWARDS

Applications for most grants are considered by the Law School Committee on Scholarships in July, at which time the applicants can more accurately reflect their probable summer earnings. There are some funds normally allocated to entering students for which applications must be submitted by March 1. To be considered for any grant, an applicant must have on file with the Law School his Law School Admission Test score.

It is suggested that potential applicants inquire of the Dean's Office at an early date for application forms and additional information concerning presently available scholarships, possible additional scholarships, or changes in the deadline dates.

ASIAN LAW SCHOLARSHIPS. Beginning with the academic year 1962-1963, the University of Washington School of Law will offer two scholarships in the amount of \$600 for beginning law students who have a language, international trade, or area background which would be useful in the study of the international legal problems of Japan, the Philippines, India, China, or other Asian countries.

It is expected that students receiving the scholarships would participate in the University of Washington School of Law Program in the Law of Asian Countries and would receive further and sustained financial support based on their progress in the program.

SCHOLARSHIPS

JAMES M. BAILEY MEMORIAL SCHOLARSHIP. Awards totaling \$500 to "outstanding students in law" are made during the summer for the following academic year by the trustees of Consolidated Charities. The awards are made on the basis of scholastic promise and achievement and financial need.

LAWRENCE BOGLE and CASSIUS E. GATES SCHOLARSHIP AWARD. An annual award of \$750 by the other members of the firm of Bogle, Bogle & Gates in honor of the named partners.

THE CARKEEK SCHOLARSHIP. The Vivian M. Carkeek scholarship fund of \$450 annually was established by the will of Florence L. Carkeek in memory of her husband's devotion to the ideals of justice and law.

DELTA THETA PHI-STORY SENATE FOUNDERS' SCHOLARSHIP FUND. This scholarship was established by Clarence W. Pierce, one of the founders of Delta Theta Phi-Story Senate. The income from the fund will be awarded each year as a scholarship to that member of Story Senate, Delta Theta Phi, having the highest cumulative two-year law school grade average.

FRANK E. HOLMAN LAW STUDENT GRANT. The Frank E. Holman Law Student Fund was established pursuant to an agreement between the Board of Regents and the partners of Mr. Holman in order to provide for annual grants in amounts to be determined annually under the terms of the agreement to students in the Law School on the basis of financial need, scholarship, aptitude for the law, and character. Prospective first-year students are eligible for consideration.

JUDGE ROBERT M. JONES MEMORIAL AWARD. Established by Mrs. Marjorie M. Jones in memory of her late husband to promote appreciation of the fundamental purposes of the American legal system and particularly the Constitution of the United States. The amount available each year is expected to be \$500 to be awarded to the law student or students best demonstrating this appreciation according to rules established each year.

KARR, TUTTLE, CAMPBELL, KOCH, AND GRANBERG SCHOLARSHIP. An award of \$300 established by the named Seattle law firm to a deserving student matriculated in the Law School. Consideration is to be given to demonstrated scholastic achievement, need, and good citizenship.

LAW WIVES ASSOCIATION OF UNIVERSITY OF WASHINGTON SCHOLARSHIP. A \$300 scholarship awarded annually by the Law Wives to a married law student for his second or third year based upon financial need.

MACDONALD, HOAGUE AND BAYLESS AWARD. Established by the named Seattle law firm as a grant to the applicant, for his third year in Law School, whose interests and activities inside and outside of Law School best meet criteria indicating civic responsibility and leadership. An award of \$600 is made in the Spring of the applicant's second year in Law School.

NATIONAL ASSOCIATION OF CLAIMANTS AND COMPENSATION ATTORNEYS (Washington Chapter). An annual award of \$200 to stimulate interest in the responsibility of attorneys in representing the injured and improving medical-legal relationships in the field of personal injury litigation.

SEATTLE-KING COUNTY BAR AUXILIARY SCHOLARSHIP. A scholarship awarded annually by the King County Bar Auxiliary to a third-year law student based upon need, scholarship, and character, with special emphasis on need.

UNIVERSITY TRAFFIC COURT JUDGE. A third-year law student appointed by the Dean on recommendation from the Faculty Committee on Scholarships. Any student in good standing is eligible but preference will normally be given to members of the Law Review or Legal Aid Program. \$25.00 monthly.

WASHINGTON TITLE INSURANCE COMPANY GRANT. An annual grant of \$350 established by the named company to a deserving law student, based upon need, scholarship, and performance in property law courses.

WILLIAM WALLACE WILSHIRE MEMORIAL SCHOLARSHIP FUND. This fund was established under the will of the late Fannie Belden Shepherd. The will provides that the net income from the fund shall be expended and disbursed in the form of scholarships to students enrolled in the School of Law, and that in awarding the scholarships "the Board of Regents shall be governed by the financial need, general character, and demonstrated scholastic ability of the applicants for such scholarships." The maximum amount awarded under any one scholarship is \$750. Prospective first-year students are eligible for consideration.

LOAN FUNDS

CLASS OF 1939 LOAN SCHOLARSHIP. The members of the class of 1939 have contributed a loan scholarship of approximately \$350 annually to be awarded to a

third-year student. The class requests that the recipient, though without legal obligation, expresses a willingness to replenish the fund when in the future his financial position makes it possible for him to do so.

HICKMAN LOAN FUND. A loan fund administered by the Peoples National Bank of Washington which is available to properly qualified young men from King County to further their education.

JUDGE RALPH OLSON MEMORIAL LOAN FUND. An emergency loan fund established for second- and third-year law students by Mrs. Olson and her sons through contributions of friends and associates in memory of Judge Olson.

DR. JOHN T. ROBSON LOAN FUND. A loan fund for law students established by John T. Robson, M.D., member of the Law Class of 1957.

ISABELLA MARGARET SCOTT MEMORIAL LOAN. A loan fund for deserving law students from the estate of Isabella M. Scott.

J. P. TONKOFF LOAN FUND. An emergency loan fund established in the name of Mr. Tonkoff, a Yakima lawyer, by a client preferring to remain anonymous, to express partially the appreciation and high regard in which his professional efforts are held.

UNIVERSITY SCHOLARSHIP AND LOAN FUNDS. University scholarships are granted on application and on a competitive basis. Usual requirements include scholarly achievement and promise, excellence of character, and financial need. The University also administers several funds from which loans are made to students who have successfully completed at least one quarter at the University. A handbook listing scholarships is available from the Office of the Dean of Students.

UNIVERSITY OF WASHINGTON LAW SCHOOL ALUMNI FUND. This fund, established and maintained through a program of annual giving by alumni, makes available money to students and the School to foster the aims of the School in such manner as a Board of Overseers of the fund may determine. A portion of the money is available for loans to qualified students, but ordinarily loan funds disbursed under the direction of the Law School Scholarships Committee are not available to first-year law students. Therefore, it is particularly important that the entering student make adequate provision for anticipated expenses during his first year.

PRIZES AND AWARDS

APPELLATE MOOT COURT. Each year the Student Bar Association sponsors an Appellate Moot Court Competition. It is designed to develop skill in research and brief writing and to encourage forensic ability. Prizes donated by law book publishing houses are awarded to the four finalists.

NATHAN BURKAN MEMORIAL COMPETITION. The American Society of Composers, Authors, and Publishers awards annually in each of the approved law schools of the country a first prize of \$150 and a second prize of \$50 for the best papers by graduating students on subjects within the field of copyright law.

THE CARKEEK PRIZE. The Vivian M. Carkeek prize of \$50 is awarded annually "for the best student contribution to the *Washington Law Review* on a point of Washington law or any point of peculiar interest to Washington attorneys."

THE W. G. McLAREN PRIZE. Awards of \$100 and \$50 are made annually to the first-year students submitting the best solutions to a problem in legal draftsmanship. The awards are presented by W. G. McLaren, a leading Seattle citizen and lawyer.

LAW WEEK AWARD. The United States *Law Week* Award, a prize of approximately \$100 value, is given to the graduating student in law who, in the judgment of the faculty committee, has made the most satisfactory scholastic progress in his final year. The award consists of a year's complimentary subscription to *Law Week*.

LEGAL AID BUREAU PROGRAM AWARD. An award made annually to a student participant in the Legal Aid Bureau Program for superior performance in the program.

IVOR LUSTY AWARD. An award of \$50 will be made annually to the third-year student who submits the best solution to a problem involving a security transaction in international trade. Interested students who are not enrolled in the course in Credit Transactions may receive a copy of the problem and appropriate instructions in the Dean's Office. The award is made by Ivor Lusty, a graduate of the School.

THE SEATTLE LIFE INSURANCE AND TRUST COUNCIL WILL CONTEST. During each academic year awards are made to the four law students who, in the opinion of the judges, draft the best will based on a stipulated set of facts. The prizes are \$350, \$250, \$150, and \$75.

UNIVERSITY OF WASHINGTON LAW SCHOOL ALUMNI SCHOLASTIC IMPROVEMENT PRIZES. Two prizes will be awarded annually, depending upon the availability of funds, one to a student entering the third year and one to a graduating student showing the greatest scholastic improvement in the second and third year, respectively.



THE PROGRAM IN LAW

THE PROGRAM IN LAW

THE LL.B. DEGREE

THE DEGREE OF BACHELOR OF LAWS (LL.B.) is conferred upon all regular students who have completed satisfactorily the prescribed course of study in residence, consisting of a minimum of 132 quarter credits in professional law subjects, including required courses, with a scholarship average of at least 68, extending over at least nine quarters.

GRADING

The grading system of the School of Law is as follows: 85-100=A; 77-84=B; 68-76=C; 60-67=D; 0-59=E.

A copy of the probation, drop, and reinstatement rules is distributed to each student the first day of instruction.

EXAMINATIONS

Examinations are conducted under an honor system administered by the Student Bar Association.

ATTENDANCE—THE ABSENCE RULE

Regular and punctual class attendance is required of every student. The right to take examinations, as well as the privilege of continuing in the Law School, is conditioned upon compliance with this rule.

STUDY PROGRAMS OFFERED

REGULAR PROGRAM FOR FULL-TIME STUDENTS

This program leads to an LL.B. degree at the end of three academic years, Autumn through Spring. Students are encouraged to follow this program whenever possible. It is the position of the faculty of the School of Law that no student can do justice to himself in the regular program if he is engaged in any substantial amount of outside employment or activities.

ACCELERATED PROGRAM

It is possible for a student to accelerate the date of his graduation by completing successfully a full program of study during the summers between his first and second, and second and third years in the School of Law. For example, under this program a student who enters the School of Law in the Autumn of 1962 will be able to graduate in December, 1964, and thus be eligible for the state bar examination in January, 1965. To accelerate, a student must have the approval of the Dean's Office. The School policy is to permit only those students whose grades at the end of the first year indicate that they have at least an average, as compared with a minimum, proficiency for the study of the law to undertake the accelerated program.

PART-TIME PROGRAMS

A systematic program for students who are unable to attend Law School on a full-time basis is available. The primary purpose of the program is to allow students who must maintain employment to attend Law School. Wherever and whenever possible, classes will be scheduled in the mornings, thus permitting students to obtain or continue afternoon and/or evening employment. The part-time program requires fifteen quarters of study over a four-year period. To finish on schedule, the student will be required to attend three summer sessions. His credit load per quarter will average slightly less than nine instead of the normal fifteen credits required of full-time students.

An intermediate program in which a student may average twelve hours per quarter for eleven quarters may also be arranged for students requiring less outside employment.

Students who start Law School on a part-time program are not permitted to switch to the full-time program without special permission of the Dean.

SUMMER SCHOOL

The Law School offers a limited number of courses for its own students who are qualified and who desire to accelerate, or who are following a prescribed part-time program, or who desire to take additional subject-matter and for students from other law schools who have completed at least one year of study and who wish to do additional work for credit in their respective schools.

Several of the courses offered deal with subjects in which local law is of unusual significance. These courses will be of particular interest to students from other schools who plan to practice in this state. The Summer School courses also afford opportunity for further study by practicing lawyers who desire systematic instruction in specialized areas of expanding significance.

Students with advanced standing who wish to transfer to this Law School as degree candidates and who desire to begin their study in the Summer Quarter must comply with the admission procedures set forth above.

CURRICULUM

The first and second years of law study are composed of a program of required courses. Except for Law 569, Office Management and Professional Responsibility, the third-year program is entirely elective.

FIRST YEAR

400	Contracts (4-3-3)	<i>Rieke, Shattuck</i>
410	Civil Procedure I (3)	<i>Stevens</i>
420	Criminal Law and Procedure (2-3)	<i>Cosway, Morris</i>
430	Property I (3-3-4)	<i>Cross, Johnson</i>
440	Torts (3-3-4)	<i>Peck, Richards</i>
450	Agency (3)	<i>Johnson, Taylor</i>
460	Orientation (0)	<i>Gallagher, Amandes, Rombauer</i>
461, 462	Legal Research and Writing (2, 1)	<i>Gallagher, Amandes, Rombauer</i>

SECOND YEAR

500	Administrative Law (4)	<i>Peck, Trautman</i>
505	Business Associations (2-4)	<i>Meisenholder, Gose</i>
*510	Civil Procedure II (4)	<i>Stevens, Meisenholder</i>
515	Commercial Transactions (3-4)	<i>Cosway, Taylor</i>
520	Constitutional Law (3-4)	<i>Fletcher, Morris</i>
525	Equitable Remedies (4)	<i>Cross, Stevens</i>
530	Income Taxation (3-2)	<i>Harsch, Gose</i>
535	Property II (4-4)	<i>Cross, Fletcher</i>
540	Appellate Arguments (1)	<i>Amandes, Rombauer</i>

THIRD YEAR

**320	Trusts and Fiduciary Administration (4)	<i>Fletcher</i>
†328	Conveyancing (4)	<i>Johnson</i>
**348	Wills and Administration (4)	<i>Gose</i>
550	Admiralty (3)	<i>Richards</i>
551	Community Property (3)	<i>Cross, Trautman</i>
552	Comparative Law (3)	<i>Henderson</i>
553	Conflict of Laws (4)	<i>Trautman</i>
554	Corporation Finance and Related Tax Problems (2-2)	<i>Taylor, Gose</i>
555	Creditors' Rights (3)	<i>Cosway</i>
556	Criminal Procedure Seminar (3)	<i>Stevens</i>
557	Damages (3)	<i>Richards</i>
558	Death & Gift Taxation (3)	<i>Harsch</i>
559	Domestic Relations (3)	<i>Rieke</i>
560	Estate Planning (2-2)	<i>Harsch</i>
*561	Evidence (4-2)	<i>Richards, Meisenholder</i>
562	Federal Jurisdiction (3)	<i>Meisenholder</i>
563	Government Regulation of Business (2-2)	<i>Rieke</i>
564	Insurance (3)	<i>Taylor</i>
565	International Transactions (3)	<i>Henderson</i>
566	Jurisprudence (3)	<i>Morris</i>
567	Labor Law (3)	<i>Peck</i>
568	Labor Relations (3)	<i>Peck</i>
569	Office Management and Professional Responsibility (0)	<i>Stevens</i>
570	Legislation (3)	<i>Harsch</i>
571	Local Government Law (3)	<i>Trautman</i>
*572	Problems in Metropolitan Planning (2)	<i>Trautman</i>
573	Mortgages (4)	<i>Shattuck</i>
574	Natural Resources (3)	<i>Johnson</i>
*575	Probate Practice (2)	<i>Fletcher</i>
576	Social Legislation (2)	<i>Cosway</i>
*577	State and Local Taxes (3)	<i>Harsch</i>
578	Supreme Court Today (3)	<i>Morris</i>
579	Suretyship (2)	<i>Shattuck</i>
580	Trial and Appellate Practice (3-2)	<i>Trautman</i>
*581	Trust Administration (2)	<i>Staff</i>
600	Research Problems in Law (1-5)	<i>Staff</i>
610	Law Review (1-4, maximum 4)	<i>Trautman</i>

*Will not be offered 1962-63

**Will not be offered after 1962-63

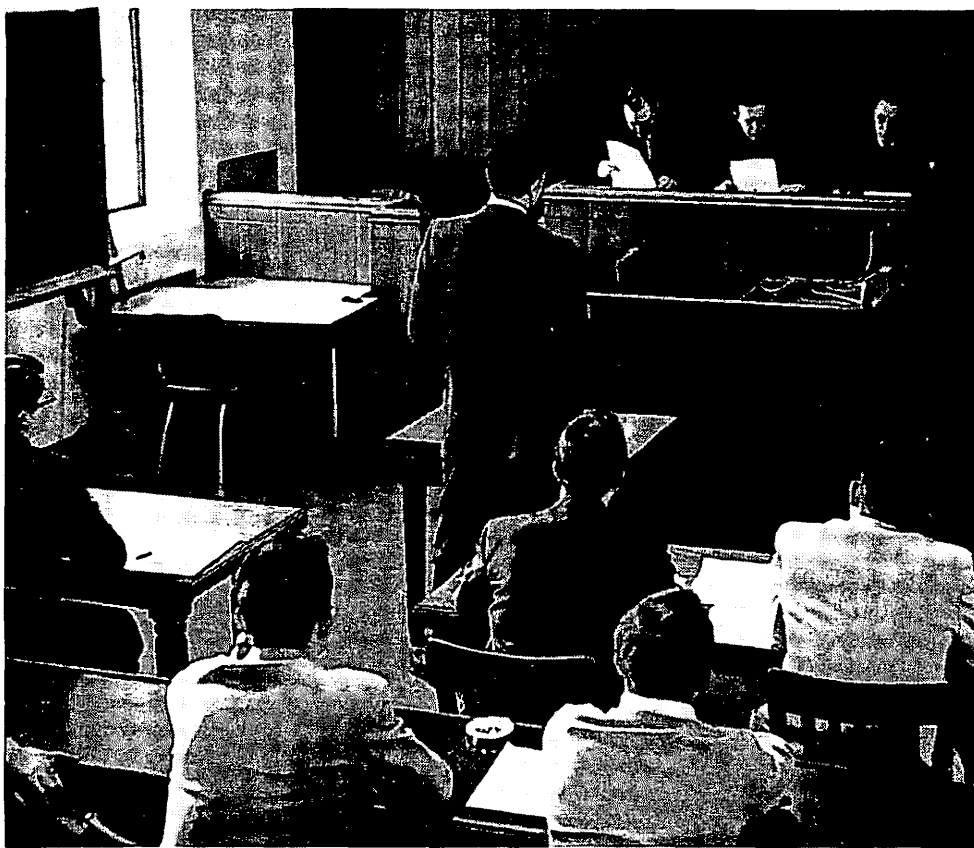
†Will not be offered after 1963-64

SUMMER, 1962

302a	Creditors' Rights (3)	<i>Cosway</i>
308b	Mortgages (3)	<i>Shattuck</i>
323b	Community Property (3)	<i>Cross</i>
324b	Landlord and Tenant (3)	<i>Amandes</i>
327b	Trusts (3)	<i>Gose</i>
328a	Conveyancing (3)	<i>Larson</i>
343a	Conflict of Laws (3)	<i>Meisenholder</i>
344b	Domestic Relations (3)	<i>Rieke</i>
349a	Wills (3)	<i>Fletcher</i>
354b	Problems in Constitutional Law (3)	<i>Forrester</i>
363a	Death and Gift Taxation (3)	<i>Harsch</i>

SUMMER, 1963 (Tentative)

551	Community Property (3)	<i>Staff</i>
553	Conflict of Laws (3)	<i>Staff</i>
555	Creditors' Rights (3)	<i>Staff</i>
557	Damages (3)	<i>Staff</i>
558	Death & Gift Taxation (3)	<i>Staff</i>
559	Domestic Relations (3)	<i>Staff</i>
567	Labor Law (3)	<i>Staff</i>
573	Mortgages (3)	<i>Staff</i>
574	Natural Resources (3)	<i>Staff</i>
582	Landlord and Tenant (3)	<i>Staff</i>



STUDENT ACTIVITIES AND SERVICES

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STUDENT ACTIVITIES

STUDENT BAR ASSOCIATION

The objectives of this organization are to promote useful activities among the students in the Law School; to foster a professional outlook on the part of such students; to promote and bring about contacts and cooperation between members of the association and members of the bar; to foster a close relationship between members of the association and members of the Law School faculty; and to carry on and promote activities for the best interest of its members, the faculty, and the School. The association sponsors an annual School banquet for members of the judiciary, the bar, the faculty, and the student body and their spouses and guests. Throughout the year, it sponsors other social functions, engages speakers to appear before the law student body, engages in intramural recreational activities, publishes a newspaper, conducts the School's moot court competition, and aids in the operation of the Legal Aid program.

Every student enrolled in the Law School is a member of this association. The elective officers—president, vice-president, secretary, and treasurer, together with two elected representatives from each class—comprise the executive board.

The Student Bar Association is affiliated with the American Law Student Association, which is sponsored by the American Bar Association.

LEGAL AID BUREAU PROGRAM

In cooperation with the Seattle-King County Bar Association and under the supervision of a faculty adviser, students of demonstrated ability in the second- and third-year classes are offered the opportunity of assignment to regular weekly office hours at the Legal Aid Bureau in Seattle. The services of the Bureau are available to persons who are unable to afford the services of an attorney. Students are given the fullest responsibility consistent with their experience and ability. They interview clients to determine the nature of their problems; after consulting with the Bureau director or the faculty adviser, they dispose of those cases which

require only advice; they conduct negotiations for settlements with opposing parties or their attorneys; and they prepare cases for litigation under the supervision of the Bureau director or one of a panel of volunteer attorneys, with whom they appear in court. The practical experience thus acquired and the honor which attaches to selection for membership in the program are of considerable assistance to the young attorney embarking on his professional career.

VOLUNTARY DEFENDER PROGRAM

Participation in the Voluntary Defender Program is limited to students in the second and third years who have completed the course in Criminal Law and Procedure. The function of the participants is to assist attorneys who have been appointed by the Superior Court of the State of Washington to defend persons charged with a crime who are unable to afford legal representation. The students assist the attorneys by investigating, doing research, and performing any other services required to prepare the case for trial. Participation in this program not only gives the student invaluable experience but also gives the attorney additional assistance to insure that every defendant in a criminal proceeding gets a fair trial and is adequately represented by counsel.

MOOT COURT PROGRAM

With the assistance and cooperation of the faculty, the Student Bar Association conducts an extensive moot court competition. Competing students research assigned problems, prepare appropriate briefs, and present oral argument before courts composed of judges, lawyers, and faculty members.

Each student is required to compete in one round during his first year in conjunction with the course in Legal Research and Writing; a second argument is required of all students in their second year. Additional voluntary rounds determine the moot court finalists, who present their arguments before Judges of the Supreme Court of the State of Washington. Prizes donated by law book publishers are awarded to the four finalists.

A team from the School of Law also participates annually in the unique International Moot Court Competition with a team from the Faculty of Law of the University of British Columbia.

ORDER OF THE COIF

The Order of the Coif is a national honorary legal society with a chapter at the University. The order encourages scholarship and the advancement of the ethical standards of the legal profession. Membership is restricted to students who have demonstrated outstanding scholarship, and who are within the upper ten per cent of the graduating class.

"WASHINGTON LAW REVIEW"

The *Washington Law Review* is a quarterly legal periodical. It is published by a student board consisting of approximately twenty-five select second- and third-year students under the direction of five student editorial officers and with assistance from the law faculty. The *Review* serves as a medium of expression for legal scholars and is devoted particularly to the interpretation, advancement, and harmonious development of the law. It contains scholarly articles by judges, lawyers, teachers, and authorities in related business and professional fields. Surveys and discussions, based on thorough research by student members of the board, of important court decisions and topics of concern and interest to members of the profession, are included.

The possibility of gaining admission to the *Law Review* staff provides students with an additional incentive to strive for high standards of performance during their first year in law school. In most cases, admission to *Law Review* is based upon the student's performance during his first year. Only a very limited number of students are admitted on the basis of their high scholastic performance during their second year.

A place on the student editorial board is an invaluable experience for professional life, and should be one of the goals of every law student. It provides opportunities to develop skill in research and expression beyond those available in normal classwork activity. As a member of the *Law Review* staff, the student will gain his first experience in solving both administrative and peculiarly legal problems through organized cooperative effort. *Law Review* membership affords a means by which the student can make a real contribution to the legal profession during his years at law school.

LEGAL FRATERNITIES

Three law fraternities are represented at the School of Law: Story Senate of Delta Theta Phi, Dunbar Chapter of Phi Alpha Delta, and Ballinger Inn of Phi Delta Phi International. Composed of and governed by law students, these fraternities serve to promote and develop comradeship, loyalty to the School and to the law, and an understanding of and devotion to the finest traditions of the legal profession.

ASSOCIATED STUDENTS

Membership in the Associated Students of the University of Washington, the central organization which conducts all student activities, is required of all regularly enrolled students. Through the ASUW Board of Control and its various committees and boards, students assume major responsibility in the government of student life. The ASUW helps to finance the programs of athletics, debates, concerts, lectures, and many other activities and facilities, including the University of Washington *Daily* and the Student Union Building.

STUDENT SERVICES

HOUSING

Information and applications for residence in University-owned housing for single persons may be obtained by writing to the Manager, Men's Residence Halls, 1201 N.E. Campus Parkway, Seattle 5, or to the Manager, Women's Residence Halls, University of Washington, Seattle 5. Preference in assignment to vacancies is given to students under twenty-one years of age until August 1; thereafter assignment are made in the order of application. Prospective students may apply for the residence halls prior to their acceptance by the University but not before April 15.

University regulations require that women students under twenty-one who do not live at home must live in approved group residences such as the Women's Residence Halls, sororities, and church-sponsored living groups. Other types of living arrangements must be reported to the Dean of Women and be approved by the student's parents or guardian.

The Office of Student Residences maintains listings of off-campus rooms, rooms with board, housekeeping rooms, apartments, and houses which are available to University students. These listings, however, must be consulted in person.

Teaching and research assistants and other part-time sub-faculty personnel are given first priority for assignment to University-owned housing facilities for married students. Second preference for assignment to Union Bay Village or Sand Point Homes is given to graduate, medical, dental, and law students who have children. Prospective students are eligible to apply when they have been accepted for admission. Write to the Office of Student Residences, 23 Administration Building, for further information and application forms.

A complete statement of University housing policy appears in the *Student Handbook of University Rules and Regulations* and the *Housing Bulletin*.

HEALTH SERVICES

The University maintains a health service and infirmary to help guard against infectious diseases and incipient ill health.

The infirmary receives bed patients at any hour and provides nursing care, medicines, and the attendance of a staff doctor up to one week each quarter free of charge. For a period longer than one week, a charge of \$2.00 a day is made. At their own expense, infirmary patients may consult any licensed physician in good standing.

Health and accident insurance for students is available at the time of registration.

GRADUATE PLACEMENT

The School maintains a placement service to assist students in finding legal positions upon graduation, and provides assistance to alumni who are seeking new associations. It also aids students in finding legal positions for the summer months. Of course, the securing of employment remains the ultimate responsibility of the individual. However, the experience of the recent past indicates that virtually all graduates can be suitably placed.

WORK PLACEMENT

There are available a limited number of part-time positions for student attendants in the Law School Library.

Part- and full-time work off campus may be obtained at the University Placement Office. Applications are accepted from students or graduates of the University and from the wives or husbands of University students. Application must be made in person after residence in Seattle has been established. Placement in jobs on the campus is handled by the Personnel Department and the ASUW Personnel Office.

LAW SCHOOL ALUMNI ASSOCIATION

The Alumni Association of the School of Law has been active since 1922. Originally an informal association of graduates of the School, the association was formally organized as a nonprofit corporation August 17, 1949, and is governed by elected officers independently of the School of Law.

The association is designed to give graduates information about the location and activities of the Law School alumni, as well as the current accomplishments, objectives, and problems of the School itself. Among its goals are keeping the law alumni in closer touch with each other in the practice of law and stimulating the younger practitioners to greater activity in their local and state bar associations. Committees of the association assist in placement of graduating students, relocation of graduates, and procurement of student loan funds and scholarships. Membership in the Alumni Association, on a dues-paying basis, is open to any graduate.

Association officers for the year 1961-62 are: Grant Armstrong, '29, Chehalis, president; Ralph Rogers, '34, Tacoma, vice-president; James Gay, '43, Seattle, treasurer; and Luvern V. Rieke, '49, Law School, executive secretary. Trustees: Lyle D. Keith, '32, Spokane; Frank A. Sheirs, '49, Port Orchard; Warren L. Shattuck, '34, Seattle; Jack Cunningham, '50, Centralia; Herbert Davis, '35, Prosser; Harold Lant, '32, Bellingham; and William Montgomery, '35, Seattle. Overseers of the Law School Alumni Fund: Robert H. Van Eaton, '49, Kirkland; Harwood A. Bannister, '40, Mt. Vernon; James B. Hovis, '50, Yakima; J. Guthrie Langsdorf, '35, Vancouver; Fred Crollard, '10, Wenatchee; Arthur Paulsen, '46, Tacoma; and Harry M. Cross, '40, Seattle.

LL.B. DEGREES CONFERRED 1959-60

Agranoff, Efrem Z., B.A., Washington	Egger, Robert S., B.A., Washington
Alfieri, James A., Seattle University	Eide, Donald A., B.A., Washington
Allper, Stanley B., B.S., Washington	Ellis, David T., B.S., Idaho
Anderson, Denny E., B.A., College of Puget Sound	Feeley, James M., B.A., Washington State
Atwell, William O., B.A., Washington	Fiori, George, Washington
Austin, Cletis E., B.A., Washington	Fitch, H. Graham, B.A., Washington
Barer, Arnold J., B.A., Washington	Groshong, W. Ronald, B.A., Washington
Barge, Dennis R., B.A., Washington	Hackett, John A., Washington
Beckman, Marvin E., B.A., Washington	Henderson, Richard S., B.S., Georgetown University
Bernard, Terry V., B.S., Utah	Herman, Morton G., B.A., Washington
Bottiger, Russell T., B.A., College of Puget Sound	Hollenbeck, Cedric B., B.S., Washington
Callison, Judith C., B.A., Washington	Johnson, Richard B., B.S., Washington State
Carroll, Edward M., B.S., Boston University	Johnson, William M., Jr., B.A., Wash- ington
Carter, William L., Washington	Kinzel, William L., B.A., Washington
Clifford, Timothy R., B.A., Yale	Klewen, Melvin L., B.A., Washington State
Cogan, John P., Washington	Lamb, Robert H., B.A., Washington State
Colgrove, John F., B.A., Reed College	Leach, James G., B.A., Washington
Cummins, David C., B.S., Idaho	Lehne, Donald P., B.A., Washington
Curran, Charles P., B.A., Washington	McKisson, Robert W., B.A., Drake
Dahlgren, Donald C., B.A., Washington	Mitchell, Ronald F., B.A., Yale
Dietmeier, Roland V., Washington	Olson, Gene G., B.A., Washington
Dobson, Wyman K., B.A., Washington	

Ono, Andrew S., A.B., Grinnell College
 Parkhurst, Ivan P., B.S., Oregon State
 Patrick, Robert F., B.A., Washington State
 Peters, Douglas D., B.A., Washington
 Rembe, Toni, Washington
 Roe, Charles B., B.A., College of Puget Sound
 Rombauer, Marjorie D., B.A., Washington
 Schlicker, Wilfred E., B.A., Washington
 Schumann, E. Paul, Central Washington
 Shelton, Richard W., B.A., Washington
 Sherrard, Jean R., Washington
 Simpson, Robert E., B.S., Washington State
 Skellenger, David P., B.A., Washington
 Spence, Malcolm S., Washington
 Spencer, Dave C., B.A., Washington
 Sprague, Thomas E., B.A., Washington
 Stern, Michel P., B.A., Washington
 Thomas, John J., A.B., Nebraska
 Thomas, Joyce M., B.A., Tulsa
 Thomas, Robert W., B.A., Washington
 Uhlman, Wesley C., B.A., Washington
 Washburn, Dexter A., B.A., Washington
 Wiehl, Richard L., Washington
 Wilson, P. Bruce, Washington
 Wilson, Wesley M., B.S., Illinois Inst. of Tech.; M.B.A., Chicago
 Woody, Frank, B.A., Washington
 Yates, Earl E., B.A., Washington

LL.B. DEGREES CONFERRED 1960-61

Anderson, Robert L., B.A., Washington
 Bader, Jorgen G., B.A., Washington
 Barnes, Ned M., B.A., Minnesota
 Baronsky, Robert, B.A., Washington
 Bereiter, John B., B.A., Washington
 Best, David A., B.S., U.S. Military Academy
 Brown, Raymond E., B.A., Seattle University
 Burgess, Frederick R., B.A., Washington
 Burgess, John O., B.A., Washington
 Carter, James A., Kentucky
 Choy, Milton W. B., B.A., Washington
 Clark, Murphy L., Oregon
 Coe, Harold B., B.A., Washington
 Cohoe, Bruce W., B.A., Washington
 Cole, Charles T., B.A., Washington
 Coniff, Joseph L., B.A., Washington
 Conway, John M., B.A., Washington
 Cook, James W., B.A., Washington
 Dalrymple, Diane, B.A., Walla Walla College
 Duggan, Robert D., B.A., Washington
 Dunlap, Richard J., B.A., Washington
 Engle, Howard E., Jr., B.A., Washington State
 Godsil, Martin A., B.A., Washington
 Grahm, Thomas B., B.A., Washington
 Green, Michael R., B.A., Washington
 Hahn, Gerald M., B.A., Washington
 Hanna, Ray L., B.A., Washington
 Hayes, Frederick B., B.A., Washington
 Hoff, Michael, B.A., Washington
 Howe, James B., Jr., B.A., Virginia
 Johnson, Burton R., B.A., Washington
 Johnson, Jerald R., B.A., Washington
 King, Edmond N., A.B., Whitman
 Ladley, James D., A.B., Whitman
 Larson, Lee A., B.A., Washington State
 Lorentzen, Robert H., B.S., Washington
 McLeod, Murray A., Seattle University
 Martin, John R., Jr., B.A., Washington
 Muller, Richard H., B.A., Reed College
 Navoni, Donald L., B.A., Seattle University
 Neubauer, Ronald G., B.A., Washington
 Newton, Henry T., B.A., Washington
 Nowell, John R., Washington
 Olson, Theodore H., B.A., Washington
 Olwell, Patrick H. II, B.A., Washington
 Owens, Frank J., B.A., Washington
 Peterson, Lloyd W., B.A., Washington
 Phillipps, Kenneth E., B.A., Washington
 Pratt, Stanley S., B.A., Washington State
 Priest, Donald E., A.B., Whitman
 Prince, Robert E., A.B., Stanford
 Ragan, John C., B.S., Louisiana State
 Reid, Warren F., B.A., Washington
 Reser, Howard Y., B.A., Washington State
 Roe, Harding T., A.B., Stanford
 Ryker, George C., B.A., Washington
 Stead, Robert E., B.A., Washington State
 Stewart, Frederick L., B.A., Washington
 Stohr, Robert C., Washington
 Studebaker, Lauren D., B.A., Washington
 Sweany, Garrett G., B.A., Washington
 Swenson, Robert G., B.A., Washington
 Thomas, James R., B.A., Colorado College
 Tytler, Morton M., B.A., Washington
 Watson, John M., B.A., Washington
 Williams, David L., B.S., Washington
 Wilson, William A., B.A., Washington

LAW SCHOOL HONORS FOR THE ACADEMIC YEAR 1959-60

Honor Graduate in Law
Marjorie Dick Rombauer

With Honors in Law
Marjorie Dick Rombauer
David Charles Cummins

Order of the Coif
Timothy Robert Clifford
John Frederick Colgrove
David Charles Cummins
Robert William McKisson, Jr.
Marjorie Dick Rombauer
Joyce Mary Thomas
Philip Bruce Wilson

James M. Bailey Memorial Scholarships
Philip Bruce Wilson
Richard Wayne Shelton

Nathan Burkan Memorial Prize
(Not awarded this year)

Vivian M. Carkeek Prize in Law
Marjorie Dick Rombauer

Vivian M. Carkeek Scholarship
Charles Theodore Cole
Robert Baronsky

Judge Robert M. Jones Memorial Award
Timothy Robert Clifford

Karr, Tuttle, Campbell, Koch and Granberg Scholarship

Gordon Gene Conger

King County Bar Auxiliary Scholarship
Fredrick Ross Burgess
W. Ronald Groshong

Law Class of 1939 Scholarship
Charles Peter Curran

Law School Alumni Scholastic Improvement Prizes

Robert Franklin Patrick (3rd year)
Ned Macklin Barnes (2nd year)

Law Week Award
Robert Franklin Patrick

Law Wives Association Scholarship
Earl Ellsworth Yates

Legal Aid Bureau Program Award
Donald Alwin Eide

Ivor Lusty Award
W. Ronald Groshong

Warren G. Magnuson Scholarship
John Patrick Cogan

MacDonald, Hoague & Bayless Award
Robert Harold Lamb

W. G. McLaren Prizes
1st Prize Leon Charles Misterek
2nd Prize Paul Anthony Webber

Moot Appellate Court Competition
1st Prize Raymond Edward Brown
2nd Prize Michael Richard Green
3rd Prize Frank Joseph Owens
4th Prize John Brien Bereiter

National Association of Claimants and Compensation Attorneys Award
Ronald Fellows Mitchell

Seattle Life Insurance & Trust Council Will Drafting Contest

1st Prize Marjorie Dick Rombauer
2nd Prize W. Ronald Groshong
3rd Prize Robert Franklin Patrick
4th Prize William Lay Kinzel

William Wallace Wilshire Memorial Scholarship

Raymond Edward Brown
William Laurence Carter
John Frederick Colgrove
Donald Alwin Eide
W. Ronald Groshong
Earl McColl Hill
Walter Charles Howe, Jr.
Robert Harold Lamb
Richard Henry Muller
Michael Duggan O'Keefe
Mark Theodore Patterson
David Pier Skellenger
Dave Conrad Spencer
Fred Lee Stewart
Philip Bruce Wilson

LAW SCHOOL HONORS FOR THE ACADEMIC YEAR 1960-61

Honor Graduate in Law
Robert Baronsky

With Honors in Law
Robert Baronsky

Order of the Coif
Jorgen Gabriel Bader
Robert Baronsky
James Allen Carter
Robert Donald Duggan
Thomas Bernard Grahn
Howard Yancey Reser

James M. Bailey Memorial Scholarship
Charles Theodore Cole

Nathan Burkan Memorial Prize
(Not awarded this year)

Vivian M. Carkeek Prize in Law
Philip Bruce Wilson

Vivian M. Carkeek Scholarship
Charles David Sheppard

Delta Theta Phi-Story Senate Founders' Scholarship
Howard Yancey Reser

Judge Robert M. Jones Memorial Award
Raymond Edward Brown

Karr, Tuttle, Campbell, Koch and Granberg Scholarship
Howard Theodore Almquist

Law Class of 1939 Scholarship
Stanley Samuel Pratt
Frederick Lee Stewart

Law School Alumni-Scholastic Improvement Prizes
Charles Orno Shoemaker (2nd year)
James Warren Cook (3rd year)

Law Week Award
James Warren Cook

Law Wives Association Scholarship
Charles Francis Murphy

Legal Aid Bureau Program Award
(Not awarded this year)

Ivor Lusty Award
David Lee Williams

MacDonald, Hoague & Bayless Award
Richard Henry Muller
Thomas Bernard Grahm

Warren G. Magnuson Scholarship
Lloyd William Peterson

W. G. McLaren Prizes
1st Prize Nancy Christina Nuckols
2nd Prize Evan Lynn Schwab

Moot Appellate Court Competition
1st Prize Paul Anthony Webber
2nd Prize Gordon Gene Conger
3rd Prize Charles Eugene Peery
4th Prize Charles Favour Abbott
David Wayne Campbell

National Association of Claimants and Compensation Attorneys' Award
Richard Henry Muller

Seattle King County Bar Auxiliary Scholarship
Earl McColl Hill
Walter Charles Howe, Jr.

Seattle Life Insurance & Trust Council Will Drafting Contest

1st Prize Frank Joseph Owens
2nd Prize John Martin Watson
3rd Prize Stanley Samuel Pratt
4th Prize Robert Laurence Anderson

William Wallace Wilshire Memorial Scholarship
Charles Favour Abbott
David Alpheus Best
Larry Allan Beck
Raymond Edward Brown
David Wayne Campbell
Charles Theodore Cole
Larrie Earl Elhart
Ragnar Rice Engebretsen
Dean Alwood Floyd
Robert Elliott Heaton
Earl McColl Hill
Harold Roland Hofstedt
Walter Charles Howe, Jr.
Nicholas John Kamplin
James Herbert McDaniel
William James Milhofer
Charles Francis Murphy
Mark Theodore Patterson
Charles Eugene Peery
Evan Lynn Schwab
Frederick Lee Stewart
Richard Joseph Thorpe
Forrest Wesley Walls

BULLETIN • UNIVERSITY OF WASHINGTON



SCHOOL OF MEDICINE

1962-1964

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BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes three general bulletins; bulletins of the colleges and schools; Summer Quarter Bulletin; the bulletin of the Center for Graduate Study at Hanford; and bulletins of the Division of Correspondence Study and the Division of Evening Classes.

INTRODUCTION TO THE UNIVERSITY, one of the general bulletins, is especially prepared for new and prospective students. It lists all the University curricula, with their admission requirements, and presents information on other phases of student life, including services for students, student activities, and expenses. **UNIVERSITY RULES AND REGULATIONS**, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as registered students. **HANDBOOK OF SCHOLARSHIPS**, the third general bulletin, lists the various scholarships available.

Curricula, courses, and scholarship requirements in each field of study are described in the college and school bulletins. Each of these bulletins also discusses services, organizations, and expenses as they relate to students in the particular college or school.

Requests for copies of any of the bulletins should be addressed to the Addressograph Service.

General Bulletins

HANDBOOK OF SCHOLARSHIPS (RESTRICTED DISTRIBUTION)

INTRODUCTION TO THE UNIVERSITY

UNIVERSITY RULES AND REGULATIONS (FOR REGISTERED STUDENTS ONLY)

Bulletins of the Colleges and Schools

COLLEGE OF ARCHITECTURE AND URBAN PLANNING

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF BUSINESS ADMINISTRATION

SCHOOL OF DENTISTRY

COLLEGE OF EDUCATION

COLLEGE OF ENGINEERING

COLLEGE OF FISHERIES

COLLEGE OF FORESTRY

GRADUATE SCHOOL

SCHOOL OF LAW

SCHOOL OF MEDICINE

SCHOOL OF NURSING

COLLEGE OF PHARMACY

SCHOOL OF SOCIAL WORK

Other Bulletins

SUMMER QUARTER

CENTER FOR GRADUATE STUDY AT HANFORD

CORRESPONDENCE STUDY

EVENING CLASSES

BULLETIN
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CALENDAR

Application for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

AUTUMN QUARTER, 1962

SEPT. 24—MONDAY	Instruction begins, Medicine III and IV, Term 1 (8 a.m.)
OCT. 1—MONDAY	Instruction begins, Medicine I and II (8 a.m.)
NOV. 12—MONDAY	State Admission Day holiday
NOV. 21—WEDNESDAY	Instruction ends, Medicine III
NOV. 23—FRIDAY	Instruction begins, Medicine III, Term 2 (8 a.m.)
NOV. 21-26	Thanksgiving recess (5 p.m. to 8 a.m.) Medicine I and II
NOV. 22	Thanksgiving holiday, Medicine III and IV
DEC. 15—SATURDAY	Instruction ends, Medicine IV (1 p.m.)
DEC. 17—MONDAY	Instruction begins, Medicine IV, Term 2 (8 a.m.)
DEC. 13-18	Examinations, Medicine I and II
DEC. 18—TUESDAY	Instruction ends, Medicine I and II (5 p.m.)
DEC. 22—SATURDAY	Christmas recess begins, Medicine III and IV (12:30 p.m.)
JAN. 2—WEDNESDAY	Christmas recess ends, Medicine III and IV (8 a.m.)

WINTER QUARTER, 1963

JAN. 7—MONDAY	Instruction begins, Medicine I and II (8 a.m.)
JAN. 30—WEDNESDAY	Instruction ends, Medicine III
JAN. 31—THURSDAY	Instruction begins, Medicine III, Term 3 (8 a.m.)
FEB. 22—FRIDAY	Washington's Birthday and Founder's Day holiday
MAR. 18-22	Examinations, Medicine I and II
MAR. 16—SATURDAY	Instruction ends, Medicine IV (5 p.m.)
MAR. 18—MONDAY	Instruction begins, Term 3, Medicine IV (8 a.m.)
MAR. 22—FRIDAY	Instruction ends, Medicine I and II (5 p.m.)

SPRING QUARTER, 1963

APR. 1—MONDAY	Instruction begins, Medicine I and II (8 a.m.)
APR. 2—TUESDAY	Instruction ends, Medicine III
APR. 3—WEDNESDAY	Instruction begins, Medicine III, Term 4 (8 a.m.)
MAY 30—THURSDAY	Memorial Day holiday
JUNE 10-14	Examinations
JUNE 14—FRIDAY	Instruction ends
JUNE 15—SATURDAY	Commencement

AUTUMN QUARTER, 1963

SEPT. 23—MONDAY	Instruction begins, Medicine III and IV, Term 1 (8 p.m.)
SEPT. 30—MONDAY	Instruction begins, Medicine I and II (8 a.m.)
NOV. 11—MONDAY	State Admission Day holiday
NOV. 20—WEDNESDAY	Instruction ends, Medicine III (1 p.m.)
NOV. 22—FRIDAY	Instruction begins, Medicine III, Term 2 (8 p.m.)
NOV. 20-25	Thanksgiving recess (5 p.m. to 8 a.m.)

Nov. 21	Thanksgiving holiday, Medicine III and IV
DEC. 14—SATURDAY	Instruction ends, Medicine IV (5 p.m.)
DEC. 16—MONDAY	Instruction begins, Medicine IV, Term 2 (8 p.m.)
DEC. 12-17	Examinations, Medicine I and II
DEC. 17—TUESDAY	Instruction ends, Medicine I and II (5 p.m.)
DEC. 21—SATURDAY	Christmas recess begins, Medicine III and IV (1 p.m.)
DEC. 30—MONDAY	Christmas recess ends, Medicine III and IV (8 a.m.)
JAN. 1—WEDNESDAY	New Year holiday, Medicine III and IV

WINTER QUARTER, 1964

JAN. 6—MONDAY	Instruction begins, Medicine I and II (8 a.m.)
JAN. 29—WEDNESDAY	Instruction ends, Medicine III
JAN. 30—THURSDAY	Instruction begins, Medicine III, Term 3 (8 p.m.)
FEB. 22—SATURDAY	Washington's Birthday and Founder's Day holiday
MAR. 16-20	Examinations, Medicine I and II
MAR. 14—SATURDAY	Instruction ends, Medicine IV (5 p.m.)
MAR. 16—MONDAY	Instruction begins, Medicine IV, Term 3 (8 a.m.)
MAR. 20—FRIDAY	Instruction ends, Medicine I and II (5 p.m.)

SPRING QUARTER, 1964

MAR. 30—MONDAY	Instruction begins, Medicine I and II (8 a.m.)
MAR. 31—TUESDAY	Instruction ends, Medicine III (1 p.m.)
APR. 1—WEDNESDAY	Instruction begins, Medicine III, Term 4 (8 a.m.)
MAY 30—SATURDAY	Memorial Day holiday
JUNE 8-12	Examinations
JUNE 12—FRIDAY	Instruction ends
JUNE 13—SATURDAY	Commencement

OBSERVANCE OF UNIVERSITY RULES AND REGULATIONS

It is the University's expectation that a student will follow University rules and regulations as they are stated in the Bulletins. In instances where no appeal procedure is spelled out and the student is persuaded that a special set of circumstances makes appeal reasonable, he may appeal the application of specific rules or regulations to the Office of the Dean of the School or College in which he is enrolled in the case of an academic matter, or to the Office of the Dean of Students in the case of a nonacademic matter. These offices will either render a decision on the appeal or refer the student to the proper office for a decision.

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.

ADMINISTRATION

BOARD OF REGENTS

MRS. A. SCOTT BULLITT, <i>President</i>	Seattle
ALBERT B. MURPHY, M.D., <i>Vice-President</i>	Everett
JOSEPH DRUMHELLER	Spokane
JOHN L. KING	Seattle
HERBERT S. LITTLE	Seattle
HAROLD S. SHEFELMAN	Seattle
ROBERT J. WILLIS	Yakima

HELEN E. HOAGLAND, *Secretary*

DON H. WAGEMAN, *Treasurer*

OFFICERS OF ADMINISTRATION

CHARLES E. ODEGAARD, Ph.D.	<i>President of the University</i>
FREDERICK P. THIEME, Ph.D.	<i>Provost of the University</i>
GLENN H. LEGGETT, Ph.D.	<i>Vice-Provost of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
HAROLD A. ADAMS, M.S.	<i>Director of Admissions</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>
GEORGE N. AAGAARD, M.D.	<i>Dean of the School of Medicine</i>

BOARD OF HEALTH SCIENCES

CHARLES E. ODEGAARD, Ph.D.	<i>President of the University</i>
GEORGE N. AAGAARD, M.D.	<i>Dean of the School of Medicine; Chairman of the Board</i>
MAURICE J. HICKEY, M.D., D.M.D.	<i>Dean of the School of Dentistry</i>
SOLOMON KATZ, Ph.D.	<i>Dean of the College of Arts and Sciences</i>
JOSEPH L. MCCARTHY, Ph.D.	<i>Dean of the Graduate School</i>
JACK E. ORR, Ph.D.	<i>Dean of the College of Pharmacy</i>
MARY S. TSCHUDIN, R. N., Ph.D.	<i>Dean of the School of Nursing</i>
JEAN MILNE, <i>Secretary</i>	

OFFICERS OF THE SCHOOL OF MEDICINE

GEORGE N. AAGAARD, M.D.	<i>Dean</i>
RICHARD J. BLANDAU, M.D., Ph.D.	<i>Associate Dean</i>

JOHN R. HOGNESS, M.D. Associate Dean
MARY ADAMS, B.A. Assistant to the Dean

HEALTH SCIENCES ADMINISTRATIVE OFFICERS

JEAN ASHFORD, M.L. Acting Librarian
BOYD BALDWIN, M.A. Audio-Visual Coordinator
DERWIN R. DE MERS Business Manager
JAMES H. FARNSWORTH, M.S. Director of Scientific Stores
CLIFFORD L. FREEHE Television Coordinator
DONALD F. HISCOX, B.F.A. Administrative Assistant
GEORGE A. LEHMAN, B.S. Plant Engineer
TOMMY W. PENFOLD, D.V.M. Director of Vivarium
JESSIE W. PHILLIPS, B.F.A. Director of Medical Illustration
JAMES R. SISLEY, B.S. Director of Medical Instrument Shop
SEYMOUR STANDISH, JR., B.A. Assistant to the Chairman of the
Board of Health Sciences
STEPHEN E. NORD, B.A. Personnel

UNIVERSITY HOSPITAL ADMINISTRATIVE OFFICERS

LEROY S. RAMBECK, B.A. Hospital Administrator
JOHN R. HOGNESS, M.D. Medical Director
PHILIP J. GILLETTE, M.P.H. Assistant Hospital Administrator

FACULTY, SCHOOL OF MEDICINE

The following lists include all faculty members except those at the assistant and associate levels.

The first date following a name indicates the beginning of service in the University. When two dates are given, the second, in parentheses, is the date of promotion to present academic rank.

ADMINISTRATION

AAGAARD, George N., 1954
Dean of the School of Medicine
B.S., 1934, M.B., 1936, M.D., 1937,
Minnesota
BLANDAU, Richard J., 1949 (1955)
Associate Dean of the School of Medicine
A.B., 1935, Linfield College; Ph.D., 1939,
Brown; M.D., 1948, Rochester
HOGNESS, John R., 1951 (1959)
Associate Dean of the School of Medicine
and Medical Director of the University
Hospital
B.S., 1943, M.D., 1946, Chicago
NOLAN, Donald E., 1951
Administrative Consultant
M.D., 1936, Minnesota

SHERWOOD, Kenneth K., 1947
Administrative Consultant
B.S., 1923, B.M., 1925, M.D., 1926,
Minnesota

BASIC HEALTH SCIENCES

ANATOMY

BASSETT, David L., 1959
Professor of Anatomy
A.B., 1934, M.D., 1939, Stanford
BLANDAU, Richard J., 1949 (1951)
Professor of Anatomy; Assistant Dean,
School of Medicine
A.B., 1935, Linfield College; Ph.D.,
1939, Brown; M.D., 1948, Rochester

- BLEVINS, Charles E., 1962
Instructor in Anatomy
B.A., 1947, M.A., 1948, Stanford University; Ph.D., 1961, University of California
- BODEMER, Charles W., 1956 (1959)
Associate Professor of Anatomy
B.A., 1951, Pomona College; M.A., 1952, Claremont Graduate School; Ph.D., 1956, Cornell
- EVERETT, Newton B., 1946 (1957)
Professor of Anatomy; Chairman of the Department of Anatomy
B.S., 1937, M.S., 1938, North Texas State College; Ph.D., 1942, Michigan
- JENSEN, Lyle H., 1949
Professor of Anatomy, Administrative Officer
B.A., 1939, Walla Walla College; Ph.D., 1943, Washington
- LUFT, John H., 1956 (1958)
Associate Professor of Anatomy
B.A., 1949, M.D., 1953, Washington
- ODLAND, George F., 1955
Assistant Professor of Anatomy
M.D., 1946, Harvard
- RIEKE, William O., 1958
Assistant Professor of Anatomy
M.D., 1958, Washington
- ROOSEN-RUNGE, Edward C., 1952 (1959)
Professor of Anatomy
M.D., 1936, Hamburg (Germany)
- SKAHEN, Julia G., 1946
Associate Professor of Anatomy, Physiology and Biophysics
B.S., 1926, M.S., 1928, Washington; Ph.D., 1940, Chicago
- SUNDSTEN, John W., 1962
Instructor in Anatomy
A.B., 1956, Ph.D., 1961, University of California at Los Angeles
- WOOD, Richard L., 1959
Assistant Professor of Anatomy
B.A., 1950, Linfield College; Ph.D., 1957, Washington

RESEARCH APPOINTMENTS

- BOYDEN, Edward A., 1955 (1956)
Research Professor of Anatomy
A.B., 1909, A.M., 1911, Ph.D., 1916, Harvard
- RUMERY, Ruth E., 1955 (1960)
Research Assistant Professor of Anatomy
B.S., 1943, New Hampshire; M.S., 1947, Ph.D., 1952, Rochester

CLINICAL APPOINTMENTS

- DeMARSH, Quin B., 1947 (1955)
Clinical Associate Professor of Anatomy
B.S., 1935, Washington; M.S., 1937, M.B., 1939, M.D., 1940, Northwestern
- LASHER, Earl Parsons, 1946 (1955)
Clinical Assistant Professor of Anatomy
B.A., 1931, M.D., 1934, Cornell
- LINDAHL, Wallace W., 1947 (1953)
Clinical Instructor in Anatomy
B.S., 1933, Washington State; M.D., 1938, Northwestern
- SWARTZ, Edgar, 1950 (1955)
Clinical Instructor in Anatomy
A.B., 1942, Ohio; M.D., 1943, Cincinnati

BIOCHEMISTRY

- COX, David J., 1960
Instructor in Biochemistry
B.A., 1956, Wesleyan; Ph.D., 1960, Pennsylvania

- DAVIE, Earl W.
Associate Professor of Biochemistry
B.S., 1950, Ph.D., 1954, Washington
- FISCHER, Edmond H., 1953 (1956)
Professor of Biochemistry
Ph.D., 1947, Geneva (Switzerland)
- GOLDSWORTHY, Patrick D., 1952 (1957)
Lecturer in Biochemistry
A.B., 1941, M.A., 1947, Ph.D., 1952, California
- GORDON, Milton P., 1959
Associate Professor of Biochemistry
B.A., 1950, Minnesota; Ph.D., 1953, Illinois
- HANAHAN, Donald James, 1950 (1959)
Professor of Biochemistry
B.S., 1941, Ph.D., 1944, Illinois
- KAPLAN, Alex, 1960
Associate Professor of Biochemistry
A.B., 1932, California (Los Angeles); Ph.D., 1936, California
- KREBS, Edwin G., 1948 (1957)
Professor of Biochemistry
A.B., 1940, Illinois; M.D., 1943, Washington University
- NEURATH, Hans, 1950
Professor of Biochemistry; Chairman of the Department of Biochemistry
Ph.D., 1933, Vienna (Austria)
- THOMPSON, Guy A., Jr., 1960 (1962)
Instructor in Biochemistry
B.S., 1953, Mississippi State; Ph.D., 1959, California Institute of Technology
- WALSH, Kenneth A., 1959 (1962)
Assistant Professor of Biochemistry
B.Sc., 1951, McGill (Canada); M.S., 1953, Purdue; Ph.D., 1959, Toronto (Canada)
- WILCOX, Philip E., 1952 (1957)
Associate Professor of Biochemistry
B.S., 1943, California Institute of Technology; Ph.D., 1949, Wisconsin

RESEARCH APPOINTMENTS

- GABRIO, Beverly W., 1950 (1959)
Research Assistant Professor of Biochemistry
A.B., 1944, Lindenwood College; Ph.D., 1950, Rochester
- KELLER, Patricia J., 1955 (1956)
Research Associate Professor of Biochemistry
B.S., 1945, Detroit; Ph.D., 1953, Washington University
- KUMAR, Sampath K.S.V., 1961
Research Instructor
B.Sc.(Hons), 1953, Loyola College, Madras, India; Ph.D., 1958, Madras University
- POSNER, Jerome B., 1961
Research Instructor of Biochemistry
B.S., 1951, M.D., 1955, Washington
- STEIN, Eric A., 1954 (1958)
Research Assistant Professor of Biochemistry
Ph.D., 1954, Geneva (Switzerland)

MICROBIOLOGY

- CHAMBERS, Velma C., 1956 (1958)
Instructor and Research Instructor in Microbiology
R.N., 1937, Mercy Hospital; B.S., 1942, M.S., 1948, Ph.D., 1954, Washington
- DOUGLAS, Howard Clark, 1941 (1958)
Professor of Microbiology and Genetics
A.B., 1936, Ph.D., 1949, California
- DUCHOW, Esther A., 1940 (1954)
Instructor in Microbiology
B.S., 1934, M.S., 1952, Washington

- EVANS, Charles A., 1946
Professor of Microbiology; Chairman of the Department of Microbiology
B.S., 1935, B.M., 1936, M.D., 1937, Ph.D., 1942, Minnesota
- GROMAN, Neal B., 1950 (1958)
Associate Professor of Microbiology
B.S., 1947, Ph.D., 1950, Chicago
- HENRY, Bernard S., 1931 (1946)
Professor of Microbiology
B.S., 1925, M.A., 1926, Ph.D., 1931, California
- HOLLAND, John J., 1960 (1961)
Associate Professor of Microbiology
B.S., 1953, Loyola; Ph.D., 1957, California (Los Angeles)
- LANCASTER, Louis J., 1959
Instructor in Microbiology
B.S., 1952, Virginia Polytechnic Institute; M.D., 1956, Maryland
- NESTER, Eugene W., 1962
Instructor in Microbiology
B.S., 1952, Cornell; Ph.D., 1959, Western Reserve
- ORDAL, Erling J., 1937 (1957)
Professor of Microbiology
A.B., 1927, Luther College (Iowa); Ph.D., 1936, Minnesota
- SHERRIS, John C., 1959
Associate Professor of Microbiology; Director, Hospital Clinical Microbiology Laboratory
M.B., B.S., 1948, M.D., 1950, London
- SPOTTS, Charles R., 1963
Instructor in Microbiology
B.A., 1955, M.A., 1957, Ph.D., 1960, California
- WEISER, Russell S., 1934 (1949)
Professor of Microbiology (Immunology)
B.S., 1930, M.S., 1931, North Dakota State; Ph.D., 1934, Washington

RESEARCH APPOINTMENTS

- BINGHAM, Margaret N., 1956
Research Instructor in Microbiology
B.A., 1936, Stanford; M.D., 1940, Oregon
- OH, Jang O., 1960
Research Instructor in Microbiology
M.D., 1948, Severance Medical College (Korea); Ph.D., 1960, Washington
- PACHA, Robert E., 1961
Research Instructor in Microbiology
B.S., 1955, M.S., 1958, Ph.D., 1961, Washington
- RIDGWAY, George, 1956
Research Instructor in Microbiology
B.S., 1949, M.S., 1951, Ph.D., 1954, Washington
- WHITELEY, Helen R., 1953 (1961)
Research Associate Professor of Microbiology
B.A., 1942, California; M.S., 1947, Texas; Ph.D., 1951, Washington

CLINICAL APPOINTMENTS

- BRANCATO, Frank P., 1958
Clinical Instructor in Microbiology
B.S., 1948, Long Island; A.M., 1949, Boston; Ph.D., 1952, Washington State
- VENNESLAND, Kirsten, 1954
Clinical Instructor in Microbiology
B.S., 1934, M.D., 1942, Chicago

PATHOLOGY

- ALVORD, Ellsworth C., Jr., 1960 (1962)
Professor of Pathology
B.S., 1944, Haverford College; M.D., 1946, Cornell

- BENDITT, Earl P., 1957
Professor of Pathology; Chairman of the Department of Pathology
B.A., 1937, Swarthmore; M.D., 1941, Harvard
- BROWN, David V., 1951 (1960)
Associate Professor of Pathology
B.A., 1935, Reed College; M.D., 1939, Oregon
- HOUGIE, Cecil, 1960
Associate Professor of Pathology
M.R.C.S. (England), L.R.C.P. (London), 1945; M.B., B.S., 1946, University of London
- LAGUNOFF, David, 1960 (1962)
Assistant Professor of Pathology
M.D., 1957, University of Chicago
- MARTIN, George M., 1957 (1960)
Assistant Professor of Pathology
B.S., 1949, M.D., 1953, Washington
- MOTTET, N. Karle, (1959) 1961
Associate Professor of Pathology
B.S., 1947, Washington State; M.D., 1952, Yale
- PREHN, Richmond T., 1958 (1960)
Associate Professor of Pathology
M.D., 1947, Long Island College of Medicine
- REICHENBACH, Dennis D., 1961
Instructor in Pathology
B.S., 1955; M.D., 1958, University of Washington
- ROSS, Russell, 1962
Assistant Professor of Pathology and Oral Pathology
A.B., 1951, Cornell University; D.D.S., 1955, Columbia University; Ph.D., 1962, University of Washington
- SMUCKLER, Edward A., 1961
Instructor in Pathology
A.B., 1952, Dartmouth College; M.D., 1956, Tufts University
- SREEBNY, Leo M., 1957 (1961)
Professor of Oral Pathology and Pathology
D.D.S., 1945, Ph.D., 1954, Illinois
- WIEGENSTEIN, Louise, 1948 (1953)
Instructor of Pathology (Part-time)
B.S., 1938, Simmons College; M.D., 1946, Tufts

RESEARCH APPOINTMENTS

- ERIKSEN, Nils, 1949 (1957)
Research Assistant Professor of Pathology
B.S., 1939, Ph.D., 1944, Washington
- PRIEST, Robert E., 1957 (1960)
Research Assistant Professor of Pathology
B.A., 1950, Reed College; M.D., 1954, Chicago
- SHAW, Cheng-Mei, 1960 (1962)
Research Assistant Professor of Pathology
M.D., 1950, National Taiwan University School of Medicine
- WATTS, Ruth M., 1957 (1961)
Research Instructor of Pathology
B.S., 1921, Washington; M.S., 1925, Yale; Ph.D., 1930, Chicago

CLINICAL APPOINTMENTS

- BITAR, Emmanuel, 1949
Clinical Instructor in Pathology
B.S., 1935, Washington; M.D., 1939, Oregon
- BONIFACI, Robert W., 1962
Clinical Instructor of Pathology
M.D., 1949, Tufts College
- BUSTEED, Frank F., 1962
Clinical Instructor of Pathology
B.A., 1948, British Columbia; M.D., 1952, Washington

- CREIGHTON, S. Allison, 1949 (1958)
Clinical Assistant Professor of Pathology
B.S., 1930, New Brunswick; M.D.,
C.M., 1935, McGill (Canada)
- EGGERTSEN, Burton S., 1962
Clinical Instructor in Pathology
B.S., 1947, University of South Dakota;
M.D., 1949, Southwestern Medical
College, University of Texas
- ELLIS, Ralph C., 1961
Clinical Assistant Professor of Pathology
M.D., 1937, University of Kansas
- GIEDT, Walvin R., 1962
Clinical Instructor of Pathology
B.Sc. in Med., 1933, University of South
Dakota; M.D., 1937, University of
Chicago (Rush)
- GRIFFITH, Paul C., 1954 (1960)
Clinical Assistant Professor of Pathology
A.B., 1941; M.D., 1943, University of
Nebraska
- HABERMAN, Clayton R., 1954 (1959)
Clinical Instructor in Pathology
B.S., 1947, M.D., 1949, Wisconsin
- HOLYOKE, John B., 1955
Clinical Assistant Professor of Pathology
B.S., 1937, M.D., 1940, Nebraska
- HOLMES, Elizabeth J., 1960
Clinical Instructor in Pathology
B.A., 1949, Stanford University; M.D.,
1954, Women's Medical College of
Pennsylvania
- JENSEN, Clyde Reynolds, 1947
Clinical Assistant Professor of Pathology
A.B., 1923, Dartmouth; M.D., 1925,
Rush Medical College
- JONES, Hugh Warren, 1949 (1958)
Clinical Assistant Professor of Pathology
B.S., 1934, M.D., 1938, Arkansas
- KNUDTSON, Kenneth P., 1953
Clinical Assistant Professor of Pathology
B.S., 1938, M.D., 1941, Wisconsin
- LARSON, Charles P., 1947 (1948)
Clinical Assistant Professor of Pathology
B.A., 1931, Gonzaga; M.D., C.M.,
1936, McGill (Canada)
- LAZERTE, Gordon D., 1958 (1961)
Clinical Assistant Professor in Pathology
M.D., 1948, Tufts
- LUND, Paul K., 1947
Clinical Assistant Professor of Pathology
B.A., 1934, Carleton College; M.D.,
C.M., 1940, McGill (Canada)
- MARSHALL, Charles E., 1959
Clinical Instructor in Pathology
M.D., 1940, Australia; D.C.P., 1952,
London University
- MASON, David G., 1947 (1949)
Clinical Assistant Professor of Pathology
B.A., 1930, M.D., 1935, Oregon
- POWELL, Clermont S., 1954 (1961)
Clinical Assistant Professor of Pathology
M.D., 1948, Jefferson Medical College
- RICKER, Walter A., 1946 (1954)
Clinical Associate Professor of Pathology
M.D., 1939, Marquette
- SCHULDBERG, Irving I., 1953 (1958)
Clinical Assistant Professor of Pathology
B.A., 1937, M.D., 1940,
Southern California
- TESLUK, Henry, 1956
Clinical Instructor in Pathology
A.B., 1941, M.D., 1943, Cornell
- THORSON, Theodore A., 1952 (1959)
Clinical Assistant Professor of Pathology
M.D., 1950, Washington

PHARMACOLOGY

- DILLE, James Madison, 1946
*Professor of Pharmacology; Chairman
of the Department of Pharmacology*
B.S., 1930, M.S., 1933, Nebraska;
Ph.D., 1935, Georgetown; M.D., 1946,
Illinois
- ELDER, John T., 1957
Instructor in Pharmacology
B.S., 1953, M.S., 1955, Massachusetts
College of Pharmacy; Ph.D., 1959,
Washington
- HOLLIDAY, Audrey R., 1957 (1959)
Assistant Professor in Pharmacology
B.A., 1945, Oregon; M.S., 1949, Ph.D.,
1957, Washington
- HORITA, Akira, 1954 (1961)
Associate Professor of Pharmacology
B.A., 1950, M.S., 1951, Ph.D., 1954,
Washington
- LOOMIS, Ted Albert, 1947 (1957)
*State Toxicologist; Professor of
Pharmacology*
B.S., 1939, Washington; M.S., 1941,
Ph.D., 1943, Buffalo; M.D., 1946, Yale
- MAGEE, Donal F., 1951 (1962)
Professor of Pharmacology
B.A., 1944, M.A., B.M., B.Ch., 1948,
Oxford (England); Ph.D., 1952, Illinois
- WEST, Theodore C., 1949 (1959)
Associate Professor of Pharmacology
B.S., 1948, M.S., 1949, Ph.D., 1952,
Washington

RESEARCH APPOINTMENTS

- THIERSCH, John B., 1950 (1954)
*Research Associate Professor of
Pharmacology*
M.D., 1935, Bern (Switzerland); M.D.,
1935, Freiburg (Germany); Med.
Habl., 1938, Adelaide (Australia);
M.D., 1951, Washington

PHYSIOLOGY AND BIOPHYSICS

- BROWN, Arthur C., 1960
Instructor in Physiology and Biophysics
B.A., 1948, M.S., 1954, Chicago; Ph.D.,
1960, Washington
- FINLEY, Theodore N., 1961
*Assistant Professor of Physiology and
Biophysics and Anesthesiology*
M.D., 1954, Johns Hopkins Medical School
- GLICKSTEIN, Mitchell, 1962
*Assistant Professor of Physiology and
Biophysics and Psychology*
B.A., 1951, Ph.D., 1958, Chicago
- KENNEDY, Thelma T., 1958 (1961)
*Assistant Professor of Physiology and
Biophysics*
Ph.B., B.S., 1947, M.S., 1949, Ph.D.,
1955, Chicago
- PATTON, Harry D., 1947 (1956)
Professor of Physiology and Biophysics
B.A., 1939, Arkansas; Ph.D., 1943, M.D.,
1946, Yale
- RANCK, James B., Jr., 1961
Instructor in Physiology and Biophysics
B.A., 1952, Haverford College; M.D.,
1955, Columbia
- RUCH, Theodore C., 1946 and 1961
*Professor of Physiology and Biophysics
and Chairman of the Department of
Physiology and Biophysics; Director,
Regional Primate Research Center at the
University of Washington*
B.A., 1927, Oregon; M.A., 1928, Stanford;
B.A., 1930, B.Sc. Oxon., 1932, Oxford
(England); Ph.D., 1933, Yale

- RUSHMER, Robert F., 1947 (1956)
Professor of Physiology and Biophysics
B.S., 1936, Chicago; M.D., 1939, Rush
Medical College
- SCHER, Allen M., 1950 (1962)
Professor of Physiology and Biophysics
B.A., 1942, Ph.D., 1951, Yale
- SKAHEN, Julia G., 1946 (1961)
*Associate Professor of Physiology and
Biophysics and Anatomy*
B.S., 1926, M.S., 1928, Washington;
Ph.D., 1940, Chicago
- SMITH, Orville A., 1958 (1959)
*Assistant Professor of Physiology and
Biophysics; Assistant Director of
Regional Primate Research Center at the
University of Washington*
B.A., 1949, Arizona; M.A., 1950, Ph.D.,
1953, Michigan State
- TOWE, Arnold L., 1953 (1962)
*Associate Professor of Physiology and
Biophysics*
B.A., 1948, Pacific Lutheran College;
Ph.D., 1953, Washington
- WIEDERHIELM, Curt A. R., 1961
Instructor in Physiology and Biophysics
Karolinska Institutet, 1947; Ph.D., 1961,
Washington
- WOODBURY, J. Walter, 1950 (1962)
Professor of Physiology and Biophysics
B.S., 1943, M.S., 1947, Ph.D., 1950, Utah
- YOUNG, Allan C. 1949 (1960)
Professor of Physiology and Biophysics
B.A., 1930, M.A., 1932, British Columbia
(Canada); Ph.D., 1934, Toronto
(Canada)

RESEARCH APPOINTMENTS

- BRAND, Edmund H., 1953 (1956)
*Research Instructor in Physiology and
Biophysics*
B.S., 1947, Pacific
- KOCH, Alan R., 1957 (1961)
*Research Assistant Professor of Physiology
and Biophysics*
B.S., 1951, Michigan; Ph.D., 1955,
Columbia

PREVENTIVE MEDICINE

- ALEXANDER, E. Russell, 1961
*Assistant Professor of Preventive Medicine
and Pediatrics*
Ph.B. 1948, S.B., 1950; M.D., 1953,
Chicago
- BENNETT, Blair M., 1950 (1962)
*Associate Professor of Preventive
Medicine*
A.B., 1938, Georgetown; M.A., 1941,
Columbia; Ph.D., 1950, California
- FREMONT, Joseph C., 1961
Assistant in Preventive Medicine
B.S., 1957, M.D., 1959, Illinois
- GRAYSTON, J. Thomas, 1960
*Professor of Preventive Medicine and
Chairman, Department of Preventive
Medicine*
B.S., 1947, M.D., 1948, M.S., 1952,
Chicago
- HATLEN, Jack B., Jr., 1952 (1958)
Instructor in Preventive Medicine
B.S., 1949, M.S., 1958, Washington
- MARTIN, Harry B., 1961
*Associate Professor of Preventive Medicine
and Director, Environmental Research
Laboratory*
B.A., 1943, Washington; M.D., 1949,
Johns Hopkins
- MERRITT, James E., 1961 (1962)
Instructor in Preventive Medicine
B.A., 1949, M.S.W., 1951, Washington

- MILLS, Caswell A., 1954 (1960)
*Assistant Professor of Preventive
Medicine and Associate Professor of
Men's Physical Education*
B.A., 1935, Minot State Teachers College;
M.A., 1943, Ph.D., 1959, Washington
- REEVES, G. Spencer, 1950
*Associate Professor of Preventive Medicine
and Men's Physical Education*
B.S., 1933, M.S., 1937, Oregon; M.P.H.,
1951, California
- STANDISH, Seymour M., Jr., 1956
*Lecturer in Preventive Medicine and
Assistant to the Chairman, Board of
Health Sciences*
B.A., 1942, Washington

RESEARCH APPOINTMENTS

- BOATMAN, Edwin S., 1961
Research Associate in Preventive Medicine
B.S., 1950, B.S., 1952, British
Post-graduate Medical School; M.S.,
1961, Washington
- BREYSSSE, Peter A., 1957
*Research Instructor in Preventive
Medicine*
B.S., 1952, Idaho; M.S., 1954, Washington
State; M.P.H., 1957, Pittsburgh
- JENKIN, Howard M., 1961
*Research Assistant Professor of Preventive
Medicine*
B.S., 1949, Wisconsin; Ph.D., 1960,
Chicago
- KENNY, George E., 1961
*Research Instructor in Preventive
Medicine*
B.S., 1952, Fordham; M.S., 1957, North
Dakota; Ph.D., 1961, Minnesota
- SOPER, Maxine S., 1961
Research Associate in Preventive Medicine
B.Sc., 1952, Minnesota

CLINICAL APPOINTMENTS

- AGER, Ernest A., 1962
Clinical Instructor in Preventive Medicine
B.S., 1947, M.B., 1951, M.D., 1952;
M.P.H., 1960, Minnesota
- BRYAN, Elizabeth, 1961
Clinical Instructor in Preventive Medicine
B.A., 1932, M.D., 1937, Western Reserve
- BUCOVE, Bernard, 1957 (1961)
*Clinical Associate Professor of Preventive
Medicine*
M.D., 1937, D.P.H., 1946, Toronto,
Canada
- DEISHER, Robert W., 1954 (1962)
Clinical Professor of Preventive Medicine
B.A., 1941, Knox College (Illinois); M.D.,
1944, Washington University
- FISH, John O., 1960
Clinical Instructor in Preventive Medicine
B.S., 1949, Washington; M.P.H., 1959,
Michigan
- GIEDT, Walvin R., 1948
Clinical Instructor in Preventive Medicine
B.S., 1933, South Dakota; M.D., 1937,
Rush Medical College; M.P.H., 1941,
Johns Hopkins
- HALL, Nora Page, 1950 (1961)
*Clinical Instructor in Preventive
Medicine*
B.S., 1937, Washington State; M.P.H.,
1950, California
- HANKS, Thrift G., 1952 (1961)
*Clinical Associate Professor of Preventive
Medicine*
B.S., 1934, M.S., M.D., 1939, Illinois

- LANE, H. Wallace, 1957 (1962)
Clinical Assistant Professor in Preventive Medicine
AB., 1933, M.A., 1935, M.D., 1939, Kansas; M.P.H., 1951, Johns Hopkins
- LEHMAN, Sanford P., 1951
Clinical Assistant Professor of Preventive Medicine
B.S., 1928, Wooster College; M.D., 1934, Cincinnati; M.P.H., 1941, Michigan
- LESTER, Charles N., 1962
Clinical Instructor in Preventive Medicine
B.A., 1928, M.D., 1934, Colorado; M.P.H., 1960, California
- MYKUT, Margaret C., 1951 (1960)
Clinical Associate Professor of Preventive Medicine
B.S., 1938, Oregon; M.A., 1944, Washington
- NORTHROP, Cedric, 1947 (1954)
Clinical Assistant Professor of Preventive Medicine
B.A., 1930, M.D., 1936, Oregon
- PETERSON, Donald R., 1960
Clinical Instructor in Preventive Medicine
B.A., 1944, Oregon State; M.S., 1946, M.D., 1947, Oregon; M.P.H., 1958, California
- SEALEY, J. Leon, 1962
Clinical Instructor in Preventive Medicine
B.S., 1934, M.S., 1936, Kansas State; M.D., 1947, Kansas
- WANG, San-Pin, 1961
Clinical Assistant Professor of Preventive Medicine
M.D., 1944, D.Sc., 1959, Keio, Japan; M.P.H., 1952, Michigan
- WILKEY, John R., 1949 (1958)
Clinical Associate Professor of Preventive Medicine
B.A., 1926, Western Ontario, Canada; M.D., C.M., 1931, McGill, Canada; D.P.H., 1940, Toronto, Canada
- WOOLRIDGE, Robert L., 1961
Clinical Assistant Professor of Preventive Medicine
B.A., 1941, South Dakota; M.S., 1943, Chicago; D.Sc., 1961, Keio, Japan
- KENNEDY, William F., 1960
Instructor in Anesthesiology
B.S., 1952, Bates College, Lewiston, Maine; M.D., 1957, Maryland
- ORALLO, Maria, 1961 (1962)
Instructor in Anesthesiology
A.A., 1948, M.D., 1953, Univ. of Santo Tomas, Manila, P.I.
- RITCHIE, J. M. Graham, 1961
Instructor in Anesthesiology
M.A., 1946, Cambridge; M.R.C.S., 1950, Royal College of Physicians and Surgeons; M.B., B.Chir., 1951, Cambridge; L.M.C.C., 1955 (Canada)
- RENSAA, Margaret A., 1961
Instructor in Anesthesiology
B.S., 1953, Alberta; M.D., 1955, Alberta (Canada)
- SABAWALA, Phiroze B., 1961
Assistant Professor of Anesthesiology and Pharmacology
M.C.P.S., 1950, Grant (Bombay)
- TAKAMURA, John M., 1960
Instructor in Anesthesiology
D.D.S., 1945, Tokyo Dental College; M.D., 1950, Keio University Medical School, Tokyo, Japan
- TAYLOR, James V., 1961
Instructor in Anesthesiology
B.A., 1950, M.D., 1954, University of British Columbia (Vancouver, Canada)

CLINICAL APPOINTMENTS

- BACKUP, Phillip H., 1961
Clinical Assistant Professor of Anesthesiology
A.B., 1949, Middlebury College; M.D., 1946, Vermont College of Medicine
- BRIDENBAUGH, L. Donald, 1960
Clinical Assistant Professor of Anesthesiology
B.S., 1943, Nebraska; M.D., 1947, Nebraska
- COMPTON, David W., 1961
Clinical Instructor of Anesthesiology
B.S., 1937, Washington; M.D., 1941, Pennsylvania
- EATHER, Kenneth F., 1961
Clinical Assistant Professor of Anesthesiology
B.S., 1942, Nevada; M.D., 1945, Pennsylvania
- GOODSON, David N., 1961
Clinical Instructor of Anesthesiology
M.A., 1950, Cambridge; M.B., B.Ch., 1953, Charing Cross Hospital Medical School (England)
- MASON, Gene W., 1961
Clinical Instructor of Anesthesiology
B.S., 1949, Northwestern; M.B. and M.D., 1953, Chicago Medical School
- MOORE, DANIEL C., 1961
Clinical Associate Professor of Anesthesiology
A.B., 1940, Amherst; M.D., 1944, Northwestern
- MOUSEL, Lloyd H., 1961
Clinical Assistant Professor of Anesthesiology
B.S., 1927, M.D., 1930, Nebraska; M.S., 1939, Minnesota
- MORRIS, Lucien E., 1961
Clinical Professor of Anesthesiology
B.S., 1936, Oberlin College; M.D., 1943, Western Reserve
- TURNBULL, Lawrence F., 1961
Clinical Instructor of Anesthesiology
B.S., 1943, Washington State; M.D., 1946, Northwestern

CLINICAL MEDICAL SCIENCES

ANESTHESIOLOGY

- AASHEIM, Geordis M., 1960
Instructor in Anesthesiology, Veterans Administration Hospital
B.A., 1951, Saskatoon; M.D., 1955, Toronto
- BONICA, John J., 1960
Professor of Anesthesiology; Chairman of the Department of Anesthesiology
B.S., 1938, New York University; M.D., 1942, Marquette
- CRAWFORD, Edward W., 1962
Instructor in Anesthesiology
B.S., 1948, Michigan; M.D.C.M., 1952, McGill (Canada)
- FINLEY, Theodore N., 1961
Assistant Professor of Anesthesiology, Physiology, and Biophysics
B.S., 1950, Washington; M.D., 1954, Johns Hopkins
- GREEN, Henry D., 1961
Assistant Professor of Anesthesiology
M.D., 1953, Washington University, St. Louis
- HANSEN, John M., 1961
Associate Professor of Anesthesiology
M.B.Ch.B., 1943, Otago (England)

WANGEMAN, Clayton P., 1961
Clinical Professor of Anesthesiology
 A.B., 1929, Ohio Wesleyan University;
 M.D., 1933, Western Reserve

MEDICAL PRACTICE

ADAMS, J. Gordon, 1951
Affiliate in General Practice
 B.S., 1927, Washington; M.D., 1933, California

ANDERSON, Dorothy B., 1952
Affiliate in General Practice
 B.S., 1935, Washington; M.D., 1941, Women's Medical College of Pennsylvania

ANDERSON, Richard M., 1953
Affiliate in General Practice
 B.S., 1940, Washington; M.D., 1944, Stanford

ASHLEY, Grant D., 1952
Affiliate in General Practice
 B.S., 1938, Appalachian State Teachers College; M.D., 1945, Bowman Gray Medical School

BAKER, A. Bruce, 1957
Affiliate in General Practice
 B.S., 1929, M.D., 1932, Oregon

BALDECK, Joseph E., 1960
Affiliate in General Practice
 M.D., 1931, Creighton

BARDARSON, Baird M., 1960
Affiliate in General Practice
 M.D., 1955, Washington

BARNES, Kenneth O., 1953
Affiliate in General Practice
 B.S., 1940, Washington; M.D., 1943, Chicago

BENSON, R. A., 1949
Affiliate in General Practice
 B.A., 1926, St. Olaf College; M.D., 1932, Chicago

BUNKER, Raymond J., 1958
Affiliate in General Practice
 M.D., 1947, N.Y.U. College of Medicine

CALDWELL, J. Presley, 1952
Affiliate in General Practice
 B.S., 1930, South Dakota State; B.M., M.D., 1933, Northwestern

CAMPICHE, John L., Jr., 1957
Affiliate in General Practice
 Ph.B., 1947, S.B., 1948, M.D., 1951, Chicago

CHING, Ernest F., 1950
Affiliate in General Practice
 B.S., 1935, Hawaii; M.D., 1939, College of Medical Evangelists

COFFIN, Stanley, 1960
Affiliate in General Practice
 M.D., 1953, Washington

DAY, Charles G., 1949
Affiliate in General Practice
 B.A., 1935, M.D., 1938, Oregon

FERREE, Virgil D., 1957
Affiliate in General Practice
 B.S., 1934, Pacific Union; M.D., 1937, College of Medical Evangelists

FISCHER, Harold C., 1954
Affiliate in General Practice
 B.A., 1938, M.A., 1945, Illinois; B.S., M.D., 1943, Chicago College of Medicine

FISHER, William T., 1960
Affiliate in General Practice
 B.S., 1949, M.D., 1953, Washington

FRITZ, Harold D., 1949
Affiliate in General Practice
 M.D., 1924, Cincinnati

GAMON, Wilfred A., 1953
Affiliate in General Practice
 B.S. in Medicine, 1941, South Dakota; B.M., M.D., 1943, Northwestern

GOINEY, Bernard J., 1954
Affiliate in General Practice
 B.S., 1932, Washington; M.D., 1940, Oregon

GUDGEL, Kenneth E., 1951
Affiliate in General Practice
 B.S., 1945, M.D., 1948, Iowa

HAHN, John R., 1952
Affiliate in General Practice
 B.S., 1948, M.D., 1950, Nebraska

HAMMOND, Don R., 1952
Affiliate in General Practice
 B.S., 1942, B.S. in Medicine, 1943, M.D., 1944, Northwestern

HEATH, Malcolm G., 1960
Affiliate in General Practice
 B.A., 1935, Carolina; M.D., C.M., 1941, McGill

HICKS, W. W., 1952
Affiliate in General Practice
 M.D., 1920, Virginia

HITCHMAN, Robert N., 1960
Affiliate in General Practice
 B.S., 1944, Washington; M.D., 1948, Marquette

HUBER, Dale G., 1955
Affiliate in General Practice
 B.S., 1941, Washington; M.D., 1945, Northwestern

JOHNSON, A. Holmes, 1949
Affiliate in General Practice
 B.A., 1918, Morningside College; B.S., 1919, Oregon; M.D., 1924, Northwestern

JUDY, Frederick R., 1949
Affiliate in General Practice
 B.A., 1926, Whitman College; M.A., M.D., 1938, Oregon

JUDY, Harriet E., 1949
Affiliate in General Practice
 B.S., 1926, Whitman College; M.D., 1933, Oregon

KINZIE, Ralph V., 1949
Affiliate in General Practice
 A.B., 1938, Manchester College; M.D., 1942, Indiana

KIRKPATRICK, Wendell C., 1960
Affiliate in General Practice
 M.D., 1951, Washington University

KLAAREN, C. J., 1950
Affiliate in General Practice
 B.S., 1927, William Penn College; M.D., 1931, Iowa

KRAABEL, Austin B., 1958
Affiliate in General Practice
 B.A., B.S., 1935, North Dakota; M.D., 1937, Oregon

KRETZLER, Harry H., 1949
Affiliate in General Practice
 B.S., 1921, M.D., 1923, Nebraska

KUNZ, George G. R., Jr., 1957
Affiliate in General Practice
 B.S., 1935, Washington; B.S. in Medicine, 1940, North Dakota; M.D., 1942, Temple Medical School

LAYTON, Richard H., 1957
Affiliate in General Practice
 M.D., 1954, Washington

LINELL, Michael A., 1960
Affiliate in General Practice
 M.R.C.S., L.R.C.P., 1938, London University (England)

LOCKRIDGE, Thaddeus L., 1954
Affiliate in General Practice
 B.A., 1936, Montana; M.D., 1942, Pennsylvania

- LOEHR, Doyle M., 1950
Affiliate in General Practice
B.S., 1927, Simpson College (Iowa);
M.D., 1931, Iowa
- LOREE, David R., 1954
Affiliate in General Practice
A.B., 1926, B.S., 1927, Linfield College;
M.D., 1934, Oregon
- LUNDY, L. Fred, 1949
Affiliate in General Practice
Ph.G., 1905, Fremont College of
Pharmacy; M.D., 1909, Creighton
- MANSFIELD, Charles O., 1949
Affiliate in General Practice
B.S., 1939, Washington; M.D., 1943,
Oregon
- McARTHUR, Charles E., 1949
Affiliate in General Practice
A.B., 1926, Bethel College; M.A., 1929,
Kansas; M.D., 1938, Oklahoma
- McKINLAY, Duncan W., 1960
Affiliate in General Practice
B.A., 1926, Walla Walla; M.D., 1937,
College of Medical Evangelists
- MILLIGAN, John O., 1954
Affiliate in General Practice
B.S., 1934, M.D., 1936, Nebraska
- MOORE, James A., 1960
Affiliate in General Practice
B.S., 1938, North Dakota State College;
M.D., 1943, Northwestern
- MUNGER, Irvia C., Jr., 1949
Affiliate in General Practice
A.B., 1923, Wyoming; B.S. in Medicine,
1924, M.D., 1925, Nebraska
- RAWSON, Errol W., 1949
Affiliate in General Practice
B.S., 1919, Washington; M.D., 1925,
Rush Medical College
- RAYMAN, Mortimer S., 1960
Affiliate in General Practice
S.B. 1941, Harvard; M.D., 1944,
Columbia
- RICH, Richard I., 1956
Affiliate in General Practice
B.S., 1936, College of Puget Sound; M.D.,
1940, Jefferson Medical College
- ROSENBLADT, L. M., 1953
Affiliate in General Practice
M.D., 1932, Nebraska
- SCHEYER, Carl J., 1949
Affiliate in General Practice
B.S., 1932, College of Puget Sound; M.D.,
1936, Louisville
- SLADE, Erwin R., 1960
Affiliate in General Practice
B.S., 1940, Washington; M.D., 1943,
Oregon
- SLIND, Ole, 1953
Affiliate in General Practice
B.S., 1938, Washington State; M.D.,
1942, Washington University
- SPENCER, Bob A., 1960
Affiliate in General Practice
B.S., 1942, North Texas State;
M.D., 1946, Texas
- STILES, Richard A., 1960
Affiliate in General Practice
B.S., 1946, Washington State; M.D.,
1953, Northwestern
- STIMPSON, Edward K., 1949
Affiliate in General Practice
A.B., 1927, Stanford; M.D., 1932,
Harvard
- STORRS, Henry G., 1955
Affiliate in General Practice
B.A., 1942, Amherst; M.D., 1945,
Pennsylvania
- SULKOSKY, Leo F., 1951
Affiliate in General Practice
B.A., 1935, Washington; M.D., 1944,
Oregon
- TAIT, Arnold C., 1953
Affiliate in General Practice
B.S., 1939, Pacific Union College
(California); M.D., 1940, College
of Medical Evangelists
- TAYLOR, J. Earl, Jr., 1949
Affiliate in General Practice
B.S., B.M., M.D., 1940, Illinois
- THALER, Joseph, 1953
Affiliate in General Practice
A.B., 1929, M.A., 1930, Ph.D., 1933,
Cornell; M.D., 1937, Rochester
- TUCKER, Frederick A., 1950
Affiliate in General Practice
B.S., 1927, Washington State; M.D., 1931,
University of Louisville
- UNDERHILL, Frank J., 1960
Affiliate in General Practice
B.S., 1940, Washington;
M.D., 1943, Oregon
- WATTS, Arthur B., 1958
Affiliate in General Practice
B.S., 1938, Chicago; M.B., 1942, M.D.,
1943, Northwestern
- WAY, John D., 1951
Affiliate in General Practice
A.B., 1934, M.D., 1940, Kansas
- WEBSTER, Bruce J., 1949
Affiliate in General Practice
B.S., 1936, Washington; M.D., 1940,
Oregon
- ZIMMERMAN, James E., 1947
Affiliate in General Practice
B.S., 1942, Washington State; M.D.,
1945, Oregon

MEDICINE

- AAGAARD, George N., 1954
Professor of Medicine
B.S., 1934, M.B., 1936, M.D., 1937,
Minnesota
- BIERMAN, Edwin L., 1962
Assistant Professor of Medicine
A.B., 1951, Brooklyn; M.D., 1955, Cornell
- BIRCHFIELD, Richard I., 1960
Instructor in Medicine
B.S., 1950, M.D., 1953, Washington
- BRUCE, Robert A., 1950 (1959)
Professor of Medicine
B.S., 1938, Boston; M.S., 1940, M.D.,
1943, Rochester
- CHATRIAN, Gian E., 1959
Assistant Professor of Surgery
(Neurosurgery) and Medicine
(Neurology)
M.D., 1951, Naples (Italy)
- COBB, Leonard A., 1957 (1960)
Assistant Professor of Medicine
B.S., 1949, M.D., 1952, Minnesota
- DECKER, John L., 1958 (1962)
Associate Professor of Medicine
B.A., 1942, Richmond; M.D., 1951,
Columbia
- DODGE, Harold T., 1957 (1961)
Associate Professor of Medicine
M.D., 1948, Harvard
- DOWLING, J. Thomas, 1961
Associate Professor of Medicine
B.S., 1948, Washington; M.D., 1952,
Harvard
- ENSINCK, John W., 1960 (1961)
Instructor in Medicine and Assistant
Director, Clinical Research Center
B.S., 1952, M.D.C.M., 1956, McGill,
Montreal (Canada)

- EVANS, Robert S., 1951 (1959)
Professor of Medicine
B.S., 1934, Washington; M.D., 1938, Harvard
- FINCH, Clement A., 1949 (1955)
Professor of Medicine
B.S., 1936, Union College; M.D., 1941, Rochester
- GABRIO, Beverly W., 1953 (1959)
Lecturer in Medicine and Research Assistant Professor of Biochemistry
A.B., 1944, Lindenwood; Ph.D., 1950, Rochester
- GARTLER, Stanley M., 1957 (1961)
Associate Professor of Medicine and Genetics
B.S., 1948, California (Los Angeles); Ph.D., 1952, California
- GOODNER, Charles J., 1962
Assistant Professor of Medicine
B.A., 1951, Reed; M.D., 1955, Utah
- HEGSTROM, Robert M., 1956 (1962)
Instructor in Medicine
M.D., 1955, Washington
- HOGNESS, John R., 1951 (1960)
Associate Professor of Medicine; Medical Director, University Hospital; Associate Dean, School of Medicine
B.S., 1943, M.D., 1946, Chicago
- KIRBY, William M. M., 1949 (1955)
Professor of Medicine
B.S., 1936, Trinity; M.D., 1940, Cornell
- KLEBANOFF, Seymour J., 1962
Associate Professor of Medicine
M.D., 1951, Toronto (Canada)
- MOTULSKY, Arno G., 1953 (1961)
Professor of Medicine and Genetics
B.S., 1945, M.D., 1947, Illinois
- NELP, Wil B., 1962
Assistant Professor of Radiology and Medicine
B.A., 1951, Franklin; M.D., 1955, Johns Hopkins
- ODLAND, George F., 1957 (1962)
Assistant Professor of Medicine and Anatomy
M.D., 1946, Harvard
- PARKER, Frank, 1960 (1962)
Instructor in Medicine
M.D., 1958, Washington
- PASNICK, Lila J., 1959 (1962)
Instructor in Medicine
B.S., 1952, Puget Sound; M.D., 1956, Oregon
- PAULSEN, C. Alvin, 1958 (1961)
Assistant Professor of Medicine
B.A., 1947, M.D., 1952, Oregon
- PETERSDORF, Robert G., 1959 (1962)
Professor of Medicine
B.A., 1948, Brown; M.D., 1952, Yale
- PLUM, Fred, 1953 (1962)
Professor of Medicine
A.B., 1944, Dartmouth; M.D., 1947, Cornell
- RICH, Clayton, 1960 (1962)
Associate Professor of Medicine
M.D., 1948, Cornell
- RUBIN, Cyrus E., 1954 (1962)
Professor of Medicine
A.B., 1943, Brooklyn; M.D., 1945, Harvard
- SCHNATZ, J. David, 1960 (1962)
Instructor in Medicine
A.B., 1953, Princeton; M.D., 1957, Buffalo
- SCRIBNER, Belding H., 1951 (1962)
Professor of Medicine
A.B., 1941, California; M.D., 1945, Stanford; M.S., 1951, Minnesota

- SIMON, Ernest R., 1959 (1961)
Instructor in Medicine
M.D., 1954, Harvard
- SWANSON, August G., 1954 (1959)
Assistant Professor of Medicine (Neurology) and of Pediatrics (Neurology)
A.B., 1951, Westminster College; M.D., 1949, Harvard
- VANARDEL, Paul P., Jr., 1953 (1962)
Associate Professor of Medicine
B.S., 1947, Yale; M.D., 1951, Columbia
- VOLWILER, Wade, 1949 (1959)
Professor of Medicine
A.B., 1939, Oberlin College; M.D., 1943, Harvard
- WILLIAMS, Robert H., 1948
Professor of Medicine; Chairman of the Department of Medicine
A.B., 1929, Washington and Lee; M.D., 1934, Johns Hopkins
- WOOD, Francis C., Jr., 1960 (1961)
Instructor in Medicine
A.B., 1950, Princeton; M.D., 1954, Harvard

RESEARCH APPOINTMENTS

- GLOMSET, John A., 1960
Research Assistant Professor of Medicine
Med. Kand., 1953, Med. Dr., 1960, Uppsala (Sweden)
- GOLDSWORTHY, Patrick D., 1952 (1957)
Research Assistant Professor of Medicine and Lecturer in Biochemistry
A.B., 1941, M.A., 1947, Ph.D., 1952, California
- WAYS, Peter O., 1954 (1962)
Research Instructor in Medicine
B.A., 1949, Harvard; M.D., 1953, Columbia

CLINICAL APPOINTMENTS

- AHERN, James J., 1951 (1961)
Clinical Associate Professor of Medicine
B.S., 1938, Washington; M.D., 1945, Chicago
- ALLEN, John D., 1956 (1962)
Clinical Instructor in Medicine
M.D., 1955, Harvard
- ALTOSE, Alexander R., 1949
Clinical Instructor in Medicine
M.B., 1937, M.D., 1938, Northwestern
- ANDRUS, William W., 1955 (1959)
Clinical Instructor in Medicine
M.D., 1953, Harvard
- ARCESE, Norman, 1956 (1958)
Clinical Instructor in Medicine
B.S., 1943, Alabama; M.B., M.D., 1946, Northwestern
- ARONSON, Samuel F., 1949 (1958)
Clinical Associate Professor of Medicine
B.S., 1931, Washington; M.D., 1936, Northwestern
- ARST, Daniel B., 1955 (1962)
Clinical Instructor in Medicine
A.B., 1938, Wichita; M.D., 1944, Kansas
- BAILEY, Richard J., 1954
Clinical Affiliate in Medicine
M.S., 1926, M.D., 1927, Minnesota
- BAIN, Robert C., 1958 (1961)
Clinical Instructor in Medicine
B.S., M.D., 1949, Northwestern; M.S., 1956, Minnesota
- BAKER, William B., 1961 (1962)
Clinical Instructor in Medicine
B.S., 1949, Yale; M.D., 1953, Washington
- BAKKE, John L., 1951 (1961)
Clinical Associate Professor of Medicine
B.S., 1943, Washington State; M.D., 1945, Harvard

- BANNICK, Edwin G., 1949
Clinical Professor of Medicine
B.S., 1918, M.D., 1920, Iowa
- BARNES, Robert H., Jr., 1950 (1957)
Clinical Assistant Professor of Medicine
B.S., 1940, Virginia Military Institute;
M.D., 1943, Virginia
- BARRETT, Beach, 1955 (1961)
Clinical Assistant Professor of Medicine
M.E., 1940, Cornell; M.D., 1952,
Washington
- BERGY, Gordon G., 1952 (1959)
Clinical Assistant Professor of Medicine
A.B., 1947, West Virginia; M.D., 1949,
Michigan
- BINGHAM, James B., 1949 (1959)
Clinical Associate Professor of Medicine
B.S., 1935, M.D., 1937, Wisconsin
- BOBROFF, Arthur, 1950 (1955)
Clinical Instructor in Medicine
A.B., 1940, New York; M.D., 1944,
Louisville
- BRIDGES, William C., 1948 (1961)
Clinical Assistant Professor of Medicine
B.S., 1938, Washington; M.D., 1940, Yale
- BROWN, Norman K., 1960 (1962)
Clinical Instructor in Medicine
A.B., 1952, Amherst; M.D., 1956, Harvard
- BRUENNER, Bertram F., 1949 (1955)
Clinical Assistant Professor of Medicine
B.S., 1926, M.S., 1928, M.D., 1929,
Minnesota
- BURNELL, James M., 1950 (1960)
Clinical Associate Professor of Medicine
M.D., 1949, Stanford
- CAMPBELL, Alexander D., 1949 (1955)
Clinical Assistant Professor of Medicine
B.A., 1930, Whitman College; M.D.,
1934, Johns Hopkins
- CAPACCIO, George D., 1949
Clinical Assistant Professor of Medicine
M.D., 1931, Virginia
- CASSERD, Fredrick, 1955 (1960)
Clinical Instructor in Medicine
B.S., 1947, Washington; M.D., 1950,
Oregon
- CLEMENTS, Randolph, 1957 (1962)
Clinical Instructor in Medicine
M.D., 1949, Texas
- CLEVELAND, Fred Edward, 1951 (1957)
Clinical Assistant Professor of Medicine
and Lecturer in Nursing
B.S., 1937, M.D., 1941, Virginia
- COLEMAN, Daniel, 1950 (1960)
Clinical Associate Professor of Medicine
B.S., 1942, Carroll College; M.D., 1945,
Jefferson Medical College
- COLEN, John, 1959 (1961)
Clinical Instructor in Medicine
C.M., 1947, M.D., 1950, Leiden
(Netherlands)
- COLLINS, John D., 1949 (1956)
Clinical Assistant Professor of Medicine
B.S., 1933, Washington; M.D., 1938,
Northwestern
- CRAMPTON, Joseph H., 1949 (1960)
Clinical Professor of Medicine
B.S., 1938, Idaho; M.D., 1941, Vanderbilt
- CREELMAN, Ernest W., 1959 (1962)
Clinical Instructor in Medicine
M.D., 1946, Harvard
- CROSBIE, James, 1952 (1960)
Clinical Associate Professor of Medicine
M.D., 1945, Chicago
- DARVILL, Fred T., Jr., 1954 (1960)
Clinical Instructor in Medicine
B.S., 1948, M.D., 1951, Washington
- DEMARSH, Quin B., 1947 (1961)
Clinical Professor of Medicine
B.S., 1935, Washington; M.S., 1937,
B.M., 1939, M.D., 1940, Northwestern
- DONOHUE, Dennis M., 1952 (1961)
Clinical Associate Professor of Medicine
M.D., 1951, Washington
- DUNNING, Marcelle F., 1952 (1957)
Clinical Assistant Professor of Medicine
B.A., 1935, Hunter College; M.A., 1936,
Columbia; M.D., 1940, New York
University
- EGGERS, Rolf van Kerval, 1949 (1954)
Clinical Assistant Professor of Medicine
B.A., B.S., 1930, North Dakota; M.D.,
1933, Rush Medical College
- ELGEE, Neil J., 1952 (1960)
Clinical Assistant Professor of Medicine
B.S., 1946, New Brunswick (Canada);
M.D., 1950, Rochester
- ERICKSON, Robert V., 1960 (1962)
Clinical Instructor in Medicine
B.A., 1952, M.D., 1956, Washington
- EVANS, Ernest M., 1949
Clinical Instructor in Medicine
A.B., 1935, Haverford College; M.D.,
1939, Pennsylvania
- EYER, Kenneth M., 1960 (1962)
Clinical Instructor in Medicine
M.D., 1956, Washington
- FEIN, Sherwood B., 1954 (1958)
Clinical Instructor in Medicine
B.S., 1948, M.D., 1951, Western Reserve
- FERGUS, Emily B., 1953 (1960)
Clinical Assistant Professor of Medicine
A.B., 1946, Mount Holyoke; M.D., 1950,
Pittsburgh
- FEY, Louis D., 1949
Clinical Instructor in Medicine
B.S., 1934, Washington; M.B., 1938,
M.D., 1939, Northwestern
- FISHER, Peter, 1956 (1961)
Clinical Assistant Professor of Medicine
M.D., 1948, Pennsylvania
- FODOR, Oscar A., 1950 (1957)
Clinical Instructor in Medicine
B.S., 1938, Franklin and Marshall College;
M.D., 1942, Indiana
- FOE, Adrian A., 1952 (1956)
Clinical Instructor in Medicine
M.D., 1945, Nebraska
- FOSTER, Robert F., 1948
Clinical Assistant Professor of Medicine
B.S., 1925, Washington; M.D., 1930,
Northwestern
- FRANCIS, Byron F., 1949
Clinical Professor of Medicine
B.S., 1922, Washington; M.D., 1926,
Washington University
- FRANKLIN, Abby, 1955 (1960)
Clinical Assistant Professor of Medicine
M.D., 1948, Ohio State
- FRAYSER, Lois, 1950 (1960)
Clinical Assistant Professor of Medicine
B.A., 1928, Richmond; M.S., 1935, M.D.,
1943, Michigan
- GIBLETT, Eloise R., 1952 (1961)
Clinical Associate Professor of Medicine
B.S., 1942, M.S., 1947, M.D., 1951,
Washington
- GREENLEAF, Richard Cranch, 1950 (1957)
Clinical Assistant Professor of Medicine
B.S., 1939, Yale; M.D., 1942, Columbia
- HACKEDORN, Howard M., 1953 (1960)
Clinical Assistant Professor of Medicine
B.S., 1935, Washington State; M.D.,
1940, Harvard; M.S., 1951, Oregon

- HAGEN, John M. V., 1952 (1958)
Clinical Assistant Professor of Medicine and Lecturer in Nursing
B.A., 1942, Wyoming; M.D., 1950, Rochester
- HAMES, George H., 1950
Clinical Instructor in Medicine
B.A., 1926, Victoria; M.D., 1929, Toronto (Canada)
- HAMMER, Charles J., Jr., 1960 (1962)
Clinical Instructor in Medicine
A.B., 1950, Western Maryland; M.D., 1954, Maryland
- HAVILAND, James W., 1949 (1956)
Clinical Professor of Medicine and Lecturer in Nursing
A.B., 1932, Union College; M.D., 1936, Johns Hopkins
- HENLEY, Elaine D., 1956 (1961)
Clinical Assistant Professor of Medicine
B.A., 1947, California (Los Angeles); M.D., 1951, California
- HILDEBRAND, Alice G., 1949 (1961)
Clinical Associate Professor of Medicine
B.S., 1932; M.D., 1936, Nebraska; M.S., 1940, Minnesota
- HOGUE, Philip N., 1949 (1957)
Clinical Assistant Professor of Medicine
B.S., 1936, Washington; M.B., 1940, M.D., 1941, Northwestern
- HOUGHTON, Benjamin C., 1951 (1956)
Clinical Associate Professor of Medicine
M.D., 1934, Iowa
- HUDSON, Dean G., 1953 (1959)
Clinical Instructor in Medicine
B.S., 1946, Washington; M.D., 1950, Cornell
- JOBB, Emil, 1949 (1959)
Clinical Assistant Professor of Medicine and Lecturer in Nursing
B.S., 1937, B.M., 1941, M.D., 1942, Wayne
- JOHN, Gregory G., 1953 (1962)
Clinical Assistant Professor of Medicine
B.S., 1949, Washington; M.D., 1952, Oregon
- JOHNSON, Willard P., 1959 (1961)
Clinical Instructor in Medicine
B.A., 1948, California; M.D., 1953, Texas
- JONES, Richard F., 1955 (1957)
Clinical Instructor in Medicine
B.A., 1943, M.D., 1946, Oregon
- KATSMAN, Alvin, 1952 (1961)
Clinical Assistant Professor of Medicine
B.S., 1944, Washington; M.D., 1948, Nebraska; M.S., 1950, Iowa
- KELLY, William J., 1954 (1957)
Clinical Instructor in Medicine
B.S., 1941, Seattle University; M.D., 1945, Temple
- KING, Harold E., 1959 (1961)
Clinical Instructor in Medicine
B.A., 1950, Stanford; M.D., 1955, Washington
- KING, Robert L., 1949 (1954)
Clinical Associate Professor of Medicine and Lecturer in Nursing
M.D., 1928, B.S., 1931, Virginia
- KOHLI, Daniel R., 1951 (1954)
Clinical Instructor in Medicine
A.B., 1938, Wisconsin; M.B., 1941, M.D., 1942, Northwestern
- KOFER, John J., 1956 (1962)
Clinical Assistant Professor of Medicine
B.S., 1950, M.D., 1953, Washington
- KOREY, Herman G., 1951 (1953)
Clinical Instructor in Medicine
B.S., 1932, Chicago; M.D., 1936, Rush Medical College
- KRANTZ, Clement I., 1949
Clinical Assistant Professor of Medicine
A.B., 1920, M.D., 1924, Johns Hopkins
- KROUSE, Howard, 1956 (1960)
Clinical Assistant Professor of Medicine (Neurology and Psychiatry)
B.A., 1939, M.D., 1943, Iowa
- LANE, Fenton J., 1954 (1957)
Clinical Instructor in Medicine
M.D., 1945, Michigan
- LANE, James J., Jr., 1957 (1962)
Clinical Instructor in Medicine
B.S., 1951, Northwestern; M.D., 1955, Washington
- LARSON, Earl R., 1955 (1961)
Clinical Instructor in Medicine
B.S., 1951, M.D., 1953, Minnesota; M.I.H., 1955, Harvard
- LAWS, E. Harold, 1949 (1958)
Clinical Associate Professor of Medicine
B.S., 1938, M.D., 1940, Indiana
- LAYMAN, James D., Jr., 1953 (1961)
Clinical Assistant Professor of Medicine
B.S., 1944, Seattle University; M.D., 1947, St. Louis
- LEEDE, William E., 1949
Clinical Instructor in Medicine
B.S., 1934, M.D., 1937, Oregon
- LEFFMAN, Henry, 1956 (1961)
Clinical Associate Professor of Medicine (Neurology and Psychiatry)
M.D., 1935, Prague, Czechoslovakia
- LEHMANN, John Hans, 1950 (1956)
Clinical Instructor in Medicine
M.D., 1935, Perugia (Italy)
- LENFANT, Claude J. M., 1961
Clinical Instructor in Medicine
M.D., 1956, Faculte Medecine, Paris (France)
- LEVENSON, Robert M., 1955 (1959)
Clinical Instructor in Medicine
M.D., 1946, Louisville
- LINDAHL, Wallace W., 1949 (1960)
Clinical Associate Professor of Medicine (Neurology)
B.S., 1933, Washington State; M.D., 1938, Northwestern
- LINDBERG, John H., 1955 (1961)
Clinical Assistant Professor of Medicine
B.S., 1946, Washington; B.M., M.D., 1948, Northwestern
- LINELL, Michael A., 1955 (1958)
Clinical Instructor in Medicine
M.R.C.S., L.R.C.P., 1938, Kings College (England)
- LOGAN, Gordon A., 1952 (1958)
Clinical Assistant Professor of Medicine
B.S., 1945, M.S., 1947, Purdue; M.D., 1951, Columbia
- LUCAS, John E., 1952 (1960)
Clinical Associate Professor of Medicine
B.S., 1940, Washington; M.D., 1943, Harvard; M.S., 1951, Minnesota
- MALDEN, Marcel, 1960 (1961)
Clinical Instructor in Medicine
M.B., Ch.B., M.R.C.S., L.R.C.P., 1952, Sheffield (England)
- MANCHESTER, Robert C., 1949 (1960)
Clinical Assistant Professor of Medicine
A.B., 1927, Ohio Wesleyan; M.S., 1930, M.D., 1932, Rochester
- MARSHALL, Helen S., 1950 (1956)
Clinical Instructor in Medicine
B.S., 1939, M.D., 1942, Wisconsin
- MARTIN, Carroll J., 1952 (1961)
Clinical Associate Professor of Medicine and Physiology-Biophysics
B.S., M.D., 1940, Iowa

- MARTIN, John K., 1949
Clinical Assistant Professor of Medicine
B.S., 1926, M.D., 1928, Nebraska
- MERRYFIELD, Lloyd W., 1951 (1958)
Clinical Instructor in Medicine
B.S., 1942, M.S., 1943, California
Institute of Technology; M.D., 1950, Harvard
- MICHEL, Jean C., 1951 (1960)
Clinical Assistant Professor of Medicine
B.S., 1943, Bowdoin College; M.D., 1946, Columbia
- MITTELSTAEDT, Lester W., 1952 (1958)
Clinical Instructor in Medicine
B.S., 1944, Washington; M.D., 1949, Oregon
- MORGAN, Edward H., 1951 (1957)
Clinical Assistant Professor of Medicine and Lecturer in Nursing
A.B., 1938, DePauw; B.M., M.D., 1943, Northwestern; Ph.D., 1950, Minnesota
- MORTON, Robert J., 1948 (1954)
Clinical Assistant Professor of Medicine
A.B., 1939, M.D., 1943, Kansas; M.S., 1947, Minnesota
- MULLINS, John R., 1954 (1962)
Clinical Assistant Professor of Medicine (Neurology)
B.S., 1942, Gonzaga; M.D., 1945, St. Louis
- MURRAY, John S., 1958 (1961)
Clinical Instructor in Medicine
A.A., 1949, Vincennes; B.S., 1951, M.D., 1954, Indiana
- NELSON, Averly M., 1949
Clinical Instructor in Medicine
B.S., 1937, Washington; M.D., 1941, Oregon
- NIELSEN, Robert L., 1952 (1961)
Clinical Assistant Professor of Medicine
M.D., 1951, Harvard
- NOLAN, Donald E., 1951 (1961)
Clinical Associate Professor of Medicine (Administration)
B.S., M.B., 1935, M.D., 1936, Minnesota
- PACE, William R., Jr., 1951 (1954)
Clinical Instructor in Medicine
B.S., 1943, M.D., 1945, Arkansas
- PAINE, Robert M., 1951 (1954)
Clinical Instructor in Medicine and Lecturer in Nursing
B.S., 1942, Bowdoin College; M.D., 1946, Columbia
- PATON, Richard R., 1957 (1961)
Clinical Instructor in Medicine
B.S., 1950, M.D., 1954, Washington
- PAXSON, Chauncey G., Jr., 1956 (1960)
Clinical Instructor in Medicine
M.D., 1950, Jefferson Medical College
- PEARSALL, H. Rowland, 1957 (1960)
Clinical Assistant Professor of Medicine
B.S., 1939, Roanoke College; M.D., 1943, Medical College of Virginia
- PEARSON, Clarence C., 1948 (1954)
Clinical Assistant Professor of Medicine and Lecturer in Nursing
B.A., 1934, M.D., 1937, Texas; M.S., 1947, Minnesota
- PEIRCE, Charlotte T., 1950 (1954)
Clinical Instructor in Medicine
B.A., 1937, Bryn Mawr; M.D., 1941, Johns Hopkins
- PERRY, David M., 1955 (1962)
Clinical Assistant Professor of Medicine
B.A., 1950, Washington; M. D. C. M., 1954, McGill, Montreal (Canada)
- PILLOW, Randolph P., 1951 (1956)
Clinical Instructor in Medicine and Lecturer in Nursing
B.A., 1942, M.D., 1944, Virginia
- PIRZIO-BIROLI, Giacomo, 1952, (1961)
Clinical Assistant Professor of Medicine
M.D., 1951, Johns Hopkins
- POMMERENING, Robert A., 1948 (1958)
Clinical Associate Professor of Medicine and Lecturer in Nursing
A.B., 1938, M.D., 1942, Michigan
- POTTER, Robert T., 1949 (1958)
Clinical Associate Professor of Medicine and Lecturer in Nursing
B.S., 1937, M.D., 1940, Minnesota; M.S., 1944, Johns Hopkins
- RADKE, Ryle A., 1955 (1962)
Clinical Associate Professor of Medicine
B.M., 1933, M.D., 1934, Northwestern; M.S., 1951, Louisville
- RANKIN, Robert M., 1948 (1960)
Clinical Associate Professor of Medicine (Neurology)
B.S., 1937, Washington; M.D., 1942, Johns Hopkins
- REEVES, Robert L., 1953 (1957)
Clinical Assistant Professor of Medicine and Lecturer in Nursing
B.S., 1943, Virginia Military Institute; M.D., 1946, Virginia
- REIFF, Robert H., 1958
Clinical Affiliate in Medicine
A.B., 1939, Whitman College; Ph.D., 1944, Minnesota; M.D., 1949, Tennessee
- ROYS, Harvey C., 1951 (1955)
Clinical Instructor in Medicine
M.D., 1943, Oklahoma
- RUPRECHT, Archibald L., 1954 (1960)
Clinical Instructor in Medicine
A.B., 1943, Harvard; M.D., 1946, Columbia
- SAMSON, Werner E., 1957 (1962)
Clinical Instructor in Medicine
B.S., 1949, M.D., 1953, Washington
- SATA, William K., 1955 (1961)
Clinical Assistant Professor in Medicine (Neurology)
B.A., 1945, M.D., 1947, Utah
- SCHALLER, Gilbert K., 1953 (1959)
Clinical Instructor in Medicine
B.S., 1948, M.D., 1952, Washington
- SCOTT, Michael J., 1952 (1955)
Clinical Instructor in Medicine
B.S., 1943, Washington; M.D., 1946, Creighton
- SHAW, John M., 1955 (1962)
Clinical Assistant Professor of Medicine
M.D., 1949, Michigan
- SHAW, Joseph W., 1949
Clinical Professor of Medicine
B.S., 1924, M.D., 1926, M.S., 1930, Michigan
- SHEEHY, Thomas F., Jr., 1952 (1962)
Clinical Associate Professor of Medicine
B.S., 1942, Villanova; M.D., 1945, Temple
- SHERWOOD, Kenneth K., 1949 (1961)
Clinical Associate Professor of Medicine (Administration)
B.S., 1923, B.M., 1925, M.D., 1926, Minnesota
- SIMPSON, Robert W., 1950 (1958)
Clinical Associate Professor of Medicine
A.B., 1936, M.D., 1942, Stanford
- SKUBI, Kazimer B., 1949 (1954)
Clinical Assistant Professor of Medicine
B.S., 1932, Washington; M.D., 1940, Rush Medical College
- SMART, Thomas B., 1952 (1959)
Clinical Assistant Professor of Medicine
B.S., 1947, M.D., 1951, Washington
- SODERSTROM, Kenneth M., 1949
Clinical Assistant Professor of Medicine
M.D., 1931, Nebraska; M.S., 1940, Johns Hopkins

- SPARKMAN, Donal Ross, 1949 (1960)
*Clinical Professor of Medicine and
Lecturer in Nursing*
B.S., 1930, Washington; M.D., 1934,
Pennsylvania
- STEENROD, William J., Jr., 1953 (1957)
*Clinical Instructor in Medicine and
Lecturer in Nursing*
B.S., 1943, Western Michigan College;
M.D., 1946, Michigan
- STEVENS, Alexander, Jr., 1951 (1961)
Clinical Associate Professor of Medicine
B.A., 1943, Yale; M.D., 1946, Cornell
- STIMSON, William H., 1957 (1959)
Clinical Assistant Professor of Medicine
M.D., 1939, George Washington
- STROH, James E. S., 1949 (1957)
Clinical Associate Professor of Medicine
B.S., 1928, South Dakota; M.D., 1931,
Illinois
- TANNER, Donald C., 1954 (1962)
Clinical Assistant Professor of Medicine
A.B., 1947, M.D., 1951, Stanford
- TU, Wu-Hao, 1960 (1961)
Clinical Instructor in Medicine
M.D., 1950, National Taiwan, Taipei
(Formosa)
- ULRICH, Delmont M., 1951 (1958)
Clinical Assistant Professor of Medicine
B.S., 1940, M.D., 1943, Minnesota
- UYENO, Ben T., 1951 (1962)
Clinical Assistant Professor of Medicine
B.S., 1943, Washington; M.D., 1949,
Rochester
- VICTOR, Ralph G., 1961
Clinical Instructor in Medicine
B.A., 1938, Columbia; M.D., 1943,
Rochester
- VOEGLIN, Walter L., 1949
Clinical Assistant Professor of Medicine
B.S., 1929, Washington, M.D., 1934,
Northwestern
- WATTS, William E., 1950 (1958)
*Clinical Associate Professor of Medicine
and Lecturer in Nursing*
B.S., 1938, Washington; M.D., 1942,
Harvard; M.S., 1949, Minnesota
- WEINSTEIN, Sydney, 1949 (1956)
Clinical Assistant Professor of Medicine
B.S., 1926, Washington; M.D., 1930,
Jefferson Medical College
- WILLIAMS, Paul L., 1949
Clinical Instructor in Medicine
B.S., 1934, M.D., 1937, Oregon
- WILLKENS, Robert F., 1955 (1961)
Clinical Assistant Professor of Medicine
B.S., 1950, Antioch College; M.D., 1954,
Rochester
- WOLFE, William A., 1951 (1959)
Clinical Instructor in Medicine
B.S., 1943, M.D., 1945, Northwestern;
M.S., 1950, Washington
- ZIMMERMAN, Bruce M., 1949 (1958)
Clinical Associate Professor of Medicine
B.S., 1935, North Dakota; M.B., 1937,
M.D., 1938, Northwestern

OBSTETRICS AND GYNECOLOGY

- DE ALVAREZ, Russell R., 1948
Professor of Obstetrics and Gynecology
B.S., 1933, M.D., 1935, M.S., 1940,
Michigan
- FIGGE, David C., 1953 (1961)
*Associate Professor of Obstetrics and
Gynecology*
B.S., 1949, M.D., 1950, Northwestern

- HERRMANN, Walter, 1961
Professor of Obstetrics and Gynecology
B. Med. Sc., 1945, M.D., 1949, University
of Geneva (Switzerland)
- HUNTER, Charles A., 1961
*Professor of Obstetrics and Gynecology;
Chairman of the Department of
Obstetrics and Gynecology*
A.B., 1944, M.D., 1946, Kansas
- LAMKEE, Muriel, 1956 (1957)
Instructor in Obstetrics and Gynecology
B.A., 1949, Augustana College; B.S.,
1951, South Dakota; M.D., 1953,
Nebraska

CLINICAL APPOINTMENTS

- BANKS, Albert L., 1957
*Clinical Instructor in Obstetrics and
Gynecology*
B.A., 1940, M.D., 1943, Duke
- BIBACK, Sheldon M., 1957
*Clinical Instructor in Obstetrics and
Gynecology*
M.D., 1948, Toronto (Canada)
- BUCKNER, Fillmore, 1961
*Clinical Instructor of Obstetrics and
Gynecology*
B.S., 1948, M.D., 1942, Washington
- CAMPBELL, Robert M., 1949 (1960)
*Clinical Assistant Professor of Obstetrics
and Gynecology*
B.S., 1942, Washington; M.D., 1945,
M.S., 1949, Michigan
- CLANCY, John, 1948 (1957)
*Clinical Assistant Professor of Obstetrics
and Gynecology*
A.B., 1932, Montana; M.D., 1936,
Jefferson Medical College
- CODLING, John W., 1952 (1957)
*Clinical Instructor in Obstetrics and
Gynecology*
Ph.C., 1929, B.S., 1931, Washington;
M.D., 1942, Oregon
- DAVIDSON, Samuel H., 1957
*Clinical Instructor in Obstetrics and
Gynecology*
A.B., 1939, Yale; M.D., 1943, Harvard
- DAY, Charles W., 1949 (1960)
*Clinical Assistant Professor of Obstetrics
and Gynecology*
B.S., 1938, Washington; M.D., 1942,
Oregon
- DONALDSON, L. Bruce, 1948 (1957)
*Clinical Assistant Professor of Obstetrics
and Gynecology*
B.S., 1935, Northwestern; M.D., 1939,
Michigan
- FINE, Charles S., 1948 (1959)
*Clinical Assistant Professor of Obstetrics
and Gynecology*
M.D., 1937, Toronto (Canada)
- GOMBERG, Bernard, 1954
*Clinical Instructor in Obstetrics and
Gynecology*
B.S., 1939, M.S., M.D., 1941, Illinois
- GRIFFIN, Joe L., 1958 (1959)
*Clinical Instructor in Obstetrics and
Gynecology*
A.B., 1941, M.D., 1944, Illinois
- HARRISON, Harold E., 1951 (1957)
*Clinical Assistant Professor of Obstetrics
and Gynecology*
B.S., 1931, M.D., 1933, Creighton
University
- HAYDEN, Glen E., 1960
*Clinical Assistant Professor of Obstetrics
and Gynecology*
A.B., 1942, Wisconsin; M.D., 1946,
Marquette University

- HELWIG, Carl M., 1948 (1955)
Clinical Associate Professor of Obstetrics and Gynecology
M.D., 1926, Ohio State
- KEIFER, Walter S., 1960
Clinical Instructor in Obstetrics and Gynecology
A.B., 1939, College of Emporia; M.D., 1943, Kansas
- KETTERING, Harry A., 1951 (1955)
Clinical Instructor in Obstetrics and Gynecology
B.A., 1942, M.D., 1945, Oregon
- KIMBALL, Charles Dunlap, 1948 (1957)
Clinical Associate Professor of Obstetrics and Gynecology
M.D., 1934, Buffalo
- KNUDSON, Wendell C., 1948 (1957)
Clinical Instructor in Obstetrics and Gynecology
B.S., 1933, Washington; M.D., 1938, Northwestern
- LEE, Albert F., 1948 (1957)
Clinical Assistant Professor of Obstetrics and Gynecology
B.S., 1935, College of Puget Sound; M.D., 1937, Duke
- LOWDEN, Robert J., 1954 (1957)
Clinical Instructor in Obstetrics and Gynecology
B.S., 1942, Seattle University; M.D., 1945, Marquette
- MACCAMY, Edwin Thomas, 1949 (1956)
Clinical Instructor in Obstetrics and Gynecology
B.S., 1937, Gonzaga; M.S., M.D., 1940, Northwestern
- McINTYRE, Donald M., 1946 (1955)
Clinical Assistant Professor of Obstetrics and Gynecology
B.S., 1939, Washington; M.D., 1943, Chicago
- NUCKOLS, Hugh Hunter, 1948 (1957)
Clinical Assistant Professor of Obstetrics and Gynecology
B.S., 1930, Washington; M.D., 1934, Pennsylvania
- PETERSON, Paul G., 1948 (1957)
Clinical Assistant Professor of Obstetrics and Gynecology
A.B., 1927, St. Olaf College; M.D., 1932, Rush Medical College
- RICE, Glen S., 1949 (1960)
Clinical Assistant Professor of Obstetrics and Gynecology
A.B., 1938, Pacific College; M.D., 1942, Oregon
- ROLLINS, Paul R., 1948 (1957)
Clinical Associate Professor of Obstetrics and Gynecology
Ph.C., B.S., 1924, Washington; M.D., 1928, Washington University
- ROTTON, Glenn Nelson, 1948
Consultant in Obstetrics and Gynecology
B.S., 1915, M.D., 1926, Iowa
- RUTHERFORD, Robert N., 1948 (1957)
Clinical Assistant Professor of Obstetrics and Gynecology
A.B., 1932, Illinois; M.D., 1936, Harvard
- SCHROEDER, Herman J., 1948 (1950)
Clinical Instructor in Obstetrics and Gynecology
Ph.C., B.S., 1931, Washington; M.D., 1940, Oregon
- SMITH, R. Philip, 1948 (1957)
Clinical Assistant Professor of Obstetrics and Gynecology
A.B., 1930, B.S., 1932, M.D., 1934, Kansas
- STIPP, Charles G., 1960
Clinical Instructor in Obstetrics and Gynecology
A.B., 1939, M.D., 1943, Kansas
- THORP, Donald J., 1948
Consultant in Obstetrics and Gynecology
A.B., 1921, B.S., 1923, M.D., 1927, Michigan
- WALKER, Albert T., 1961
Clinical Assistant Professor of Obstetrics and Gynecology
A.B., 1922, M.A., 1923, M.D., 1926, California

PEDIATRICS

- ALDRICH, Robert A., 1956
Professor of Pediatrics; Chairman of the Department of Pediatrics
B.A., 1939, Amherst; M.B., 1943, M.D., 1944, Northwestern
- ALEXANDER, E. Russell, 1961
Assistant Professor of Preventive Medicine and Pediatrics
Ph.B., 1948, S.B., 1950, M.D., 1953, Chicago
- BAKER, Helen, 1956
Instructor in Pediatrics
B.S., 1947, Maryland; M.D., 1951, Johns Hopkins
- BAUM, David, 1961
Instructor in Pediatrics
A.B., 1951, Dartmouth; M.D., 1955, Cornell
- CHAPMAN, John T., 1961
Instructor in Pediatrics (Neurology)
M.D., 1955, George Washington
- DEANE, Philip G., 1957 (1959)
Instructor in Pediatrics
B.A., 1952, Middleburg; M.D., 1952, Yale
- DEISHER, Robert W., 1949 (1962)
Professor of Pediatrics; Director of the Child Health Center and Director of Clinic for Child Study
A.B., 1941, Knox College (Illinois); M.D., 1944, Washington University
- GUNTHEROTH, Warren G., 1958 (1962)
Associate Professor of Pediatrics
M.D., 1952, Harvard
- HAMMER, Sherrel L., 1959 (1962)
Instructor in Pediatrics
B.A., 1953, College of Idaho; M.D., 1957, Washington
- IGO, Robert P., 1958 (1961)
Assistant Professor of Pediatrics
B.S., 1950, M.D., 1952, Utah
- KELLEY, Vincent C., 1958
Professor of Pediatrics
B.A., 1934, M.S., 1935, North Dakota; B.S. (Education), 1936, Ph.D., 1942, B.S. (Medicine), 1944, M.S., 1945, M.D., 1946, Minnesota
- MACKLER, Bruce, 1957 (1961)
Professor of Pediatrics
B.S., 1939, M.D., 1943, Temple
- McNELLIS, Ellen, 1958
Instructor in Pediatrics
M.B.Ch.B., 1938, D.P.H., 1940, Glasgow (Scotland)
- SEELY, J. Rodman, 1958
Assistant Professor of Pediatrics
B.S., 1950, M.D., 1952, Utah
- SHURTLEFF, David B., 1960 (1962)
Assistant Professor of Pediatrics
M.D., 1955, Tufts
- SOBEL, Raymond, 1960
Associate Professor of Psychiatry and Pediatrics
B.A., 1937, Harvard; M.D., 1941, N.Y.U. College of Medicine

- SWANSON, August G., 1958 (1959)
Assistant Professor of Medicine and Pediatrics (Neurology)
 A.B., 1945, Westminster; M.D., 1949, Harvard
- WAXMAN, Sorrel H., 1959 (1962)
Assistant Professor of Pediatrics
 B.A., 1952, M.D., 1956, University of Toronto (Canada)
- WEDGWOOD, Ralph P., 1962
Associate Professor of Pediatrics
 M.D., 1947, Harvard
- WILLIAMS, Christopher P., 1959 (1962)
Instructor in Pediatrics
 B.A., 1953, Oregon; M.D., 1958, University of Oregon Medical School

RESEARCH APPOINTMENTS

- ABEL, Francis Lee, 1961
Research Instructor in Pediatrics
 A.A., 1950, Creston Jr. College, Iowa;
 B.A., 1952, Kansas; M.D., 1957, Harvard; Ph.D., 1960, Wisconsin
- CHAR, Donald F. B., 1959 (1962)
Research Assistant Professor in Pediatrics
 M.D., 1950, Temple
- LABBE, Robert F., 1957
Research Associate Professor of Pediatrics
 B.S., 1947, Portland; M.S., 1949, Ph.D., 1951, Oregon State
- ORIGENES, Mauricio L., 1958 (1960)
Research Instructor in Pediatrics
 A.A., 1949, M.D., 1954, Catholic University (Philippines)
- SMITH, Elizabeth Knapp, 1958
Research Associate Professor of Pediatrics
 B.S., 1938, Florida State; M.S., 1939, Michigan; Ph.D., 1943, Iowa
- YU, Wei Liang (William), 1959 (1961)
Research Instructor in Pediatrics
 M.D., 1947, Cheeloo University, Tsinan, China

CLINICAL APPOINTMENTS

- ADKINS, George E. M., 1949 (1953)
Clinical Instructor in Pediatrics
 B.S., 1941, Washington; M.D. 1944, Oregon
- ANDERSON, O. William, 1950 (1951)
Clinical Instructor in Pediatrics
 B.S., 1931, Idaho; B.M., 1935, M.D., 1936, Northwestern
- BIERMAN, C. Warren, 1958 (1959)
Clinical Assistant Professor of Pediatrics
 M.D., 1947, Harvard
- BILLINGTON, Sherod M., 1947 (1956)
Clinical Associate Professor of Pediatrics
 A.B., 1932, M.D., 1935, Vanderbilt
- CLEIN, Norman W., 1947 (1956)
Clinical Associate Professor of Pediatrics
 B.S., 1924, M.D., 1925, Northwestern
- DOCTER, Jack Merton, 1948 (1959)
Clinical Associate Professor of Pediatrics
 B.S., 1937, Washington; M.D., 1941, Columbia
- DOUGLASS, Frank H., 1950
Consultant in Pediatrics
 Ph.G., 1919, Washington State; M.D., 1925, Oregon
- EMERSON, Bettina Meyerhoff, 1948 (1950)
Clinical Instructor in Pediatrics
 M.D., 1943, Johns Hopkins
- GREGORES, Basil, 1961
Clinical Instructor in Pediatrics
 M.D., 1953, Washington
- GRYTBAK, Margit H., 1948 (1950)
Clinical Instructor in Pediatrics
 B.S., 1930, B.M., 1932, M.D., 1944, Minnesota

- GUY, May Borquist, 1948 (1950)
Clinical Instructor in Pediatrics
 A.B., 1923, Reed College; M.D., 1932, Cornell; M.P.H., 1938, Harvard
- GUY, Percy F., 1947
Clinical Instructor in Pediatrics
 M.D., 1922, Michigan; M.P.H., 1938, Harvard
- HARTMANN, John R., 1955 (1960)
Clinical Assistant Professor in Pediatrics
 M.D., 1947, Johns Hopkins
- HOFFMAN, Robert W., 1952 (1954)
Clinical Instructor in Pediatrics
 M.D., 1946, St. Louis
- JAQUETTE, William Alderman, Jr., 1947 (1956)
Clinical Associate Professor of Pediatrics
 A.B., 1932, Harvard; M.D., 1936, Pennsylvania
- JOHNSON, Walfred W., 1956
Clinical Instructor in Pediatrics
 B.A., 1947, Montana; M.D., 1951, St. Louis
- JOSLIN, Blackburn S., 1959
Clinical Instructor in Pediatrics
 B.S., 1943, Haverford; M.D., 1947, Johns Hopkins
- JOY, Frederick B., 1947 (1956)
Clinical Assistant Professor of Pediatrics
 B.A., 1929, M.D., 1931, Oregon
- JUSTICE, Robert S., 1955 (1958)
Clinical Instructor in Pediatrics
 B.A., 1949, College of Puget Sound; M.S.W., 1955, Washington
- KAPLAN, Charles, 1948 (1956)
Clinical Assistant Professor of Pediatrics and Lecturer in Nursing
 B.A., 1934, M.D., 1937, Toronto (Canada)
- KIRSCHVINK, Joseph Francis, 1959
Clinical Instructor in Pediatrics
 B.S., 1950, Arizona State; M.D., 1955, Utah
- KUMASAKA, Yugio, 1958 (1960)
Clinical Instructor in Pediatrics
 M.D., 1955, Washington
- LAGOZZINO, Daniel A., 1950 (1958)
Clinical Instructor in Pediatrics
 B.S., 1940, Washington; M.D., 1943, Oregon
- LAVECK, Gerald, 1957 (1960)
Clinical Assistant Professor of Pediatrics
 B.S., 1948, M.D., 1951, Washington
- LEWIS, Donald, 1956 (1958)
Clinical Instructor in Pediatrics
 B.S., 1947, M.D., 1951, Northwestern
- LUCE, Ralph R., 1950 (1956)
Clinical Assistant Professor of Pediatrics
 B.S., 1941, M.S., 1942, Idaho; M.D., 1945, Washington University
- MACKOFF, Leslie, 1956 (1959)
Clinical Instructor in Pediatrics
 A.B., 1948, California; M.D., 1953, Washington
- MOLL, Frederic C., 1959
Clinical Professor of Pediatrics
 A.B., 1937, M.D., 1940, Rochester
- MOLL, Gretchen, 1960
Clinical Assistant Professor of Pediatrics
 B.A., 1936, Bennington; M.D., 1941, Yale
- PRIEST, Jean H., 1960
Clinical Instructor in Pediatrics
 Ph.B., 1947, B.S., 1949, M.D., 1953, Chicago
- PYNE, Gordon E., 1959
Clinical Instructor in Pediatrics
 B.S., 1949, M.D., 1953, Washington
- SKINNER, Alfred L., 1955 (1960)
Clinical Instructor in Pediatrics
 A.B., 1947, M.D., 1951, Harvard

- SPICKARD, Vernon W., 1947 (1956)
Senior Consultant in Pediatrics
B.S., 1916, Drake; M.D., 1918,
Pennsylvania
- SPIELHOLZ, Jess B., 1960
Consultant in Pediatrics
M.D., 1932, Long Island College of
Medicine; M.P.H., 1943, Columbia
- STAMM, Stanley J., 1956
Clinical Instructor in Pediatrics
B.S., 1948, Washington; M.D., 1952,
St. Louis
- STERNER, John A., 1950 (1951)
Clinical Instructor in Pediatrics
B.S., 1940, Washington; M.D., 1944,
Pennsylvania
- SUTHERLAND, Donald A., 1956 (1958)
Clinical Instructor in Pediatrics
A.B., 1943, Pomona College; M.D., 1947,
Rochester
- TIDWELL, Robert A., 1947 (1956)
Clinical Associate Professor of Pediatrics
B.S.M., 1935, M.D., 1937, Oklahoma
- TUCKER, James L., 1950 (1956)
Clinical Assistant Professor of Pediatrics
B.A., 1941, Amherst College; M.D., 1944,
Cornell

PHYSICAL MEDICINE AND REHABILITATION

- BRUNNER, George D., 1957
*Assistant Professor of Physical Therapy,
Head, Division of Physical Therapy*
B.S., 1950, Miami University; Diploma,
Physical Therapy, 1951, D. T. Watson
School of Physiatrics
- FORDYCE, Wilbert E., 1959
Assistant Professor of Clinical Psychology
B.S., 1948, M.S., 1951, Ph.D., 1953,
Washington
- HUME, Frances B., 1961
Instructor in Occupational Therapy
B.A., 1954, Mount Holyoke; Certificate,
Occupational Therapy, 1956, Columbia
- LEHMANN, Justus F., 1957
*Professor of Physical Medicine and
Rehabilitation; Chairman, Department of
Physical Medicine and Rehabilitation*
M.D., 1945, Johann Wolfgang Goethe
Universitat
- McMILLAN, Jo A., 1958
Instructor in Physical Therapy
B.S., 1953, North Texas State College;
Certificate, Physical Therapy, 1955,
Mayo Clinic
- MORSE, Maureen W., 1961
Lecturer in Speech
B.S., in Special Education, 1956, Wayne
University; M.Ed., in Speech Science
and Audiology, Wayne State University
- RATIBUN, Lois A., 1962
Instructor in Physical Therapy
B.S., 1955, Idaho; Certificate, Physical
Therapy, 1957, Mayo Clinic
- REDFORD, John B., 1958
*Instructor in Physical Medicine and
Rehabilitation*
B.A., 1949, British Columbia; M.D.,
1953, Toronto (Canada); M.S., 1958,
Minnesota
- SHEVLIN, M. Geraldine, 1959
*Instructor in Occupational Therapy;
Head, Division of Occupational Therapy*
B.S., in O.T., 1954, Ohio State; M.A.,
1959, Columbia

- STOLOV, Walter C., 1960
*Assistant Professor of Physical Medicine
and Rehabilitation*
B.S., 1948, City College of New York;
M.A., 1951, M.D., 1956, Minnesota
- SYMINGTON, David C., 1962
*Instructor in Physical Medicine and
Rehabilitation*
M.D., 1951, University of Glasgow,
Scotland

CLINICAL APPOINTMENTS

- BOSTROM, Dorothy, 1961
*Clinical Instructor in Physical Medicine
and Rehabilitation*
B.A., 1936, Minnesota; Certificate in
Social Work, 1937, Minnesota; M.A.,
1943, Minnesota
- DOREMUS, Bertha L., 1961
*Clinical Assistant Professor in Physical
Medicine and Rehabilitation*
B.S., 1938, Idaho; M.A., 1943, Chicago
- FISH, Harold L., 1961
*Clinical Instructor in Physical Medicine
and Rehabilitation*
B.A., 1941, Western Washington College
of Education
- LUDTKE, Walter O., 1962
*Clinical Instructor in Occupational
Therapy*
B.S. in Occupational Therapy, 1956,
College of Puget Sound
- MORROW, Susan C., 1962
*Clinical Instructor in Occupational
Therapy; Chief Occupational Therapist*
B.A., 1947, Stanford; Diploma in
Occupational Therapy, 1950, Boston
School of Occupational Therapy

PSYCHIATRY

- BAKKER, Cornelis B., 1960
Instructor in Psychiatry
M.D., 1952, Utrecht (Netherlands)
- BROWNSBERGER, Carl N., 1962
Instructor in Psychiatry
B.A., 1951, Yale; M.D., 1955, Harvard
- CHRIST, Adolph E., 1962
Instructor in Psychiatry
A.B., 1951, M.D., 1954, California
- HAMPSON, John L., 1960
Associate Professor of Psychiatry
A.B., 1943, Allegheny; M.D., 1946,
Johns Hopkins
- HOLMES, Thomas H., III, 1949 (1958)
Professor of Psychiatry
A.B., 1939, North Carolina; M.D., 1943,
Cornell
- JOHNSON, Merlin H., 1955 (1960)
Assistant Professor of Psychiatry
B.A., 1944, M.D., 1947, Iowa
- PICKEN, Bruce F., 1961
Instructor in Psychiatry
B.S., 1951, Washington State; M.D., 1955,
Washington University (St. Louis)
- PRESTON, Caroline E., 1949 (1960)
*Assistant Professor of Psychiatry
(Psychologist)*
B.A., 1940, M.A., 1941, Colorado
- RIPLEY, Herbert S., 1949
*Professor of Psychiatry; Chairman of the
Department of Psychiatry*
A.B., 1929, Michigan; M.D., 1933,
Harvard
- SOBEL, Raymond, 1960
*Associate Professor of Psychiatry and
Pediatrics; Head of the Division of
Child Psychiatry*
A.B., 1937, Harvard; M.D., 1941,
New York

- STROTHER, Charles R., 1949
Professor of Psychiatry (Psychologist)
B.A., 1929, M.A., 1932, Washington;
Ph.D., 1935, Iowa
- TJOSSEM, Theodore D., 1951 (1960)
Assistant Professor of Psychiatry and Pediatrics (Psychologist)
B.A., 1940, Drake; M.A., 1941, Iowa;
Ph.D., 1959, Washington
- TOWNES, Brenda D., 1961
Instructor in Psychiatry (Psychologist)
A.B., 1957, Antioch; M.A., 1958, Mills
- VOGEL, John L., 1959
Instructor in Psychiatry (Psychologist)
B.A., 1949, Calvin; M.A., 1950,
Michigan; Ph.D., 1959, Chicago
- WAGNER, Nathaniel N., 1962
Assistant Professor of Psychiatry (Psychologist)
B.A., 1951, Long Island; M.A., 1952
Teachers College, Columbia; Ph.D.,
1956, Columbia
- WIMBERGER, Herbert C., 1961
Instructor in Psychiatry
M.D., 1953, University of Vienna Medical
School (Austria)

RESEARCH APPOINTMENTS

- JACKSON, Joan K., 1951 (1961)
Research Associate Professor of Psychiatry (Sociologist); Lecturer in Sociology
B.A., 1945, M.A., 1947, McGill (Canada);
Ph.D., 1955, Washington
- MASUDA, Minoru, 1956 (1960)
Research Assistant Professor of Psychiatry (Psychologist)
B.S., 1936, M.S., 1938, Ph.D., 1956,
Washington
- PALOLA, Ernest G., 1960
Research Instructor in Psychiatry (Sociologist)
B.S., 1956, M.S., 1958, Ph.D., 1962,
Washington

CLINICAL APPOINTMENTS

- ALLISON, George H., 1950
Clinical Instructor in Psychiatry
B.A., 1943, Rochester; M.D., 1945, Yale
- ASHLEY, Milton M., 1960
Clinical Instructor in Psychiatry
B.S., 1942, Missouri; M.D., Harvard, 1945
- BAKER, William Y., 1947 (1958)
Clinical Associate Professor of Psychiatry
B.S., 1931, M.D., 1933, Nebraska
- BASSAN, Morton E., 1954 (1961)
Clinical Assistant Professor of Psychiatry
B.A., 1938, Hopkins; M.D., 1942,
Maryland
- BOBBITT, Francis S., 1949 (1961)
Clinical Assistant Professor of Psychiatry
B.S., 1941, B.M., 1943, M.D., 1944,
Northwestern
- BOUCHER, Jeanne V., 1956 (1958)
Clinical Instructor in Psychiatry
B.S., 1948, College of Puget Sound;
M.D., 1953, Woman's Medical College
(Pennsylvania)
- BOWERS, Frank C., 1951
Clinical Affiliate in Psychiatry
M.D., 1933, Hahnemann Medical College
- BROWN, Lida C., 1956 (1961)
Clinical Assistant Professor of Psychiatry
A.B., 1944, George Washington; M.D.,
1948, Woman's Medical College
- BROWN, Robert W., 1949
Clinical Affiliate in Psychiatry
B.A., 1923, Wisconsin; M.D., 1928,
Harvard; M.S., 1940, Minnesota
- BUCHMEIER, Joseph A., 1950 (1961)
Clinical Assistant Professor of Psychiatry
A.B., 1939, M.D., 1942, Indiana

- BUXBAUM, Edith S., 1955
Clinical Assistant Professor of Psychiatry (Psychologist)
Ph.D., 1923, Vienna (Austria)
- CANDY, Ardis J., 1954 (1957)
Clinical Instructor in Psychiatry
B.S., 1946, Beloit College (Wisconsin);
M.S., 1948, M.D., 1950, Wisconsin
- CASE, Austin M., 1959 (1962)
Clinical Instructor in Psychiatry
B.A., 1950, Stanford; M.D., 1954,
Washington
- CHIVERS, Norman C., 1950 (1956)
Clinical Associate Professor of Psychiatry
B.A., 1938, Saskatchewan (Canada);
M.D., 1941, Manitoba (Canada)
- CONTE, William R., 1959
Clinical Associate Professor of Psychiatry
A.D., 1942, Wichita; M.D., 1945,
Vanderbilt
- COOK, William B., Jr., 1956 (1960)
Clinical Instructor in Psychiatry
M.D., 1955, Pennsylvania
- CORBETT, James T., 1954
Clinical Instructor in Psychiatry
B.S., 1945, Seattle University; M.D.,
1947, St. Louis
- DAHL, Hartvig A., 1952 (1953)
Clinical Instructor in Psychiatry
B.A., 1944, Jamestown College (North
Dakota); B.S., 1944, North Dakota;
M.D., 1946, Illinois
- DANNHAUER, Allan R., 1959
Clinical Instructor in Psychiatry
B.S., 1949, Northwestern; B.S., 1952,
M.D., 1954, Illinois
- DAVIES, Roberts J., 1959 (1962)
Clinical Instructor in Psychiatry
B.S., 1930, M.B., 1933, M.D., 1934,
Minnesota
- DIAMOND, Leon S., 1951
Clinical Affiliate in Psychiatry
B.S.M., 1937, M.D., 1938, Loyola
- DICKINSON, R. Hugh, 1958
Clinical Associate Professor of Psychiatry
A.B., 1940, Cornell; M.D., 1943, Nebraska
- DORPAT, Theodore L., 1953 (1959)
Clinical Assistant Professor of Psychiatry
B.S., 1948, Whitworth; M.D., 1952,
Washington
- DRAPER, Franklin M., 1958 (1959)
Clinical Instructor in Psychiatry
B.A., 1950, Reed; M.D., 1954, Harvard
- EGGERTSEN, Harold C., 1957 (1960)
Clinical Instructor in Psychiatry
B.S., 1950, M.D., 1955, Utah
- ELY, Neal E., 1959 (1962)
Clinical Instructor in Psychiatry
B.S., 1949, Julliard School of Music;
M.A., 1950, Columbia Teachers College;
M.D., 1958, Washington
- FISK, Quentin G., 1957 (1959)
Clinical Instructor in Psychiatry
B.S., 1942, South Dakota State; B.S.,
1948, South Dakota; M.D., 1950,
Illinois
- FLEMING, Jack W., 1959
Clinical Instructor in Psychiatry (Psychologist)
A.B., 1949, Brown; M.A., 1957, Ph.D.,
1959, Colorado
- FORD, E. S. C., 1959
Clinical Instructor in Psychiatry
B.S., 1936, Kentucky; M.D., 1939,
Vanderbilt
- FREIDINGER, Arthur W., 1949
Clinical Instructor in Psychiatry
B.S., 1939, Oberlin; M.D., 1943,
Western Reserve

- GABLE, Charles M., 1950 (1961)
Clinical Assistant Professor of Psychiatry
B.S., 1939, Washington; M.D., 1941,
Tennessee
- GAMES, Jack E., 1960 (1961)
Clinical Instructor in Psychiatry
B.S., 1951, M.D., 1955, Washington
- GOFORTH, Eugene G., 1948 (1953)
Clinical Assistant Professor of Psychiatry
B.S., 1939, M.D., 1941, Illinois
- HAMMER, Frank J., 1956
Clinical Instructor in Psychiatry
(Psychologist)
B.A., 1942, Lawrence College;
Ph.D., 1950, Chicago
- HEILBRUNN, Gert, 1948 (1958)
Clinical Associate Professor of Psychiatry
B.A., 1929, City College of Nuremberg
(Germany); M.D., 1935, Bern
(Switzerland)
- HEINEMANN, Harold E., 1952 (1962)
Clinical Assistant Professor of Psychiatry
B.A., 1937, Eastern Washington College of
Education; M.D., 1948, Oregon
- HENDERSON, J. Lester, 1948 (1958)
Clinical Associate Professor of Psychiatry
B.S., 1924, Eureka College (Illinois);
M.D., 1929, Washington University
- HENDRICKS, Roger C., 1949 (1958)
Clinical Assistant Professor of Psychiatry
M.D., 1941, Rush Medical College
- HOEDEMAEKER, Edward D., 1947 (1961)
Clinical Assistant Professor of Psychiatry
B.S., 1927, M.D., 1929, Michigan
- HORTON, William D., 1950 (1958)
Clinical Assistant Professor of Psychiatry
B.A., 1939, M.D., 1942, Kansas
- HURLEY, Albert M., 1952 (1956)
Clinical Instructor in Psychiatry
B.S., 1942, St. Joseph College; M.D.,
1946, Marquette
- IVERSON, Carrol K., 1956
Clinical Instructor in Psychiatry
B.S., 1951, Iowa State; M.D.,
1951, Yale
- JACKSON, Stanley W., 1955 (1956)
Clinical Instructor in Psychiatry
B.C., 1941, M.D., C.M., 1950, McGill
(Canada)
- JONES, Elwood L., 1954 (1958)
Clinical Instructor in Psychiatry
A.B., 1949, Kansas City; B.S., 1951,
Missouri; M.D., 1953, Kansas
- KAUFMAN, S. Harvard, 1947 (1958)
Clinical Associate Professor of Psychiatry
B.S., 1934, M.D., 1936, Wisconsin
- KELLEHER, Daniel, 1958 (1961)
Clinical Instructor in Psychiatry
(Psychologist)
B.S., 1953, M.S., 1957, Ph.D., 1959,
Washington
- KIPPLE, Helen M., 1954 (1955)
Clinical Instructor in Psychiatry
B.S., 1939, M.S., 1941, Washington;
M.D., 1950, Stanford
- KLEIN, Jack, 1950
Clinical Instructor in Psychiatry
B.A., 1940, Loras College (Iowa); M.D.,
1943, Iowa
- KOGAN, Kate L., 1956
Clinical Assistant Professor of Psychiatry
(Psychologist)
B.A., 1934, Wellesley; M.A., 1935,
Ph.D., 1943, Columbia
- KOGAN, William S., 1952 (1961)
Clinical Assistant Professor of Psychiatry
(Psychologist)
A.B., 1936, New York; M.A., 1939,
Columbia; Ph.D., 1949, Pittsburgh
- KRIEGER, Margery H., 1959
Clinical Instructor in Psychiatry
(Psychologist)
B.A., 1946, Ph.D., 1955, Texas
- KROUSE, Howard, 1951 (1960)
Clinical Assistant Professor of Psychiatry
and of Medicine (Neurologist)
B.A., 1941, M.D., 1943, Iowa
- LASATER, James H., 1948
Clinical Instructor in Psychiatry
B.S., 1934, Washington; M.D., 1939,
George Washington
- LAVALLEE, John N., 1959 (1961)
Clinical Instructor in Psychiatry
B.Sc., M.D., 1953, Alberta (Canada)
- LEFFMAN, Henry, 1953 (1961)
Clinical Associate Professor of Psychiatry
and of Medicine (Neurologist)
M.D., 1935, Prague (Czechoslovakia)
- LEIDER, Allan R., 1951 (1955)
Clinical Instructor in Psychiatry
B.S., 1943, Minnesota; B.S., 1944,
Hamline (Minnesota); M.D., 1946,
Minnesota
- LEMERE, Frederick, 1947
Clinical Professor of Psychiatry
M.A., 1930, M.D., 1932, Nebraska
- MANGHAM, Charles A., 1950 (1951)
Clinical Instructor in Psychiatry
B.S., 1939, M.D., 1942, Virginia
- MEADOWS, John W., 1956
Clinical Instructor in Psychiatry
B.S., 1940, Gonzaga; M.D., 1944, Western
Reserve
- MILLAR, Thomas P., 1959
Clinical Instructor in Psychiatry
B.A., 1947, British Columbia; M.D.,
C.M., 1951, McGill (Canada)
- MILOWE, Irvin D., 1961
Clinical Instructor in Psychiatry
B.A., 1953, Columbia; M.D., 1957, Cornell
- OGLE, William A., 1956
Clinical Instructor in Psychiatry
B.A., 1938, Saskatchewan; M.D., C.M.,
1951, McGill (Canada)
- OLCH, Gerald B., 1956 (1962)
Clinical Assistant Professor of Psychiatry
M.D., 1944, Toronto
- ORR, Douglas W., 1947 (1958)
Clinical Associate Professor of Psychiatry
A.B., 1928, Swarthmore; M.S., 1933,
M.D., 1935, Northwestern
- PETERS, William F., 1955 (1956)
Clinical Instructor in Psychiatry
M.D., 1949, Temple
- POSELL, Edward A., 1949 (1953)
Clinical Affiliate in Psychiatry
B.S., 1923, College of the City of New
York; M.D., 1927, Boston
- PROANO, Augusto, 1960
Clinical Affiliate in Psychiatry
B.S., 1944, Saint Gabriel (Ecuador);
M.D., 1951, Central University Medical
School (Ecuador)
- RICE, Damaris S., 1958
Clinical Instructor in Psychiatry
M.D., 1952, Nebraska
- RICE, Jerrold S., 1957
Clinical Instructor in Psychiatry
B.A., 1948, Denver; M.D., 1952,
Nebraska
- RILEY, John B., 1948
Clinical Instructor in Psychiatry
B.S., 1929, M.B., 1933, M.D., 1934,
Minnesota
- ROBERTS, Richard W., 1959 (1962)
Clinical Instructor in Psychiatry
B.S., 1953, Washington State; M.D., 1958,
Washington

ROSE, Jerman W., 1960
Clinical Associate Professor of Psychiatry
B.S., 1939, Wake Forest; M.D., 1943,
Temple

ROWLETT, David B., 1957 (1960)
Clinical Instructor in Psychiatry
A.B., 1949, M.D., 1953, Kansas

SAYER, Robert J., 1951 (1961)
Clinical Assistant Professor of Psychiatry
A.B., 1944, Pennsylvania; M.D., 1948,
Columbia

SCHER, Maryonda E., 1955 (1959)
Clinical Instructor in Psychiatry
B.S., 1950, M.D., 1954, Washington

SCHMIDL, Fritz, 1961
Clinical Assistant Professor of Psychiatry
(Social Worker)
M.S., 1941, Columbia; J.D., Vienna, 1920

SCHWARTZ, Lawrence H., 1955 (1962)
Clinical Assistant Professor of Psychiatry
M.D., 1949, Duke

SHAW, Ian A., 1954
Clinical Instructor in Psychiatry
M.D., 1948, Harvard

SHOVLAIN, Francis E., 1949
Clinical Affiliate in Psychiatry
A.B., 1921, M.D., 1923, Creighton

STOLZHEISE, Ralph M., 1948
Clinical Instructor in Psychiatry
A.B., 1926, Willamette; M.D., 1934,
Oregon

STRAND, Glenn T., 1953 (1960)
Clinical Assistant Professor of Psychiatry
B.S., 1948, M.D., 1952, Washington

TAYLOR, Benjamin M., 1954 (1955)
Clinical Instructor in Psychiatry
M.D., 1949, St. Louis

THOMPSON, Robert W., 1959 (1962)
Clinical Instructor in Psychiatry
B.S., 1951, M.S., 1952, Stanford; M.D.,
1958, Wisconsin

VOORHEES, William D., 1953 (1960)
Clinical Assistant Professor of Psychiatry
B.A., 1942, M.D., 1945, Johns Hopkins

WELT, Walter B., 1952 (1958)
Clinical Assistant Professor of Psychiatry
B.A., 1943, M.D., 1946, Utah

WHITING, Adolph M., 1951
Clinical Instructor in Psychiatry
B.S., 1943, M.B., 1945, M.D., 1946,
Minnesota

WRIGHT, Robert G., 1959 (1961)
Clinical Instructor in Psychiatry
B.A., 1950, Johns Hopkins; M.D.,
1954, Rochester

RADIOLOGY

FIGLEY, Melvin M., 1958
Professor of Radiology; Chairman of the
Department of Radiology
M.D., 1944, Harvard

KORNELL, Albert K., 1961
Instructor in Radiology
M.D., 1956, Creighton Medical School

LEIGHTON, Robert S., 1955 (1962)
Assistant Professor of Radiology
B.A., 1933, M.D., 1938, Minnesota

LOOP, John W., 1959
Assistant Professor of Radiology
B.S., 1948, M.D., 1952, Harvard

PARKER, Robert G., 1956 (1959)
Associate Professor of Radiology
B.S., 1945, M.D., 1948, Wisconsin

PHILLIPS, Leon A., 1959
Assistant Professor of Radiology
B.S., 1948, M.D., 1952, Yale

CLINICAL APPOINTMENTS

ADDINGTON, Ercell A., 1948
Clinical Assistant Professor of Radiology
B.A., 1928, Carleton College; M.D.,
1932, M.A., 1939, Minnesota

BAIR, William J., 1957
Lecturer in Radiology
B.A., 1949, Ohio Wesleyan; Ph.D., 1954,
Rochester

BENESH, Alfred J., 1951 (1954)
Clinical Assistant Professor of Radiology
B.A., 1926, M.A., 1931, South Dakota;
M.D., 1933, Chicago

CARLILE, Thomas B., Jr., 1948
Clinical Assistant Professor of Radiology
A.B., 1936, M.D., 1939, Michigan

GILBERTSON, Eva L., 1950
Clinical Instructor in Radiology
B.A., 1938, North Dakota; M.D., 1941,
Temple; M.S., 1947, Minnesota

HADDEN, George N., 1956 (1958)
Clinical Assistant Professor of Radiology
B.S., 1947, M.D., 1951, Washington

HARTZELL, Homer V., 1948
Clinical Assistant Professor of Radiology
A.B., 1930, Stanford; M.D., 1936, Oregon

MARTIN, Owen, 1962
Clinical Instructor of Radiology
M.D., 1946, St. Louis University

MYERS, Ira T., 1956
Lecturer in Radiology
B.S., 1948, M.S., 1952, Ph.D., 1958,
Washington State

NELSON, James F., 1953 (1958)
Clinical Associate Professor of Radiology
M.D., 1946, Northwestern

PARKER, Herbert M., 1948
Clinical Assistant Professor of Radiology
B.S., 1930, M.S., 1931, Manchester
(England)

ROEDEL, Robert F., 1958
Clinical Instructor in Radiology
B.S., 1942, Washington; M.D., 1946,
Marquette

ROESCH, William C., 1953 (1959)
Clinical Assistant Professor of Radiology
A.B., 1945, Miami; Ph.D., 1949,
California Institute of Technology

ROSENBERG, Robert H., 1955
Clinical Instructor in Radiology
B.S., 1949, M.B., 1951, M.D., 1952,
Minnesota

TEMPLETON, Frederic E., 1947 (1953)
Clinical Professor of Radiology
B.S., 1927, Washington; M.D., 1931,
Oregon

WALKER, John H., 1948 (1959)
Clinical Assistant Professor of Radiology
B.S., 1936, Washington; M.D., 1940,
Michigan

WARD, Byron H., 1951 (1959)
Clinical Assistant Professor of Radiology
B.S., 1935, Washington; M.D., 1939,
Oregon

WILDERMUTH, Orless, 1956
Clinical Associate Professor of Radiology
A.B., 1939, B.S., 1941, Missouri;
M.D., 1943, Cincinnati

WOOTTON, Peter, 1959
Clinical Assistant Professor of Radiology;
Radiation Physicist
Hon. B. Sc., 1944, Birmingham (England)

SURGERY

AKESON, Wayne H., 1961
Assistant Professor of Orthopedics
M.D., 1953, Chicago

ANSELL, Julian, 1959 (1961)
Associate Professor of Surgery; Head of the Division of Urology
 B.A., 1947, Bowdoin; M.D., 1951, Tufts; Ph.D., 1959, Minnesota

BELL, John W., 1959 (1960)
Associate Professor of Surgery
 B.S., 1942, Washington; M.D., 1945, Harvard

CAMMOCK, Earl E., 1960
Instructor in Surgery
 B.A., 1949, B.S. 1950, M.D., 1953, Minnesota

CANTRELL, James R., 1960
Professor of Surgery
 A.B., 1944, M.D., 1946, Johns Hopkins

CHATRIAN, Gian, 1959
Assistant Professor of Neurosurgery and Neurology; Head of the EEG Laboratory
 M.D., 1951, Naples (Italy)

CLAWSON, D. Kay, 1958 (1961)
Associate Professor of Surgery; Head of the Division of Orthopedics
 M.D., 1952, Harvard

DEVITO, Robert V., 1956 (1962)
Assistant Professor of Surgery and Head of the Division of Plastic and Maxillofacial Surgery
 B.A., 1949, British Columbia (Canada); M.D., 1953, Washington

DILLARD, David H., 1953 (1959)
Assistant Professor of Surgery
 A.B., 1946, Whitman College; M.D., 1950, Johns Hopkins

FOLTZ, Eldon L., 1950 (1957)
Associate Professor of Neurosurgery
 B.S., 1941, Michigan State; M.D., 1943, Michigan

HARKINS, Henry Nelson, 1947
Professor of Surgery; Chairman of the Department of Surgery
 B.S., 1925, M.S., 1926, Ph.D., 1928, Chicago; M.D., 1931, Rush Medical College

JESSEPH, John E., 1955 (1961)
Assistant Professor of Surgery
 A.B., 1949, Whitman College; M.D., 1953, M.S., 1956, Washington

KELLY, William A., 1959
Instructor in Neurosurgery
 M.D., 1954, Cincinnati

MERENDINO, K. Alvin, 1948 (1955)
Professor of Surgery
 B.S., 1936, Ohio; M.D., 1940, Yale; Ph.D., 1946, Minnesota

NYHUS, Lloyd M., 1952 (1959)
Associate Professor of Surgery
 B.A., 1945, Pacific Lutheran College; M.D., 1947, Alabama

PATERSON, James R. S., 1961
Instructor in Urology
 B.S., 1944, St. Andrews; M.B. Ch.B., 1947, Edinburgh; F.R.C.S. Ed., 1953, Edinburgh

STEVENSON, John K., 1954 (1959)
Assistant Professor of Surgery
 M.D., 1949, Rochester

TOLSTEDT, Grandon E., 1957 (1961)
Assistant Professor of Surgery
 B.S., 1948, South Dakota State; M.D., 1953, Northwestern

WARD, Arthur A., Jr., 1948 (1955)
Professor of Surgery; Head of the Division of Neurosurgery
 B.S., 1938, M.D., 1942, Yale

WHITE, Lowell E., Jr., 1954 (1960)
Assistant Professor of Neurosurgery
 B.S., 1951, M.D., 1953, Washington

WINTERSCHIED, Loren C., 1957 (1962)
Assistant Professor of Surgery
 B.A., 1948, Willamette; Ph.D., 1953, M.D., 1954, Pennsylvania

RESEARCH APPOINTMENTS

FLETCHER, T. Lloyd, 1951 (1955)
Research Associate Professor of Surgery
 A.B., 1937, M.D., 1938, Clark (Massachusetts); Ph.D., 1949, Wisconsin

PAN, Hsi-Lung, 1954 (1955)
Research Instructor in Surgery
 B.S., 1946, Fukien Christian (China); M.S., 1950, College of Puget Sound; M.S., 1953, Washington

SCHMIDT, Joan A., 1955
Research Instructor in Orthopedics
 B.A., 1943, Regis College; M.S., 1950, Washington

CLINICAL APPOINTMENTS

ADAMS, Alfred O., 1950
Consultant in Orthopedic Surgery
 M.D., 1924, Washington University

ANDERSON, David W., 1961
Clinical Instructor in Orthopedics
 B.S., 1946, California; M.D., 1949, Cincinnati

ANDERSON, Kirk J., 1952 (1959)
Clinical Instructor in Orthopedic Surgery
 B.A., 1941, College of Idaho; M.D., 1944, Oregon

ANDERSON, Roger, 1948
Senior Consultant in Orthopedic Surgery
 B.S., 1915, Hamline (Minnesota); M.D., 1918, Northwestern

ASH, Joseph L., 1949
Consultant in Otolaryngology
 B.S., 1923, M.D., 1925, Creighton

BAKER, Joel W., 1948 (1952)
Consultant in Surgery
 M.D., 1928, Virginia

BERENS, Sylvester N., 1953 (1956)
Consultant in Neurosurgery
 B.S., 1924, M.D., 1928, Creighton

BILL, Alexander H., Jr., 1948 (1960)
Clinical Instructor in Surgery
 A.B., 1935, M.D., 1939, Harvard

BLACKMAN, James, 1948
Consultant in Surgery
 A.B., 1928, Kalamazoo College (Michigan); M.D., 1932, Johns Hopkins

BOGARDUS, George M., 1951 (1960)
Clinical Assistant Professor of Surgery
 M.D., 1938, Duke

BOWLES, Albert J., 1948
Consultant in Surgery
 A.B., 1919, M.D., 1923, Oregon

BROWN, Walter S., 1952
Clinical Instructor in Surgery
 A.B., 1927, Alabama; M.D., 1932, Illinois

BURGESS, Ernest M., 1948
Clinical Instructor in Orthopedic Surgery
 A.B., 1932, Utah; M.D., 1937, Columbia

BURKE, Donald R., Jr., 1954 (1960)
Clinical Instructor in Surgery
 B.S., 1945, M.D., 1948, Creighton; M.S., 1955, St. Louis

CAIN, Alvin L., 1958
Consultant in Otolaryngology
 B.S., 1941, Bethany; B.S., 1943, West Virginia; M.D., 1944, Virginia

CALLAHAN, John J., 1961
Clinical Instructor in Orthopedics
 B.S., 1938, Washington; M.D., McGill University, 1942

- CARPENTER, Wayne W., 1961
Clinical Assistant Professor of Surgery
B.S., 1936, M.D., 1940, Nebraska
- CHAMBERS, Edward F. S., 1948
Consultant in Orthopedic Surgery
M.D., 1907, Pennsylvania
- CHISM, Carl E., 1952 (1958)
Clinical Instructor in Surgery
and *Lecturer in Nursing*
B.S., 1936, M.D., 1941, Nebraska
- COE, Herbert E., 1947
Senior Consultant in Surgery
and *Lecturer in Nursing*
A.B., 1904, M.D., 1906, Michigan
- COE, Robert C., 1956 (1958)
Clinical Instructor in Surgery
B.S., 1940, Washington; M.D., 1950, Harvard
- CORBETT, Donald G., 1960
Senior Consultant in Urology
A.B., 1923, M.D., 1927, Pennsylvania
- CRENSHAW, William B., 1955 (1958)
Clinical Instructor in Urology
B.A., 1944, M.D., 1948, Virginia
- CRYSTAL, Dean K., 1947 (1960)
Clinical Assistant Professor of Surgery
and *Lecturer in Nursing*
B.S., 1936, Washington; B.A., 1938, Oxford; M.D., 1941, Johns Hopkins
- DAWSON, John H., Jr., 1961
Clinical Instructor in Surgery
B.A., 1945, Brown; M.D., 1950, Northwestern
- DIEFENDORF, Richard O., 1958
Consultant in Surgery
B.A., 1934, Amherst College; M.D., 1938, Columbia
- DUNCAN, John A., 1948
Consultant in Surgery
B.S., 1931, Washington; M.D., C.M., 1933, McGill (Canada)
- DUNCAN, William R., 1948
Clinical Instructor in Orthopedic Surgery
M.D., C.M., 1938, McGill (Canada)
- EADE, Gilbert G., 1960
Clinical Instructor in Surgery
B.S., 1948, M.D., 1951, Washington
- EDMARK, K. William, Jr., 1955
Clinical Instructor in Surgery
M.D., 1948, Colorado
- EDMUNDS, Louis H., 1948
Consultant in Orthopedic Surgery
B.A., 1922, Hampden Sydney College (Virginia); M.D., 1928, Virginia
- EGGERS, Harold E., Jr., 1949 (1956)
Clinical Instructor in Urology
B.S., 1933, M.D., 1937, Nebraska
- EMMEL, Harry E., 1949 (1959)
Clinical Instructor in Orthopedics
B.A., 1936, Willamette; M.D., 1940, Oregon
- FINLEY, John W., 1953 (1960)
Clinical Assistant Professor of Surgery
B.S., 1940, Idaho; M.D., 1943, Harvard
- FLASHMAN, Forest L., 1961
Clinical Assistant Professor of Orthopedics
B.A., 1937, Montana State; M.D., 1941, Northwestern; M.S., 1946, Minnesota
- FLORES, Robert E., 1948 (1958)
Clinical Instructor in Surgery
B.S., 1938, Western Kentucky State Teachers College; M.D., 1941, Louisville
- FORBES, Robert D., 1947 (1948)
Senior Consultant in Surgery
M.D., C.M., 1903, McGill (Canada)
- GLOYD, Park W., 1961
Clinical Assistant Professor of Orthopedics
B.S., 1945, Washington; M.D., 1948, Pennsylvania
- GOFF, Willard F., 1956
Clinical Instructor in Otolaryngology
B.S., 1931, Washington; M.D., 1935, Oregon
- GRIFFITH, Charles A., 1952 (1961)
Clinical Assistant Professor of Surgery
B.A., 1942, M.D., 1945, Harvard
- GRUMMEL, Roger W., 1961
Clinical Instructor in Surgery
B.S., 1950, University of Puget Sound; M.D., 1954, Oregon
- HALL, Donald T., 1948 (1960)
Clinical Assistant Professor of Surgery
B.S., 1931, Washington; M.D., 1935, Harvard
- HARPER, Harry P., 1952
Consultant in Surgery
B.S., 1936, M.D., 1937, Minnesota
- HAVEN, Hale A., 1948 (1956)
Senior Consultant in Neurosurgery
B.S., 1927, M.D., 1928, M.S., 1930, Ph.D., 1933, Northwestern
- HENRY, Frank C., 1949 (1960)
Clinical Instructor in Surgery
A.B., 1934, James Millikin (Illinois); M.D., 1940, Illinois
- HERRMANN, Siegfried F., 1948
Senior Consultant in Surgery
B.S., 1915, Hamline (Minnesota); M.B., M.A., 1919, M.D., 1920, Minnesota
- HERRON, Paul W., 1961
Clinical Instructor in Surgery
B.S., 1950, Washington State; M.D., 1954, Washington
- HILL, Lucius D., 1959
Clinical Instructor in Surgery
M.D., 1944, Virginia
- HUGHES, Carl W.
Clinical Associate Professor of Surgery
B.A., 1939, Missouri; M.D., 1944, Tennessee
- HUTCHINSON, J. Carl, 1946 (1948)
Clinical Instructor in Surgery
B.S., 1927, Idaho; M.D., 1933, Northwestern; M.S., 1945, Minnesota
- HUTCHINSON, William B., 1948
Consultant in Surgery
B.S., 1931, Washington; M.D., 1936, McGill (Canada)
- JARVIS, Fred J., 1948
Consultant in Surgery
B.S., 1928, M.D., 1932, Iowa
- JENSEN, Carl D. F., 1949
Consultant in Ophthalmology
M.D., 1931, Maryland
- JENSEN, Ole, Jr., 1949 (1956)
Clinical Assistant Professor of Urology
B.S., 1934, Washington; M.D., C.M., 1939, McGill (Canada); D.Med.Sc., 1944, Columbia
- JONES, Thomas W., 1960
Clinical Instructor in Surgery
B.S., 1949, Washington State; M.D., 1953, M.S., 1957, Washington
- KANAR, Edmund A., 1951 (1955)
Consultant in Surgery
B.S., 1943, M.D., 1945, Wayne
- KENNELLY, John M., Jr., 1956 (1959)
Clinical Assistant Professor of Urology
B.S., 1945, Willamette; M.D., 1948, George Washington
- KING, Brien T., 1947
Senior Consultant in Surgery
M.D., 1911, Vanderbilt
- KIRILUK, Lawrence B., 1949 (1960)
Clinical Assistant Professor of Surgery
and *Lecturer in Nursing*
B.M., 1945, M.D., 1946, Minnesota

- KNOPP, Lawrence M., 1954 (1956)
Clinical Instructor in Neurosurgery
B.S., 1949, Southwestern; M.S., 1949,
M.D., 1951, Tennessee
- LANE, John D., 1958
Consultant in Surgery
B.S., 1923, M.D., 1927, Georgia
- LASHER, Earl P., Jr., 1946 (1948)
Clinical Instructor in Surgery
B.A., 1931, M.D., 1934, Cornell
- LAUGHLIN, Robert C., 1949 (1952)
Clinical Assistant Professor of Surgery;
Acting Head of the Division of
Ophthalmology
B.A., 1931, Harvard; M.D., 1935,
Johns Hopkins
- LEAVITT, Darrell G., 1948
Consultant in Orthopedic Surgery
B.S., 1924, M.D., 1927, Oregon
- LEAVITT, Harry L., 1948
Consultant in Orthopedic Surgery
B.A., 1927, Oregon; M.D., 1930, Michigan
- LECOQC, John F., 1948
Senior Consultant in Orthopedic Surgery
M.D., 1925, A.B., 1926, Oregon
- LINEBACK, Carl M., 1962
Clinical Assistant Professor of Surgery
B.A., 1943, M.D., 1946, Emory University
- LITVIN, Lewis E., 1961
Clinical Instructor in Surgery
B.S., 1937, Washington; M.D., 1941,
Boston University
- LOBB, Allan W., 1955 (1960)
Clinical Assistant Professor of Surgery
and Lecturer in Nursing
B.S., 1941, Washington; M.D., 1946,
George Washington
- LOE, Ralph H., 1948 (1955)
Consultant in Surgery
B.S., 1925, Washington; M.D.,
1926, Pennsylvania
- LOUGHLIN, Ivan K., 1961
Clinical Instructor in Orthopedics
B.S., 1939, Washington; M.D., 1943,
Oregon
- LYMAN, John C., 1948
Senior Consultant in Surgery
B.S., 1909, Whitman College; M.D.,
1913, Johns Hopkins; D.Sc., 1946,
Whitman College
- MACMAHON, Charles E., 1948
Clinical Assistant Professor of Surgery
and Lecturer in Nursing
B.S., 1932, Washington; M.D.,
1936, Harvard
- MASON, J. Tate, 1950 (1960)
Clinical Assistant Professor of Urology
B.S., 1936, Washington; M.D., 1940,
Michigan
- MCDONALD, James L., 1959
Clinical Instructor in Surgery
M.D., 1945, St. Louis
- McELMEEL, Eugene F., 1947 (1949)
Clinical Instructor in Otolaryngology
B.A., 1930, St. Thomas (Minnesota);
B.S., 1933, M.D., 1936, Minnesota
- McKAY, John L., 1962
Clinical Assistant Professor of Surgery
B.S., 1943, Seattle University; M.D.,
1951, Creighton University
- McLEMORE, Ira O., 1948 (1952)
Senior Consultant in Orthopedic Surgery
M.D., 1923, Georgia
- McMAHON, William A., 1960
Clinical Instructor in Surgery
B.S., 1930, St. Charles College; M.D.,
1934, St. Louis University
- METHENY, David, 1948
Consultant in Surgery
A.B., 1920, Pennsylvania; M.D., 1923,
Jefferson
- MILLER, James W., 1948
Clinical Instructor in Orthopedic Surgery
A.B., 1936, M.D., 1939, Michigan
- MILLS, Waldo O., 1952 (1960)
Clinical Instructor in Surgery
B.A., 1937, Willamette; M.D., 1940,
Oregon
- MOONEY, J. Garth, 1961
Clinical Instructor in Orthopedics
B.S., 1943, Washington; M.D., 1945,
Oregon
- MOWERY, Charles R., 1956
Clinical Instructor in Surgery
B.S., 1940, M.D., 1943, Chicago
- MULLEN, Bernard P., 1948
Consultant in Surgery
B.S., 1918, Wisconsin; M.D., 1921,
Rush Medical College
- MURPHY, Thomas O., 1958
Consultant in Surgery
B.S., 1943, Willamette; M.D., 1949,
Johns Hopkins; Ph.D., 1957, Minnesota
- NASH, Henry H., 1961
Clinical Instructor in Orthopedics
B.A., 1943, Harvard; M.D., 1946,
Harvard Medical School
- NELSON, Jack N., 1949 (1956)
Clinical Assistant Professor of Urology
B.S., 1929, Walla Walla; M.D., 1932,
College of Medical Evangelists
- NELSON, Wallace, 1958 (1960)
Clinical Instructor in Neurosurgery
M.D., 1952, Washington
- NORGORE, Martin, 1946 (1952)
Consultant in Surgery
B.S., 1921, Washington; M.D., 1926,
Oregon
- OHMAN, Albert C., 1949 (1956)
Clinical Assistant Professor of Urology
M.D., 1932, Colorado
- OLSON, Clarence, 1952 (1960)
Clinical Instructor in Surgery
B.S., 1928, Chicago; M.D., 1933,
Rush Medical College
- OLSON, Hilding H., 1950 (1958)
Clinical Associate Professor of Surgery
B.S., 1939, Washington; M.D., 1943,
Oregon
- OSMUN, Paul M., 1949
Clinical Instructor in Otolaryngology
A.B., 1932, Brown; M.D., C.M., 1938,
McGill (Canada)
- PALKEN, Morton, 1954 (1958)
Clinical Instructor in Urology
B.S., 1943, M.D., 1946, Tufts College
- PARKER, Dean, 1948
Clinical Instructor in Urology
B.S., 1933, M.D., 1939, Iowa
- PASSMORE, Jack W., 1962
Clinical Assistant Professor of Surgery
B.S., 1943, M.D., 1948, Kansas
- PAYNE, J. Thomas, 1951 (1955)
Consultant in Surgery
B.S., 1938, Westminster College;
M.D., 1942, Vanderbilt
- PHILLIPS, James W., 1949 (1953)
Clinical Instructor in Surgery and
Lecturer in Nursing; Acting Head
of the Division of Otolaryngology
B.S., 1934, M.D., 1938, Stanford
- PILLING, Matthew A., 1952 (1958)
Clinical Instructor in Surgery
B.S., 1936, Nebraska State Teacher's
College; M.D., 1941, Nebraska

- PINKHAM, Roland D., 1948 (1960)
Clinical Assistant Professor of Surgery
B.S., 1934, Washington; M.D., 1939,
Stanford
- POWELL, Archie C., 1949
Clinical Instructor in Otolaryngology
B.S., M.D., 1936, Nebraska
- RAMSAY, J. Finlay, 1948
Clinical Instructor in Surgery
B.S., 1926, Washington; M.D., 1930,
Oregon
- ROGGE, Edgar A., 1961
Clinical Instructor in Orthopedics
B.S., 1931, Washington; M.D., 1935,
George Washington
- ROSSO, Weymar A., 1956 (1958)
Clinical Instructor in Urology
B.S., 1939, University of Puget Sound;
M.D., 1943, Louisville
- SACHS, Allan E., 1952
Clinical Instructor in Surgery
B.S., 1934, Chicago; M.D., 1937, Rush
Medical College
- SANDERSON, Eric R., 1947 (1960)
Clinical Instructor in Surgery
B.S., 1923, Minnesota; M.D., 1937,
Harvard
- SAUVAGE, Lester R., 1959
Clinical Instructor in Surgery
M.D., 1948, St. Louis
- SCHEINMAN, Louis J., 1953 (1956)
Clinical Instructor in Urology
B.A., 1942, North Carolina; M.D., 1945,
Long Island College
- SHERIDAN, Alfred I., 1948 (1960)
Clinical Instructor in Surgery
B.S., 1938, Washington; M.D., 1943,
Northwestern
- SMITH, Meredith P., 1962
Clinical Instructor in Surgery
B.S., 1945, St. Lawrence University;
M.D., 1949, Maryland; M.S., 1957,
Minnesota
- SPEIR, Edward B., 1948
*Consultant in Surgery and Lecturer in
Nursing*
B.A., 1929, M.D., 1933, Kansas
- STAFFORD, Donald E., 1948
Clinical Instructor in Neurosurgery
B.A., 1932, Park College (Missouri);
M.D., 1935, Harvard; M.S., 1941,
Minnesota
- STELLWAGEN, William J., 1949
Consultant in Ophthalmology
A.B., 1927, M.D., 1934, M.S., 1940,
Michigan
- STEWART, John E., 1961
Clinical Assistant Professor of Orthopedics
B.S., 1936, Washington; M.D., 1941,
Harvard
- STONE, Caleb S., Jr., 1948
Consultant in Surgery
B.S., 1922, Washington; M.D., 1926,
Washington University; M.S., 1934,
Virginia
- STRAUSS, Alfred A., 1962
Clinical Professor of Surgery
Ph.C., 1904, Washington; B.S., 1906,
Chicago; M.D., 1908, Rush Medical
College
- THOMAS, George I., 1955 (1961)
Clinical Assistant Professor of Surgery
B.A., 1946, California; M.D., 1949,
Johns Hopkins
- TUELL, Joseph I., 1948
Consultant in Orthopedic Surgery
B.S., 1929, M.D., 1932, Oregon
- TYTUS, John S., 1960
Clinical Instructor in Neurosurgery
M.D., 1947, Ohio
- TYVAND, Raymond E., 1949
Clinical Instructor in Urology
B.A., 1923, B.S., 1926, North Dakota;
M.D., 1929, Rush Medical College
- VAN PATTER, Ward N., 1961
Clinical Instructor in Surgery
M.D., 1944, Western Ontario Medical
School
- VETTO, Roy R., 1960
Clinical Instructor in Surgery
B.S., 1947, Gonzaga; M.D., 1951, Jefferson
Medical College
- WEBER, Julius A., 1949 (1953)
Consultant in Otolaryngology
B.S., 1923, M.D., 1925, Nebraska
- WHITE, Thomas T., 1953 (1962)
Clinical Associate Professor of Surgery
B.S., 1942, Harvard; M.D., 1945,
New York
- WORGAN, David K., 1950 (1954)
Clinical Instructor in Urology
B.S., 1939, M.D., 1943, Maryland
- WYRENS, Rollin G., 1949
Clinical Instructor in Urology
B.S., 1934, M.D., 1938, Northwestern;
M.S., 1942, Minnesota
- YUNCK, William P., 1949
Clinical Instructor in Urology
B.S., 1930, B.M., 1934, M.D., 1935,
Minnesota
- ZECH, Ralph K., 1953 (1957)
Clinical Instructor in Surgery
B.S., 1947, Seattle University;
M.D., 1949, Creighton
- ZECH, Raymond L., 1947 (1948)
Senior Consultant in Surgery
B.S., 1919, M.D., 1920, Northwestern

COMMITTEES

DIVISION OF HEALTH SCIENCES

INSTRUMENT SHOP: H. D. Patton, *Chairman*; M. P. Gordon, L. Mansfield, C. E. Rubin. **EX OFFICIO:** D. F. de Mers, J. R. Hogness.

LIBRARY: R. R. Weiser, *Chairman*; J. Ashford, *Secretary*; B. E. Anderson, E. A. Boyden, J. A. Glomset, F. Gray, T. A. Loomis, M. Milczewski, E. J. Ordal, K. K. Sherwood, P. E. Wilcox, **EX OFFICIO:** D. F. de Mers, E. Strange, KCH Librarian.

MEDICAL ILLUSTRATION: D. L. Bassett, *Chairman*; J. Phillips, *Secretary*; D. J. Hanahan, J. J. Holland, N. McConnell, A. W. Moore, R. E. Rumery, J. G. Skahen, T. C. West. **EX OFFICIO:** D. R. de Mers, J. R. Hogness.

OPEN HOUSE: J. J. Bonica, *Chairman*; P. Bruno, L. A. Cobb, A. Horita, J. I. Ingle, J. E. Orr. **EX OFFICIO:** G. A. Lehman, S. M. Standish.

TELEVISION EVALUATION AND PLANNING: A. W. Moore, *Chairman*; B. F. Baldwin, *Secretary*; E. A. Duchow, J. T. Elder, S. Hay, E. C. Roosen-Runge. **EX OFFICIO:** D. R. de Mers, C. L. Freehe, D. F. Hiscox, J. Phillips.

VIVARIUM: A. A. Ward, Jr., *Chairman*; C. A. Evans, L. M. Sreebny, J. W. Woodbury. **EX OFFICIO:** D. F. de Mers, J. R. Hogness, T. W. Penfold.

SCHOOL OF MEDICINE

ADMISSIONS: R. J. Blandau, *Chairman*; J. Gilbert, *Secretary*; C. W. Bodemer, H. T. Dodge, L. H. Jensen, R. G. Petersdorf, C. A. Smith, Jr., A. G. Swanson. **EX OFFICIO:** G. N. Aagaard, H. S. Ripley, R. C. Snyder.

APPOINTMENTS AND PROMOTIONS: R. H. Williams, *Chairman*, R. A. Aldrich, J. T. Grayston, H. D. Patton. **ALTERNATES:** N. B. Everett, M. M. Figley, A. A. Ward, Jr., R. R. Weiser.

BASIC SCIENCE HEADS: G. N. Aagaard, *Chairman*; J. Milne, *Secretary*; E. P. Benditt, J. M. Dille, C. A. Evans, N. B. Everett, J. T. Grayston, J. R. Hogness, H. Neurath, T. C. Ruch.

CARDIOVASCULAR TRAINING GRANT COMMITTEE: R. A. Bruce, *Chairman*; W. G. Guntheroth, Merendino, L. A. Phillips, R. F. Rushmer, R. S. Weiser, T. C. West.

CLINICAL HEADS: G. N. Aagaard, *Chairman*; M. Adams, *Secretary*; R. A. Aldrich, J. J. Bonica, M. M. Figley, H. N. Harkins, S. R. Hogness, C. A. Hunter, J. F. Lehmann, H. S. Ripley, R. H. Williams.

CLINICAL INVESTIGATION: R. H. Williams, *Chairman*; T. A. Loomis, L. E. White.

CLINICAL RESEARCH CENTER: W. Volwiler, *Chairman*; G. N. Aagaard, R. A. Aldrich, C. A. Evans, J. R. Hogness, K. A. Merendino, H. Neurath, L. S. Rambeck, R. H. Williams.

CONJOINT 426-27 ADVISORY COMMITTEE: R. A. Bruce, *Chairman*; J. F. Afonso, D. Dillard, T. H. Holmes, V. C. Kelley, J. F. Lehmann, L. A. Phillips. **EX OFFICIO:** G. N. Aagaard, R. J. Blandau.

CONJOINT 446-47 ADVISORY COMMITTEE: B. K. Scribner, *Chairman*; A. Kaplan, N. K. Mottet, R. G. Parker, J. C. Sherris. **EX OFFICIO:** G. N. Aagaard, R. J. Blandau.

COORDINATED LECTURE PROGRAM: R. S. Blandau, *Chairman*; M. Adams, *Secretary*; T. H. Holmes, L. M. Nyhus, R. G. Petersdorf.

CURRICULUM COMMITTEE: A. M. Scher, *Chairman*; M. Adams, *Secretary*; R. J. Blandau, J. R. Cantrell, R. W. Deisher, M. M. Figley, E. H. Fischer, T. H. Holmes, F. Plum. **EX OFFICIO:** J. R. Hogness.

DEAN'S COMMITTEE ON COOPERATION WITH VETERANS ADMINISTRATION: G. N. Aagaard, *Chairman*; W. Y. Baker, E. P. Benditt, J. S. Bonica, M. M. Figley, H. N. Harkins, M. J. Hickey, C. A. Hunter, J. F. Lehmann, J. F. Ramsay, H. S. Ripley, J. W. Shaw, C. S. Stone, D. D. Nolan, R. H. Williams.

EVALUATION COMMITTEES: R. J. Blandau, *Chairman*; M. Adams, *Secretary*; Committees for each year of the curriculum composed of all staff members taking part in the teaching of that year and other full-time staff members who are interested.

EXECUTIVE COMMITTEE: G. N. Aagaard, *Chairman*; M. Adams, *Secretary*; R. A. Aldrich, E. P. Benditt, R. J. Blandau, J. J. Bonica, J. M. Dille, C. A. Evans, N. B. Everett, M. M. Figley, S. T. Grayston, H. N. Harkins, J. R. Hogness, C. A. Hunter, J. F. Lehmann, H. Neurath, H. S. Ripley, T. C. Ruch, R. H. Williams. *Ex officio*: D. R. de Mers, L. S. Rambeck, S. M. Standish.

FACULTY AWARDS COMMITTEE: K. A. Merendino, *Chairman*; D. L. Bassett, H. S. Bennett, R. F. Rushmer.

FACULTY NEEDS: J. R. Hogness, *Chairman*; J. Milne, *Secretary*; R. A. Aldrich, E. P. Benditt, C. A. Evans, J. T. Grayston, C. A. Hunter, R. H. Williams.

HOSPITAL EXECUTIVE COMMITTEE: G. N. Aagaard, *Chairman*; M. Vollen, *Secretary*; R. A. Aldrich, E. P. Benditt, J. J. Bonica, M. M. Figley, H. N. Harkins, M. J. Hickey, J. R. Hogness, C. A. Hunter, J. F. Lehmann, J. E. Orr, H. S. Ripley, M. S. Tschudin, R. H. Williams. *Ex officio*: L. S. Rambeck.

INSTITUTIONAL CANCER GRANT: F. M. Huennekens, *Chairman*; D. K. Clawson, B. Mackler, R. G. Parker, R. T. Prehn, C. E. Rubin, L. M. Sreebny, A. H. Whiteley. *Ex officio*: J. L. McCarthy.

INTERNSHIP ADVISORY: P. P. VanArsdel, Jr., *Chairman*; G. Paynton, *Secretary*; D. H. Dillard, H. T. Dodge, D. C. Figge, J. L. Hampson, J. W. Loop, A. G. Swanson, L. E. White. *Ex officio*: J. R. Hogness.

LABORATORY MATERIALS: A. A. Ward, *Chairman*; H. C. Douglas, A. M. Scher.

MEDICAL STAFF ADMINISTRATIVE COMMITTEE: G. N. Aagaard, *Chairman*; M. Vollen, *Secretary*; R. A. Aldrich, E. P. Benditt, J. J. Bonica, M. M. Figley, H. N. Harkins, J. R. Hogness, C. A. Hunter, J. F. Lehmann, H. S. Ripley, R. H. Williams, J. I. Ingle, L. S. Rambeck.

MEDICAL THESIS COMMITTEE: E. G. Krebs, *Chairman*; E. C. Alvord, V. C. Kelley, J. H. Luft, E. C. Roosen-Runge, R. L. Wood.

MICROSCOPE COMMITTEE: B. S. Henry, *Chairman*.

OBJECTIVES OF MEDICAL EDUCATION: J. L. Decker, *Chairman*; J. Milne, *Secretary*; E. C. Alvord, D. L. Bassett, J. J. Bonica, W. G. Guntheroth, D. J. Hanahan, W. L. Herrmann, D. F. Magee, A. G. Motulsky, W. O. Rieke, R. Sobel, C. R. Strother. *Ex officio*: G. N. Aagaard, R. J. Blandau.

OCCUPATIONAL THERAPY ADVISORY AND EVALUATION COMMITTEE: J. F. Lehmann, *Chairman*; C. B. Bakker, G. D. Brunner, D. K. Clawson, R. P. Igo, J. B. Redford, M. G. Shevlin.

PHYSICAL THERAPY ADVISORY AND EVALUATION COMMITTEE: J. F. Lehmann, *Chairman*; G. D. Brunner, D. K. Clawson, W. F. Fordyce, J. S. MacMillan, F. Plum, W. C. Stolov. *Ex officio*: R. R. Cutler.

POSTGRADUATE MEDICAL EDUCATION: G. N. Aagaard, *Chairman*; A. Steen, *Secretary*; J. Ansell, R. R. de Alvarez, J. R. Cantrell, E. L. Foltz, H. D. Green, T. H. Holmes, H. Olson, C. E. Rubin, R. Sobel, A. G. Swanson.

RESEARCH TRAINING GRANT COMMITTEE: C. W. Bodemer, *Chairman*; M. Adams, *Secretary*; H. C. Douglas, T. C. Ruch, A. A. Ward. *Ex officio*: R. J. Blandau.

SCHEDULE COMMITTEE – FIRST, SECOND, THIRD, AND FOURTH YEARS: R. J. Blandau, *Chairman*; M. Adams, *Secretary*; R. R. de Alvarez. All full-time staff members taking part in the medical school teaching for that year are members.

SCHOLARSHIP AND GIFT: R. J. Blandau, *Chairman*; M. Adams, *Secretary*; R. S. Evans, A. Horita, O. A. Smith, R. S. Weiser. *Ex officio*: C. W. Bodemer.



THE DIVISION OF HEALTH SCIENCES

THE DIVISION OF HEALTH SCIENCES

THE DIVISION OF HEALTH SCIENCES of the University of Washington was established in the fall of 1945 to include the Schools of Dentistry, Medicine, and Nursing, the College of Pharmacy, the student Health Service, and the University Hospital. In February, 1945, the legislature of the state of Washington authorized the Board of Regents of the University to establish the Schools of Dentistry and Medicine, which were brought into the Division along with the already existing School of Nursing and College of Pharmacy. The University has offered training in nursing for over twenty-five years, and since 1931 the School of Nursing has had an integrated academic and hospital course leading to bachelor's and advanced degrees. The College of Pharmacy was founded in 1894, established a four-year course leading to a bachelor's degree in 1904 and a five-year course in 1957, and now offers both bachelor's and advanced degrees. (The nursing program is described in the *School of Nursing Bulletin*, the pharmacy program in the *College of Pharmacy Bulletin*, and the dentistry program in the *School of Dentistry Bulletin*.)

Each part of the Division of Health Sciences functions as an autonomous unit. The Division coordinates development, research, and teaching activities to strengthen and reinforce the work of each unit. For example, the basic health sciences departments meet the needs of the whole Division and of other sections of the University that are concerned with work in anatomy, biochemistry, microbiology, pathology, pharmacology, physiology and biophysics, and public health, and preventive medicine.

HEALTH SCIENCES PLANT

The Health Sciences Building overlooks the Portage Bay Yacht Basin between Lake Washington and Lake Union. It is near enough to the upper campus to offer great potentialities for cooperative research with other sections of the University, such as the Departments of Anthropology, Botany, Chemistry, Genetics, Physics, Psychology, and Zoology; the College of Engineering; the College of Fisheries; the School of Social Work; and the Student Health Service (Hall Health Center).

From 1945 to 1949, the Schools of Dentistry, Medicine, and Nursing were in temporary quarters while the Health Sciences Building was planned and built. In

March, 1947, ground was broken and construction begun on the building which now houses administrative units of the three schools, library and auditorium facilities of the entire Division, research and clinical units of the School of Dentistry, the basic health sciences departments, and laboratories and offices of the Departments of Pediatrics and Psychiatry. The first units were occupied in January, 1949, and the rest of the building was occupied in the fall of that year.

The Health Sciences Building was designed to provide space for teaching and research activities and maximum flexibility for future needs. Because interior walls are not supporting structures, redesign of areas within the building can be readily accomplished when changing demands make it necessary. The present facilities represent an investment of more than \$20,000,000 in construction and equipment.

The second unit of the new University Hospital was completed in the spring of 1959 and the first patients were admitted May 4, 1959. This 320-bed unit includes the inpatient and outpatient facilities of the hospital, the hospital laboratories, X-ray facilities, the emergency department, a large new physical medicine and rehabilitation unit, the premature nursery, etc. This second unit is contiguous with the first unit of the Hospital, which was completed in 1954 and which houses the teaching and research areas of the five clinical departments of the School of Medicine.

In addition, the Samuels Research Wing was completed in April of 1960. This wing houses additional laboratories of the clinical departments. Completion of these closely integrated units provides the University with one of the finest plants in the United States.

Funds have been received from the Federal Government for a center for cancer research, a regional primate center, and Unit I of the biology complex, which will house the departments of biochemistry and genetics. These buildings will be an extension of the Health Sciences Building to the west. Construction will begin during the present biennium.

The Health Sciences Library, which serves the Schools of Medicine, Dentistry, and Nursing, and is used in much research work done in other sections of the University, has about 89,000 carefully selected volumes (with stack space for 40,000 more) and subscribes to more than 1,619 periodicals. All books and periodicals are on open shelves and are easily accessible. Library facilities include ten glass-paneled and soundproofed reading, study, and conference rooms, as well as adequate space for microfilm and microcard readers and special study groups. The University Library also is used by health sciences students; the interlibrary loan service is particularly valuable since it makes all the medical resources of the country available for research.

HOSPITAL AFFILIATIONS

The clinical teaching programs of the Schools of Medicine, Dentistry, and Nursing are conducted not only in the University Hospital but also in hospitals affiliated with the Division of Health Sciences. Faculty members, including chairmen of clinical departments, with full time status, are appointed in teaching and service capacities at these hospitals. Many aspects of the clinical teaching program in Medicine are centered at the King County Hospital, which has a bed capacity of 480 to 535 in the Harborview Division and 240 in the Chronic Disease and Convalescent Division. Offices, laboratories, and classrooms at this hospital accommodate many of the activities of the clinical departments. The United States Veterans Administration Hospital, in Seattle, which has a bed capacity of approximately 320, is closely integrated with other teaching facilities of the Division of Health Sciences. The Veterans Administration operates this hospital as a "Dean's Committee Hospital," with the cooperation of Seattle physicians and the health sciences faculty. The Children's Orthopedic Hospital, the United States Public Health Service Hospital, and Firland Sanatorium also are affiliated with the Division. Children's Orthopedic Hospital has a bed capacity of

200, with excellent facilities in all branches of pediatrics. The U.S.P.H.S. Hospital has a capacity of 343 to 500; it is a well organized and efficiently staffed institution to which some medical students are assigned for their clerkships. Firland Sanatorium, with a capacity of 1,086, offers unusually fine opportunities for study and treatment of tuberculosis. The University of Washington Child Health Center, located in the University Hospital, provides opportunity for medical students to study the phenomena of normal growth and development of infants and children. The Center is sponsored jointly by the Departments of Pediatrics, Preventive Medicine, and Psychiatry.

The state mental hospitals are affiliated in the elective externship training program for fourth-year medical students. Western State Hospital, at Fort Steilacoom, has a bed capacity of 3,007; Eastern State Hospital, at Medical Lake, 2,361; and Northern State Hospital, at Sedro Woolley, 2,273.

Additional hospital affiliations for use in both undergraduate and graduate training programs may be developed throughout the state in the future. The School of Medicine stresses the importance of a solid foundation in general medicine in planning its program of affiliations with qualified hospitals. The ultimate goal of the Division of Health Sciences is a continuous educational program for undergraduate and graduate training in all of its professional schools.

VETERANS

ADMISSION OF VETERANS

Veterans and children of deceased veterans should meet the general admission criteria and follow the general procedures outlined for all applicants. Applications for and questions about government aid should be addressed to the Veterans Administration Regional Office.

WORLD WAR I OR II VETERANS

Under certain conditions a veteran of World War I or II who is not eligible for Veterans Administration benefits is fully or partly exempt from tuition charges. See page 47.

KOREAN VETERANS

A Korean veteran under Public Law 550 should obtain admittance to the University prior to making application for a Certificate for Education and Training, thus eliminating the chance of obtaining a certificate valid for an incorrect degree. If the veteran has any questions regarding application for a certificate, he should consult the Veterans Division, Safety Division Building. Educational allowance payments are made directly to the veteran by the Veterans Administration after the veteran and institution submit a monthly attendance certification.

TRAINING ALLOWANCE

The rate of training allowance is on a full-time basis for medical students pursuing the regular prescribed medical curriculum. If further information is desired consult the Veterans Division, Safety Division Building.

TERMINATION OF TRAINING

A veteran *eligible* under Public Law 550 must complete his training by *eight* years after his release from active service, or by January 31, 1965, whichever is earlier.

DISABLED VETERANS

A veteran with a disability under Public Law 894 should contact a training officer in the nearest Veterans Administration Office approximately four weeks prior to registration.

CHILDREN OF DECEASED VETERANS

Public Law 634 grants federal benefits to children of deceased veterans of World War I, World War II, or the Korean Conflict who died as a result of injury or disease incurred or aggravated while in the service. Information regarding eligibility under this law should be requested from a Veterans Administration Regional Office.

The Certificate for a Program of Education issued to those eligible persons by the Veterans Administration is to be presented to the Veterans Division, Safety Division Building, on the date of registration.

STUDENT ACTIVITIES AND SERVICES

HOUSING

Information and applications for residence in University-owned housing for single persons may be obtained by writing to the Manager, Men's Residence Halls, 1201 N.E. Campus Parkway, Seattle 5, or to the Manager, Women's Residence Halls, University of Washington, Seattle 5. Preference in assignment to vacancies is given to students under twenty-one years of age until August 1; thereafter assignments are made in the order of application. Prospective students may apply for the residence halls prior to their acceptance by the University but not before April 15.

University regulations require that women students under twenty-one who do not live at home must live in approved group residences such as the Women's Residence Halls, sororities, and church-sponsored living groups. Other types of living arrangements must be reported to the Dean of Women and be approved by the student's parents or guardian.

Information about fraternities or sororities may be obtained by writing to the Interfraternity Council or the Panhellenic Council, Student Union Building, University of Washington, Seattle 5.

The Office of Student Residences maintains listings of off-campus rooms, rooms with board, housekeeping rooms, apartments, and houses which are available to University students. These listings must, however, be consulted in person.

Teaching and research assistants and other part-time subfaculty personnel are given first priority for assignment to University-owned housing facilities for married students. Second preference for assignment to Union Bay Village or Sand Point Homes is given to graduate, medical, dental, and law students who have children. Prospective students are eligible to apply when they have been accepted for admission. Write to the Office of Student Residences, 23 Administration Building, for further information and application forms.

A complete statement of University housing policy appears in the *Student Handbook of University Rules and Regulations* and the *Housing Bulletin*.

PART-TIME EMPLOYMENT

The demands upon the time of students in the medical and dental courses make it inadvisable for them to undertake any kind of part-time work during the school year.

MEDICAL EXAMINATION

A student entering the University for the first time, or returning to the University after an absence of more than one calendar year, or who has previously attended Summer Quarter classes but is entering regular University classes for the first time, is required to submit to the Student Health Service (Hall Health Center) a form containing his health history and a report of a physical examination by a physician. The form will be sent to new students by the Office of Admissions, and to returning former students by the Registrar. This examination, which is required before a student may register, is taken at the student's expense.

A chest X ray, also required of the above students, is given at the Student Health Service without charge.

With the exception of Canadian students, who will follow the above instructions, foreign students must take the required physical examination at the Student Health Service when they arrive on the campus.

ASSOCIATED STUDENTS

Membership in the Associated Students of the University of Washington, the central organization which conducts all student activities, is required of all regularly enrolled students. Through the ASUW Board of Control and its various committees and boards, students assume major responsibility in the government of student life. The ASUW helps finance the programs of athletics, debates, concerts, lectures, and many other activities and facilities, including the University of Washington *Daily* and the Student Union Building.

Physician's Oath

*AT THE time of being admitted as Member of the
Medical Profession*

*I SOLEMNLY pledge myself to consecrate my life to
the service of humanity.*

*I WILL give to my teachers the respect and gratitude
which is their due;*

*I WILL practice my profession with conscience and
dignity;*

*THE HEALTH of my patient will be my first con-
sideration;*

I WILL respect the secrets which are confided in me;

*I WILL maintain by all the means in my power, the
honor and the noble traditions of the medical
profession;*

MY COLLEAGUES will be my brothers;

*I WILL not permit considerations of religion, nation-
ality, race, party politics or social standing to
intervene between my duty and my patient;*

*I WILL maintain the utmost respect for human life,
from the time of conception; even under threat, I
will not use my medical knowledge contrary to
the laws of humanity.*

*I MAKE these promises solemnly, freely and upon
my honor.*

Declaration of Geneva World Medical Association



THE SCHOOL OF MEDICINE

THE SCHOOL OF MEDICINE

THE SCHOOL OF MEDICINE offers a four-year program of courses leading to the degree of Doctor of Medicine (M.D.), programs leading to the Master of Science and Doctor of Philosophy degrees for students in the Graduate School, programs leading to Bachelor of Science degrees in Physical Therapy and in Occupational Therapy and Rehabilitation, and courses for practicing physicians. The four-year curriculum for an M.D. degree includes studies in three main areas: Basic Health Sciences, Conjoint Courses, and Clinical Sciences. In the Basic Health Sciences, the Departments of Anatomy, Biochemistry, Genetics, Microbiology, Pathology, Pharmacology, Physiology and Biophysics, and Preventive Medicine offer courses for medical, dental, nursing, and pharmacy students and for students in other University curricula. Conjoint Courses, sponsored jointly by various departments, are designed to integrate teaching in different medical fields. In the Clinical Sciences, the Departments of Anesthesiology, Medicine, Obstetrics and Gynecology, Pediatrics, Physical Medicine and Rehabilitation, Psychiatry, Radiology, and Surgery provide clinical study in the fields of medical specialization and in general medical practice.

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. It participates in the student exchange program of the Western Interstate Commission for Higher Education, under which legal residents of certain Western states which do not have medical schools may pay the tuition and fees charged to legal residents of Washington rather than the higher nonresident rate. These states are Alaska, Arizona, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming. To be eligible for this program, the student must be certified by his home state. State eligibility requirements vary, and the number of students who can be included in the program each year depends on appropriations by the legislature. A student interested in this program must apply to the certifying officer in his home state, whose address may be obtained by writing to the Western Interstate Commission for Higher Education, Fleming Law Building, Boulder, Colorado.

PHILOSOPHY AND OBJECTIVES OF THE SCHOOL OF MEDICINE

The School of Medicine seeks to begin the preparation of the individual for service in many fields of endeavor from the practice of medicine to the complex problems of public health in a modern world; from the study of human emotion to research in the chemical processes of life itself. Diversified professional opportunities unequalled by any other profession require persons whose ultimate goals may be the practice of medicine, teaching, or research in all of the basic health sciences or clinical areas of medicine, public health, radiation biology, or hospital administration, to mention only a few. Individuals with a wide variety of backgrounds can find both challenge and satisfaction in the field of medicine.

The fundamental objective of undergraduate medical education is to provide a solid foundation for the student's future development.

Undergraduate medical education must permit the student to learn fundamental principles applicable to the whole body of medical knowledge, to acquire habits of reasoned and critical judgment of evidence and experience, and to develop an ability to use these principles wisely in solving problems of health and disease.

To implement the fundamental objective, the School of Medicine provides an opportunity for the student: (1) to acquire basic professional knowledge, (2) to establish sound habits of self education and of accuracy and thoroughness, (3) to attain basic clinical and social skills, (4) to develop sound attitudes, (5) to gain an understanding of professional and ethical principles. These five requirements are obviously not distinctly separable, but are mutually interdependent.

A special word needs to be said about the development of "sound attitudes." Attitudes need to be inculcated as well as knowledge. The attitude of continuing education, the idea that the physician must remain a student throughout his life, is stressed. Establishing respect for scientific investigation and its importance in advancement of medical knowledge is a major factor in developing this attitude and in making the final product a soundly educated and trained physician.

Even though emphasis is placed on the scientific aspects of the practice of medicine, of equal importance is the development of such qualities as humanness, kindness, sympathy, and warm patient-doctor relationships. In addition, every effort is made to develop the attitude of humility in the student, the awareness of the limitations of any one physician, the necessity to seek help when it is needed without loss of personal integrity or self-respect.

Given incentive and opportunity to learn and guidance toward the grasp of principles, with the problems of health and disease as a frame of reference, it is hoped that the student will build the necessary foundation for his career in medicine, be it practice (general or limited), teaching, research, or administration. The student should develop into a responsible professional person, and be able to gain and maintain the confidence and trust of his patients, the respect of those with whom he works, and the support of the community in which he lives.

ADMISSION TO THE UNIVERSITY AND TO THE SCHOOL

The faculty of the School of Medicine believes that the appropriate level of scholarly achievement and preparation for medicine can best be developed in a liberal arts program with the emphasis on a major area of interest selected by the student in any field sufficiently demanding in scholastic discipline. A "pre-med course" with no further aim than admission to medical school is not recommended. The faculty believes that competence for the study of medicine can best be demonstrated by developing a depth of understanding in a major field. Therefore, a degree program of four years' duration is preferred. In exceptional circumstances, consideration will be given to applicants who may qualify at the end of three years of college work.

Before admission each applicant must have completed the minimum requirements listed below and must have demonstrated his proficiency in these subjects by obtaining a grade-point average of 2.50 or better. Calculation of the grade-

point average is made by multiplying the grade point received in a course (A=4, B=3, C=2, D=1) by the number of credits earned in the course, totaling these values, and dividing by the total number of credits earned.

	QUARTER CREDITS	SEMESTER CREDITS
Biology	12	8
Chemistry	18	12
Physics	12	8

In addition, proficiency in English and basic mathematics is expected of every applicant. Applicants from the University of Washington must have satisfied lower-division physical and health education requirements.

In recognition of the diverse opportunities afforded the graduate of medicine, the specified requirements are purposely kept to a minimum. In this manner each student has the opportunity to pursue, as his major field of study, any area of special interest to him, be it in the physical sciences, biological sciences, or humanities, and still acquire the intellectual skills necessary to the regular medical curriculum. In general, college courses which constitute part of the medical curriculum are not encouraged. Throughout the medical program, elective time as well as time for research and theses affords the student an opportunity to apply the knowledge and concepts acquired in his major field to the appropriate areas of medicine.

APPLICATION PROCEDURE

Applications and all credentials should be sent to the Admissions Committee. Because the Committee begins examining applications a year ahead of the time of entrance, *early application is advisable*. The final date on which applications for entrance in Autumn Quarter may be submitted is *January 1*. An application fee of \$5.00 is required of all applicants who are not residents of the state of Washington. On or before that date, each applicant must submit the following:

1. Formal application for admission on the form furnished by the School of Medicine.
2. Official transcript of previous college record (sent directly from the registrars of the institutions where preprofessional training was taken to the Admissions Committee) showing the complete college record, with grades and credits. Each applicant is required to include a list of the courses he is taking and plans to take to complete his preprofessional study before entering the School of Medicine. Canadian applicants must include a copy of their University Entrance Certificate.
3. Names, addresses, and departments, of three science and two nonscience instructors to whom recommendation forms may be sent. (University of Washington premedical students should consult the Premedical Adviser about recommendations.)
4. The score received in the Medical College Admission Test. Arrangements for this test may be made with the premedical adviser at the institution where premedical training is being taken. Medical aptitude tests are customarily given in May and October of each year. When the student takes the test, he should request that his scores be sent directly to the Admissions Committee. Further information on this test may be obtained by writing to the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey.
5. Three copies of a short autobiography.

Primary consideration is given to applications from residents of Washington and from students certified by the Western Interstate Commission for Higher Education. A certain number of out-of-state applicants are accepted each year, with preference to qualified applicants from neighboring states and territories where

no medical school exists. Applicants from states outside the Pacific Northwest are accepted only when they present exceptional academic records.

It is the policy of this school not to accept for admission students who have failed in other medical schools or who have been dismissed from them.

All applicants are given consideration on the same basis regardless of race, color, sex, religion, or parental occupation.

Students taking their premedical undergraduate work at the University of Washington customarily enroll in the College of Arts and Sciences and consult the premedical Adviser, Mrs. Helen Pearce, 121 Miller Hall, for help in planning their programs.

Information concerning admission to the curriculum in physical therapy and occupational therapy may be found under the Department of Physical Medicine and Rehabilitation, page 83.

TRANSFER STUDENTS

Transfer students are accepted into the second- and third-year classes only when vacancies occur, and only if they are in good standing at the school in which they are already enrolled. When vacancies do occur, applicants from two-year medical schools are given preference. Transfer students are not accepted in the fourth year. Applicants for entrance to the second- or third-year class must submit the following:

1. Formal application for admission on the form furnished by the School of Medicine.
2. Official transcripts of premedical and medical training (sent directly from the registrars of the institutions where the training was taken to the Admissions Committee).
3. The score received in the Medical College Admission Test.
4. A letter from the dean of the medical school indicating the student's status and relative standing in his class.
5. Three copies of a short autobiography.

Students applying for transfer from nonaccredited medical schools, in addition to the usual application, are required to pass qualifying examinations in the basic health sciences, i.e., anatomy, biochemistry, microbiology, pathology, pharmacology, and physiology. These qualifying examinations may be offered by the departments involved at a regularly scheduled time once a year. The candidate may offer successful completion of Part I examinations of the National Board of Medical Examiners in lieu of the departmental examinations. Permission to take these examinations is obtained through the School of Medicine. Accredited schools are listed in the educational number of the *Journal of the American Medical Association*.

PROCESSING OF APPLICATIONS

EVALUATION OF CREDENTIALS. The Admissions Committee examines each applicant's credentials and bases its decisions on the objective evaluation of these factors: preprofessional training, evidences of scholarship, place of residence, Medical College Admission Test rating, and personal evaluation of the student by premedical instructors in their letters of recommendation.

PERSONAL INTERVIEW. If an examination of the credentials shows them to be satisfactory, the applicant may be requested to appear for a personal interview by the Admissions Committee. At the time of interview the applicant is requested to submit two unmounted photographs (2 by 3 inches). A personal interview will not be requested if the credentials are not satisfactory. Applicants who are in school a considerable distance from Seattle may request that their interviews be held at some more convenient location; out-of-state interviews are arranged by the Committee.

NOTIFICATION OF ACCEPTANCE OR REJECTION. All candidates are given written notification of the acceptance or rejection of their applications as soon as possible after the Admissions Committee has reached a decision. Acknowledgment of notification of acceptance should be made in writing by the successful applicant within a reasonable length of time.

ACCEPTANCE OF APPOINTMENT. Within two weeks after a candidate has accepted the position offered to him in the School of Medicine, the Comptroller of the University will request a deposit of \$50.00. This deposit is applied to the first quarter's tuition. If the student wishes to withdraw, the deposit is refundable for any reason before January 15. After January 15, it is refundable only in case of withdrawal for bona fide illness, failure to complete basic premedical requirements, induction into military service, or failure to pass the physical examination required of all students at the time of the first registration.

FEES, EXTRA SERVICE CHARGES, AND RENTALS

All fees, extra service charges, and rentals are payable in United States dollars at the time of registration. The University reserves the right to change any of its fees and charges without notice. *A table of charges for medical, physical therapy, and occupational therapy students is on page 89.*

Resident students

A resident student is one who has been domiciled in Washington for at least a year immediately prior to registration. The domicile of a minor is that of his parents.

Nonresident students

Prospective students are classified as nonresidents when their credentials come from schools outside Washington. If they believe they are residents, they may petition the Residence Classification Office, 205A Administration Building, for a change of classification.

Veterans of World Wars I or II

Exemption from tuition charges is granted resident students who either (1) served in the United States Armed Forces during World War I and received honorable discharges or (2) served in the United States Armed Forces during World War II at any time after December 6, 1941, and before January 1, 1947, and received honorable discharges, but are no longer entitled to federal educational benefits or (3) are United States citizens who served in the armed forces of governments associated with the United States during World War I or II and received honorable discharges. Proof of eligibility for this exemption should be presented to the Veterans Division, Safety Division Building. Nonresident students who meet one of these requirements pay one half the nonresident tuition. This exemption is not granted to Summer Quarter students. Proof of eligibility should be met as follows:

- (1) World War I veterans should present copy of discharge papers to Comptroller's Office, 203 Administration Building.
- (2) World War II veterans with Korean service or who have suffered disability should present a letter from the Veterans Administration Regional Office to the Veterans Division, Safety Division Building, stating they are no longer eligible for any federal educational benefits. (Excepted are those veterans who have had both World War II benefits and Korean benefits and have expired those benefits at the University of Washington.)
- (3) World War II veterans who have not suffered any disability or served in the Korean Conflict should present an 8½-inch x 11-inch photostat of discharge papers to the Veterans Division, Safety Division Building.

Exemption must be cleared prior to student's appointment day for registration in order to prevent personal payment.

EXTRA SERVICE CHARGES

A registration service charge of \$15.00 is assessed those students: (1) eligible for Advance (mail) Registration who fail to participate; or (2) who, after the established application deadline, are granted Appointments or Permits to register by In-Person Registration by action of the Registration Appeal Board. A late registration charge of \$15.00 is assessed any student granted permission to register after the last registration day before the opening of Autumn, Winter, or Spring Quarters by action of the Registration Appeal Board. A charge of \$5.00 is made Autumn, Winter, and Spring Quarters 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.

**TUITION AND FEES PER QUARTER FOR STUDENTS OF MEDICINE, PHYSICAL THERAPY,
AND OCCUPATIONAL THERAPY**

TYPE OF REGISTRATION	TUITION FEE	INCIDENTAL FEE	OTHER FEES ¹ AUTUMN, WINTER AND SPRING QUARTERS	TOTAL FEES AUTUMN, WINTER AND SPRING QUARTERS
<i>Medicine</i>				
Resident	\$100.00	\$66.50	\$8.50	\$175.00
Nonresident	165.00	116.50	8.50	290.00
<i>Physical Therapy²</i>				
Resident	65.00	37.50	8.50	111.00
Nonresident	125.00	82.50	8.50	216.00
<i>Occupational Therapy²</i>				
Resident—Full-time	65.00	37.50	8.50	111.00
Nonresident—Full-time	125.00	82.50	8.50	216.00
Resident—Part-time ³	65.00	15.00	*	80.00
Nonresident—Part-time ³	125.00	50.00	*	175.00

* Optional

¹ Other fees consist of Student Activities, \$2.50; ASUW Bond Redemption, \$3.50; HUB Bond Redemption, \$1.00; and Building Fund, \$1.50.

² Summer Quarter (resident and nonresident) Fees, \$102.50; ASUW, \$2.50 = \$105.00

³ Clinical Training

Special Examination \$1.00

Removal of an Incomplete 2.00

Athletic Admission Ticket (optional for ASUW members) 3.50-6.50
Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50;
Spring Quarter, \$3.50.

Quarterly Grade Report .50
One grade report is issued at the close of each quarter without charge; the charge, payable in advance, is made for each additional copy.

Transcripts 1.00
One transcript is furnished without charge; the charge, payable in advance, is made for each additional copy.

Graduation Exercises Diploma 10.00

REFUND OF FEES, CHARGES, AND RENTALS

All fees will be refunded in full if complete withdrawal is made during the first three calendar days of the quarter; one half the amount will be refunded if withdrawal is made during the first thirty calendar days. Fee refunds are not made to students withdrawing under discipline.

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

At least two weeks must elapse between payment and refund of fees, if payment was made by check.

ESTIMATE OF YEARLY EXPENSES

Tuition, Incidental, and Other Fees

Full-time resident students \$525.00

Full-time nonresident students 870.00

Athletic Admission Ticket (optional) 6.50

Health and Accident Insurance (optional) 17.25

Microscope Purchase 350.00-500.00

All first-year medical students must buy microscopes so they may be used in the first week of Autumn Quarter. A scientific supply house in Seattle furnishes the kind of microscope students should use. Students who plan to buy second-hand, foreign-made, or other nonrecommended instruments should make sure they meet the standards of the Medical School Committee on Microscopes. The minimum requirements for a suitable microscope are a monocular type with 3 achromatic objectives of approximately the following magnifications: X10, X45 and X95; an X10 ocular; and an uncalibrated mechanical stage and carrying case.

Books and Supplies 100.00-150.00

Transportation

Beginning in the Winter Quarter of the second year of medicine, students must make arrangements for transportation to and from various hospitals in Seattle where they receive part of their training.

Board and Room

Double room and meals in Men's Residence Halls 720.00

Double Room and meals in Women's Residence Halls 660.00-720.00

Single room and meals in Women's Residence Halls 765.00

Room and meals in fraternity house 700.00-800.00

Personal Expenses 300.00

FINANCIAL AID TO STUDENTS

The ever increasing demands of medical education in terms of the effort and lengthy training required to master the accumulated knowledge necessary to the practice of medicine has resulted in costs which seem prohibitive to many prospective students.

Solutions to the problem of the burdensome cost of medical education is a matter of growing public concern and the subject of extensive current study by various public and private agencies. It is generally agreed that an increase in financial aid to medical students may be necessary to recruit and train capable physicians in sufficient numbers to meet the medical needs of an expanding population.

The University of Washington School of Medicine has received substantial private and public endowments which provide financial aid to deserving medical students in the nature of awards and prizes, fellowships, scholarships, grants-in-aid, and loans See pages 58 and 59.

The recipients of these various forms of financial aid are selected by the Scholarship Committee of the School of Medicine with the assistance and approval of appropriate administrative officials.

FELLOWSHIPS. A fellowship is an academic award of honor, based upon scholastic achievement, designed to aid and encourage the student in the furtherance of his studies or research. In cases in which the fellow collaborates with a faculty member the fellow is expected to take the lead as principal investigator. The fellow is allowed freedom of publication of his results as a condition of the grant. He is expected to devote his full time and energy to his project and may not be otherwise gainfully employed during the period of his fellowship. A fellowship may be cancelled at any time by the Scholarship Committee. Ordinarily, the fellowships cover the three months of the summer. Under certain circumstances investigative work may be continued throughout the year at a reduced stipend. See page 59.

TRAINEESHIPS. A traineeship differs from a fellowship in that the student is not expected to take as principal investigator. He is usually less experienced in research, and the stipend is somewhat less. See page 58.

SCHOLARSHIPS. A scholarship is an academic award based upon both scholarship and need and is designed to aid and encourage the student in the furtherance

of his studies or research. It carries the same rules of tenure as a fellowship except that the recipient can engage in remunerative employment upon written consent of the Scholarship Committee. A scholarship may be cancelled at any time by the Scholarship Committee. See page 58.

GRANTS-IN-AID. Grants-in-aid are made to students in good standing on the basis of need only. The recipient may engage in remunerative employment only with the written consent of the Scholarship Committee. The student must be willing to submit a realistic analysis of his complete financial situation in detail.

ASSISTANTSHIPS. A number of positions with individual faculty members are usually available to medical students during the summer months. Most of these positions involve laboratory work on research projects.

LOANS FOR MEDICAL STUDENTS. Loans are made on the same basis as grants-in-aid. Amounts up to \$6,000 or more in case of special need may be loaned to any one student over the four years of his training. The loans mature six years after graduation. They are interest free until completion of the internship and thereafter bear 2 per cent interest to maturity. Financial aid is made available through the funds listed below.

BURDON-IRWIN-JOHNSON LOAN FUND. The women physicians of Seattle established a loan fund in honor of Dr. Minnie Burdon, Dr. Lillian Irwin, and Dr. Hannah Johnson to aid women medical students.

CHI OMEGA LOAN FUND. The Seattle Chi Omega Alumnae established a loan fund in 1956 to aid deserving medical students.

DEAN OF MEDICINE STUDENT LOAN FUND. This fund is composed of small bequests made to the School of Medicine to aid medical students.

FREDERICK EPLIN LOAN FUND. The Pacific Northwest Medical Association established a loan fund in memory of Frederick Eplin, M.D., founder of the Association, in 1960.

W. K. KELLOGG FOUNDATION LOAN FUND. Through the generosity of the W. K. Kellogg Foundation a loan fund was established in 1958 for medical students.

JOHN MILES MILLER LOAN FUND. The John Miles Miller Loan Fund was established in 1958 in memory of John Miles Miller by his friends. The fund is exclusively for first-year medical students.

WARREN B. SPICKARD LOAN FUND. The Warren B. Spickard Loan Fund was established in 1961 in memory of Warren B. Spickard, M.D., by his friends.

ALICE C. STOTLAR LOAN FUND. The fund was established in March, 1951, to aid deserving medical students in obtaining their education.

DR. EVERETT O. JONES SCHOLARSHIP AND LOAN FUND. Under the terms of a trust created by the late Dr. Everett O. Jones, pioneer Seattle surgeon, the annual net income from the estate is turned over to the University to provide scholarships and loans to worthy students in the School of Medicine.

EDWARD L. TURNER SCHOLARSHIP AND LOAN FUND. This fund was established by faculty, students, and friends in 1953 in honor of Dr. Edward L. Turner, first Dean of the University of Washington School of Medicine, to aid medical students.

WASHINGTON ACADEMY OF GENERAL PRACTICE. The Washington Academy of General Practice established a loan fund for medical students in 1956.

JOHN AND MARY WILSON LOAN FUND. Under the terms of a foundation created by the late Mary Wilson the annual net income from the estate is used to provide scholarships and loans to medical students on the basis of character, scholastic ability, and need.

THE WOMEN'S AUXILIARY TO THE YAKIMA COUNTY MEDICAL SOCIETY. The Women's Auxiliary to the Yakima County Medical Society established a loan fund in 1960 for deserving medical students.

LOANS FOR INTERNS AND RESIDENTS

BRISTOL LOAN FUND. The Bristol Loan Fund was established in 1961 by the Bristol Laboratories for interns and residents under the jurisdiction of the School of Medicine faculty.

CHARLES E. WATTS MEDICAL EDUCATION FUND. The friends of Charles E. Watts, M.D., established a memorial loan fund in his name to be used for loans to residents in training in internal medicine.

APPLICATION PROCEDURES

Unless specified otherwise, application for fellowships, scholarships, and grants-in-aid should be directed to the Office of the Dean of Medicine before March 15 of each year. Application forms and related information may be obtained from the Office of the Dean of Medicine upon request. See page 58 for available scholarships and fellowships.

In case of emergency or special need an application for grant-in-aid may be made at any time.

Application for a loan may be made at any time to the Office of the Dean.

Application for assistantships should be made to faculty members.

PAYMENTS

All payment of monies concerned with endowment awards, prizes, stipends, grants-in-aid, and loans are made by the University Comptroller.

STUDENT ACHIEVEMENT AND PROMOTION

Student achievement in each course is reported by the Dean's Office to the Registrar as *P* (Pass), *A* (Excellent), *B* (Good), *C* (Average), *D* (Poor), or *E* (Failure).

D signifies that the work is of passing grade but poor. Warnings are sent to students who receive *D* in any quarter.

E signifies that the work is of failing grade. Students who receive an *E* in one major subject may be permitted to take additional work and a re-examination, if permission is granted by the instructor in the course, the Dean, and the Executive Committee. If the additional work and re-examination are satisfactory, the student's grade may be raised from *E* to *D* and promotion may be granted provided that the remainder of the work is satisfactory. If students receive *E* in more than one major subject in one year, they may not make up these deficiencies.

Each department keeps careful records of student work. At the end of each academic year the Executive Committee of the School of Medicine evaluates the accomplishment of the student during that year and determines his fitness for promotion. When general academic achievement is unsatisfactory in any year, the student is subject to dismissal from the School. Even though a student who has been dismissed from the School of Medicine may succeed in passing a medical school course which he has previously failed by taking it as part of his course in another school or college, this is not regarded as evidence that a student's abilities justify readmitting him to Medical School. Students who have been dismissed because of low scholarship can be readmitted only by action of the Executive Committee; those who are readmitted are on probation and must maintain a quality of work consistently above the minimum requirements. The faculty of the School of Medicine does not favor repetition of courses in cases of low scholarship and will not permit a student to repeat a year of work except when illness or some other extenuating circumstance justifies an exception.

EVALUATION OF FOURTH-YEAR STUDENTS

All fourth-year students are required to take Part II of the National Board Examinations in April of the year of graduation. Those receiving an over-all score of less than 75 will be examined by a committee of the faculty.

CLASS SCHEDULES

Current schedules for all classes are distributed to medical students at the beginning of each academic year. The 1962-64 schedules may be found on pages 54-57.

FIRST AND SECOND YEARS

During the first and second years of the medical course, the school year is divided into three quarters of eleven weeks each. These quarters conform to the University calendar. In the first year, the major courses of instruction are anatomy, biochemistry, and physiology and biophysics, with introductory courses in psychiatry. In the second year, the major courses are pathology, microbiology, pharmacology, conjoint physical diagnosis, and conjoint laboratory procedures, with a course in psychiatry and an introductory course in preventive medicine.

The second year serves as a bridge between the basic health sciences and the clinical sciences on which the student will concentrate during the third and fourth years. During the latter part of the second year, the student devotes an increasing amount of time to learning the art of history-taking and physical examination. In these studies, the student works closely with people preparing him for the role of physician.

THIRD AND FOURTH YEARS

During the third and fourth years of the medical school program, a major amount of the student's time is devoted to his clinical clerkships. In the clinical clerkship, the student has an opportunity to take histories, and to examine patients and follow the progress of their illness. The student is carefully supervised. Instruction is largely on an individual or small group basis. There is decreasing utilization of lectures and large group conferences. During the clinical clerkship, the student has an opportunity to study the health problems of individual patients, to learn to advance his knowledge of these problems through personal study in textbooks and the current medical literature, and to discuss the problems presented by his patients with members of the teaching staff.

In the third year of the course, the school year is divided into four terms of nine weeks each: thirteen and one-half weeks of medicine; nine weeks of surgery; nine weeks of pediatrics; four and one-half weeks of psychiatry.

During the fourth year, the school year is divided into three terms of twelve weeks each: six weeks of selective surgical specialties; eight weeks of obstetrics-gynecology, one week of which includes conjoint work with pediatrics on the newborn; two weeks of anesthesiology; two weeks of physical medicine and rehabilitation; twelve weeks of an integrated program of medicine, psychiatry, preventive medicine, and pediatrics; and six weeks of elective work.

Specialty instruction in such fields as ophthalmology, otolaryngology, radiology, forensic and legal medicine, medical ethics, medical economics, urology, orthopedics, hematology, cardiology, gastro-enterology, dermatology, etc. is given in the regularly assigned class hours.

The Saturday morning schedule of the third and fourth years includes lectures and clinical conferences which are assigned to the departments of the School of Medicine.

ELECTIVE COURSES

Approximately 25 per cent of the available class hours in each year is left unscheduled in the required curriculum, thus providing students with time in which they may elect work in areas of special interest. In the first and second years, Tuesday and Thursday afternoons are unscheduled throughout the year. In the fourth year, a block of six weeks is available for required electives. Information concerning elective course offerings is available at the Dean's Office.

GENERAL PRACTICE EXTERNSHIP

The general practice externship is available as an elective to fourth-year students. Periods of two to six weeks may be spent with a general physician engaged

actively in practice in the Pacific Northwest area. During this time the student lives in the home of the physician preceptor, accompanies him in his medical work in his office, at the hospital, and on sick calls in the homes of patients. This affords the student first-hand knowledge of the life and work of the family doctor and gives him a type of teaching which he may not get on his clinical clerkships. The student also has an opportunity to see the role which the physician plays as a citizen in his own community.

MEDICAL THESIS PROGRAM

The medical thesis program of the School of Medicine is voluntary, and participation in it is initiated by the student. Often a student will become especially interested in some particular field in medicine. This interest will lead him to a desire to learn more about the field or to do special work in it. The thesis program is a means of fulfilling his desire. A prize is awarded for the best thesis submitted each year, and certain departments have available prizes for the best thesis written under that department's supervision. The preparation of a satisfactory thesis generally carries with it honors in the department. Further information concerning the thesis program may be obtained from the chairman of the Medical Thesis Committee or from the Dean's Office.

HONORS

MEDICAL STUDENTS HONORS DAY

Medical Students Honors Day is held late in the spring of each year under the auspices of the Scholarship Committee. It provides an opportunity for selected students to present formally the results of their investigations to the students and faculty of the School of Medicine. Various scholarships, awards, and research fellowships are granted on this occasion.

ALPHA OMEGA ALPHA

A charter as Alpha of Washington was granted to the School of Medicine in 1950 by Alpha Omega Alpha, the honorary medical fraternity. Members are elected by the membership of Alpha Omega Alpha on the basis of high scholarship and good moral character.

AWARDS AND PRIZES

NORMAN W. CLEIN THESIS AWARD. An award of \$100 is given for the best thesis written by a graduating senior as determined by the Thesis Committee.

DR. EVERETT O. JONES SCHOLARSHIP PRIZES. Prizes of \$100 are awarded students who have demonstrated outstanding scholarship each year.

O'DONNELL AWARD. An annual award of \$100 was established by Margaret H. O'Donnell in 1952 to be awarded by the Department of Psychiatry to the senior medical student who has done outstanding academic and creative work in psychiatry.

FREDERICK C. MOLL PRIZE IN PEDIATRICS. An annual award of \$100 was established by Margaret H. O'Donnell in 1957 to be awarded to the senior medical student who has done outstanding work in the field of pediatrics.

MEDICAL AUXILIARY SCHOLARSHIP PRIZE. The Medical auxiliary of the University of Washington School of Medicine contributes an annual scholarship prize of \$100 to an outstanding student.

MEDICAL MRS. PRIZE. The Medical Mrs., an organization of students' wives, offers a scholarship prize of \$200 annually to the outstanding junior.

NU SIGMA NU BASIC MEDICAL RESEARCH AWARD. An award of \$100 is given annually by the Beta Chapter of Nu Sigma Nu Medical Fraternity to an underclassman, preferably a second year student, who, in the opinion of the Scholarship Committee, demonstrates superior ability in basic medical research.

FIRST-YEAR SCHEDULE 1962-63

Autumn Quarter

Hour	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
8:30	Psych. 400	Anat. 405-	Anat. 405-	Anat. 401-	Anat. 404	Unassigned
9:30	Bioch. 401	Lab.	Anat. 405-	Anat. 401- Lab.		
10:30	Demonstration		Lab.			
11:30	Bioch. 401	Bioch. 401	Bioch. 401	Bioch. 401	Bioch. 401	
12:30	Lunch	Lunch	Lunch	Lunch	Lunch	
1:30	Anat. 401-	Unassigned	Anat. 401-	Unassigned	Anat. 401-	
2:30	Anat. 401-		Anat. 401-		Anat. 401-	
3:30	Lab.		Lab.		Lab.	
4:30						

Winter Quarter

8:30	Bioch. 402	Psych. 400	Anat. -402-	Bioch. 402	Bioch. 402	Anat. -402-
9:30	Anat. -406	Physiol. 401-		Physiol. 401-	Anat. -406	Anat. -402-
10:30	Anat. -406	Physiol. 401- Conf.	Anat. -402-	Physiol. 401- Conf.	Anat. -406 Lab.	Lab.
11:30	Lab.	Unassigned	Lab.	Unassigned		
12:30	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
1:30	Bioch. 403 Conf.	Unassigned	Bioch. 403 Conf.	Unassigned	Physiol. 401-	
2:30	Bioch. 403		Bioch. 403		Physiol. 401-	
3:30	Lab.		Lab.		Lab.	
4:30						

Spring Quarter

8:30	Anat. -403	Conj. 409	Unassigned	Conj. 409	Conj. 409	Unassigned
9:30	Anat. -403		Physiol. -402			
10:30	Lab.	Conj. 409	Physiol. -402 Conf.	Conj. 409	Conj. 409 Lab.	
11:30		Lab.	Psychiat. 400	Lab.	Physiol. -402 Conf.	
12:30	Lunch	Lunch	Lunch	Lunch	Lunch	
1:30	Physiol. -402	Unassigned	Anat. -403	Unassigned	Physiol. -402	
2:30	Physiol. -402		Anat. -403		Physiol. -402	
3:30	Lab.		Lab.		Lab.	
4:30						

SECOND-YEAR SCHEDULE 1962-63

Autumn Quarter

Hour	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
8:30	Path. 441-	Pharmacol. 442-	Path. 441-	Pharmacol. 442-	Pharmacol. 442-	Micro. 441-
9:30		Micro. 441-	Path. 441- Lab.	Micro. 441-	Unassigned	Micro. 441- Lab.
10:30	Path. 441- Lab.	Micro. 441- Lab.		Micro. 441- Lab.		Psychiat. 430
11:30					Pharmacol. 442-	
12:30	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
1:30	Path. 441-	Unassigned	Pharmacol. 442-	Unassigned	Path. 441-	
2:30	Path. 441- Lab.				Path. 441- Lab.	
3:30						
4:30						

Winter Quarter

8:30	Conj. 446-	Pharmacol. -443	Conj. 426-	Pharmacol. -443	Conj. 426-	Micro. -442
9:30	Conj. 446-	Micro. -442	Conj. 426-	Micro. -442	Conj. 426-	Micro. -442 Lab.
10:30	Clinical Instruction	Micro. -442 Lab.	Clinical Instruction	Micro. -442 Lab.	Clinical Instruction	First 5 weeks; Path. -442- Lab. Last 5 weeks
11:30						Conj. 446-
12:30	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
1:30	Path. -442-	Unassigned	Path. -442-	Unassigned	Pharmacol. -443	
2:30	Path. -442- Lab.		Path. -442- Lab.		Pharmacol. -443 Lab.	
3:30						
4:30						

Spring Quarter

8:30	Coni. -427	Conj. -427	Conj. -427	Conj. -427	Conj. -447	Path. -443
9:30	Conj. -427	Conj. -427	Conj. -427	Conj. -427	Conj. -447 Lab.	Path. -443
10:30	Clinical Instruction	Clinical Instruction	Clinical Instruction	Clinical Instruction		Lab.
11:30						
12:30	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
1:30	Micro. 443, 444	Unassigned	Micro. 443, 444	Unassigned	P. Med. 425	
2:30			Path. -443		Micro. 443, 444	
3:30	Micro. 443, 444		Path. -443		Micro. 443, 444	
4:30	Lab.		Lab.		Lab.	

THIRD-YEAR CLERKSHIP SCHEDULE 1962-63

	Term I		Term II		Term III		Term IV		June 2-9	June 10-14
Sections	Sept. 24-Nov. 21		Nov. 23-Jan. 30		Jan. 31-Apr. 2		Apr. 3-June 1		R E A D I N G P E R I O D	E X A M I N A T I O N S
Section A ¼ of class	Medicine Clerkship		Medicine Clerkship	Psychiatry Clerkship	Surgery Clerkship		Pediatrics Clerkship			
Section B ¼ of class	Medicine Clerkship	Psychiatry Clerkship	Surgery Clerkship		Pediatrics Clerkship		Medicine Clerkship			
Section C ¼ of class	Surgery Clerkship		Pediatrics Clerkship		Medicine Clerkship		Medicine Clerkship	Psychiatry Clerkship		
Section D ¼ of class	Pediatrics Clerkship		Medicine Clerkship		Medicine Clerkship	Psychiatry Clerkship	Surgery Clerkship			

THIRD-YEAR LECTURE SCHEDULE 1962-63

Lectures for third year are confined to Saturday mornings in which all clinical departments take part, calling in basic science departments on certain problems. Many of the lectures are the conjoint treatment of a subject by more than one department.

FOURTH-YEAR CLERKSHIP SCHEDULE 1962-63

	Term I				Term II			Term III			June 10-14	
Sections	Sept. 24-Dec. 15				Dec. 17-March 16			March 18-June 8			E X A M I N A T I O N S	
Section A ¼ of class	Medicine Psychiatry Preventive Medicine Pediatrics				Electives		Selected Surgical Specialties		Obstetrics- Gynecology	Obstetrics- Gynecology		Anesthesiology Phys. Med. & Rehab. Pediatrics
Section B ¼ of class	Electives		Selected Surgical Specialties		Obstetrics- Gynecology	Obstetrics- Gynecology	Anesthesiology Phys. Med. & Rehab. Pediatrics		Medicine Psychiatry Preventive Medicine Pediatrics			
Section C ¼ of class	Obstetrics- Gynecology	Obstetrics- Gynecology	Anesthesiology Phys. Med. & Rehab. Pediatrics		Medicine Psychiatry Preventive Medicine Pediatrics			Electives		Selected Surgical Specialties		

Medical Practice 483—Hospital Extension Service. Each student is responsible for an assigned number of home care cases throughout the year under the guidance of an instructor.

FOURTH-YEAR SCHEDULE 1962-63

Lectures for fourth year are confined to Saturday mornings in which all clinical departments take part, calling in basic science departments on certain problems. Many of the lectures are the conjoint treatment of a subject by more than one department.

AWARDS AND PRIZES (Cont'd)

PHI DELTA EPSILON AWARD. An annual award of \$100 to the outstanding graduating senior, selected by the Scholarship Committee, was established by the Phi Delta Epsilon Graduate Club in 1954.

ROCHE AWARD. An annual award of a gold Omega watch is given by the Hoffman-LaRoche Company to the sophomore who has shown outstanding scholarship, character, personality, and seriousness of purpose during his first two years in the study of medicine.

SEATTLE GYNECOLOGICAL SOCIETY PRIZE. The Seattle Gynecological Society in 1960 established an annual award of \$250 for outstanding achievement in obstetrics and gynecology by a senior student.

SEATTLE SURGICAL SOCIETY PRIZE. The Seattle Surgical Society in 1961 established an annual award of \$250 for outstanding achievement in surgery by a senior student.

SCHOLARSHIPS

Stipends of the various scholarships listed below range from full tuition and fees (\$525) to larger amounts sufficient to cover the entire financial needs of the student through four years of medical school. (See page 51 for method of application.)

A number of four-year scholarships have been established for the purposes of meeting the full needs of especially gifted and promising students who would otherwise be unable to finance their medical education. Continuance of the scholarship is contingent upon satisfactory scholastic standing.

AVALON FOUNDATION. The Avalon Foundation has made available \$10,000 for medical scholarships for the year 1962-63.

JOHN BYRNE MEMORIAL SCHOLARSHIP. An annual scholarship for a medical student of tuition costs was established in 1949 by Mr. C. J. Byrne in memory of John Byrne.

ANNA C. DUNLAP SCHOLARSHIP FUND. In order to provide financial assistance to medical students interested in the fields of cancer, diseases of the heart, children's diseases, and nervous diseases, the late Anna C. Dunlap established a trust fund, the income of which is to be used for scholarships for medical students. Recipients of the scholarships must have completed at least the first year in medical school and have demonstrated personal and scholastic worthiness. They must be industrious, and give promise of useful citizenship. Special consideration will be given to students who are self-supporting.

GROUP HEALTH COOPERATIVE SCHOLARSHIP. An annual scholarship to cover tuition and fees for a worthy medical student whose residence is in the state of Washington is offered through the generosity of the Group Health Cooperative of Puget Sound.

DR. EVERETT O. JONES SCHOLARSHIP AND LOAN FUND. Under the terms of a trust created by the late Dr. Everett O. Jones, pioneer Seattle surgeon, the annual net income from the estate is given to the University of Washington to provide scholarships and loans to worthy students in the School of Medicine.

HELEN M. RUSSELL FUND. This fund for medical students was established in 1954 through a bequest of the estate of Helen M. Russell.

SPOKANE EXCLUSIVE PRESCRIPTION PHARMACIES MEDICAL SCHOLARSHIP. An annual scholarship was established by four Spokane pharmacies (Cowen's Pharmacy, Hart and Dilatush, Inc., Miller and Felt Pharmacy, and Whitlock's Pharmacy) to be given to a deserving medical student, preferably from the Spokane area.

EDWARD L. TURNER SCHOLARSHIP AND LOAN FUND. This fund for medical students was established by faculty, students, and friends in 1953 in honor of the late Dr. Edward L. Turner, first Dean of the University of Washington School of Medicine.

JOHN AND MARY WILSON FOUNDATION. Under terms of a trust created by the late Mary Wilson, the net income from the fund is used for scholarships for medical students. Awards are made on the basis of character and scholarship.

NATIONAL FOUNDATION SCHOLARSHIPS. Scholarships for students in the health fields are available through the National Foundation, 800 Second Avenue, New York 17, New York. Application should be made directly.

FELLOWSHIPS FOR THE SUMMER MONTHS

Each year a considerable number of research fellowships carrying stipends of \$500 to \$1200 are available to provide qualified medical students with the opportunity to engage in investigative work during the summer recess. The smaller stipends are frequently supplemented by funds from other sources. In special cases the fellowship may carry on through the year on a reduced stipend.

The available fellowships and their sources are listed below.

From Individuals

WILLIAM B. BRADSHAW TRUST FUND. This fund was established in 1955 to provide an annual fellowship award for research in epilepsy or other disorders of the central nervous system. One fellowship is awarded each year.

JULIA H. LANE FOUNDATION. In 1955, a living trust for medical students of the University of Washington was established to provide funds for summer research fellowships, student loans, counseling service for premedical students, and research in the various medical fields such as rehabilitation, diseases of ageing, etc. Three or four fellowships are awarded each year.

From National Institutes of Health

Forty-five Medical Student Research Training Grant Fellowships: field unrestricted. Fellowships in specialties supported by various training grants.

From Foundations

One Allergy Foundation of America Fellowship: field restricted to allergy; applicants must have completed second year of medicine.

From Pharmaceutical Houses

Two Lederle Medical Student Research Fellowships: field restricted to basic sciences. Two Smith, Kline, and French Fellowships: field restricted to psychiatry.

From Industry

One Tobacco Industry Research Fellowship: field unrestricted.

FELLOWSHIPS FOR A FULL YEAR

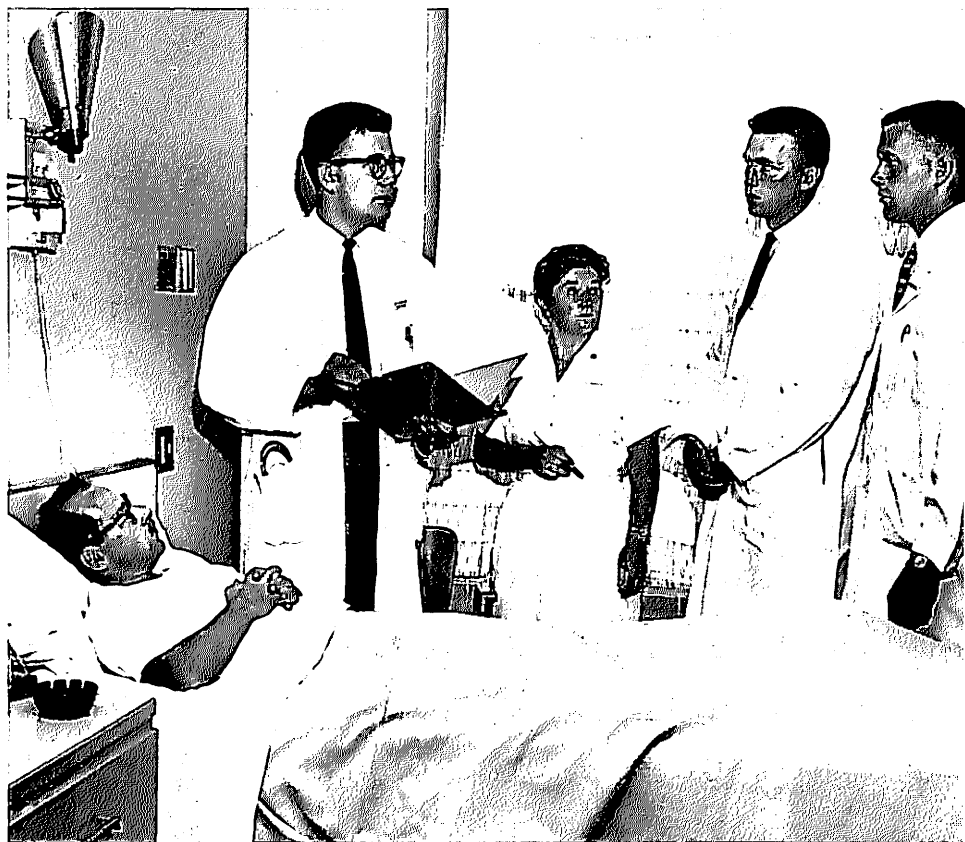
A few suitably qualified students may wish to interrupt their formal medical education to gain experience in research. Such students are often gifted in research and later choose a research career.

In order to encourage such students, a post-sophomore fellowship program has been established. Although the drop-out period permitted is one to three years, most post-sophomore fellows elect a period of one year. Six of these fellowships are available from the Medical Student Research Training Grant. They carry a tax-free stipend of \$3,200 plus an allowance of \$350 for each dependent and tuition.

RESEARCH AND TRAINING GRANTS

Each year grants from various public and private sources are received by individual faculty members and by the School of Medicine to support medical research and training in teaching and research. Extensive training programs, supported largely by the National Institutes of Health, provide training in teaching and research to individuals at the undergraduate, graduate, and postdoctoral levels including both premedical and medical students.

In 1961, grant expenditures in the School of Medicine for research projects totaled \$3,378,000, including \$778,000 in training grants.



THE DEPARTMENTAL PROGRAMS

THE DEPARTMENTAL PROGRAMS

THE SCHOOL OF MEDICINE through its departments and inter-departmental programs offers curricula leading to the degrees of Doctor of Medicine and Bachelor of Science in Physical Therapy and in Occupational Therapy and graduate study leading to the degrees of Master of Science and Doctor of Philosophy in accordance with the requirements of the Graduate School.

DEGREES

DOCTOR OF MEDICINE. Upon completion of the four-year curriculum of the School of Medicine, the M.D. degree is awarded to candidates who have (1) given evidence of good moral character; (2) completed the last two years of medical training as regularly matriculated students in the School of Medicine; (3) satisfactorily completed the required work throughout the course; (4) fulfilled all special requirements; and (5) discharged all indebtedness to the University.

DOCTOR OF MEDICINE WITH HONOR. Those students who meet the above requirements and whose work places them in the highest ten per cent of the graduating class receive a Doctor of Medicine with honor.

BACHELOR OF SCIENCE. A curriculum leading to a bachelor's degree with a major in preventive medicine is offered for students in the College of Arts and Sciences. Professional courses in the curriculum are given by the Department of Preventive Medicine in the School of Medicine. Public health students may choose an option in environmental health, biometry, or health education. The professional courses are described in this Bulletin, along with other courses offered by the Department of Public Health and Preventive Medicine, and the curriculum is described in the *College of Arts and Sciences Bulletin*.

A curriculum leading to a bachelor's degree with a major in microbiology is offered through the College of Arts and Sciences. Microbiology courses are described in this Bulletin, and the curriculum is described in the *College of Arts and Sciences Bulletin*.

BACHELOR OF SCIENCE IN MEDICAL TECHNOLOGY. The medical technology program is designed to train young men and women to be professional workers in hospital, clinic, public health, and medical research laboratories. The prescribed preparatory program consists of three years of regular university training with emphasis upon certain courses in chemistry and biology. This is followed by an eighteen-month

period of full-time instruction and training in medical technology itself. Information concerning curriculum and admission to the program in medical technology may be found under the Department of Pathology (see page 72).

BACHELOR OF SCIENCE IN PHYSICAL THERAPY. A curriculum in physical therapy is offered by the Department of Physical Medicine and Rehabilitation in the School of Medicine. It provides professional training in the basic sciences and the clinical use of accepted physical therapy modalities and procedures. Information concerning admission to physical therapy and its curriculum may be found under the Department of Physical Medicine and Rehabilitation (see page 87).

BACHELOR OF SCIENCE IN OCCUPATIONAL THERAPY. A curriculum in occupational therapy is offered by the Department of Physical Medicine and Rehabilitation in the School of Medicine. It provides professional training in the basic sciences and the clinical use of occupational therapy. Information concerning admission to occupational therapy and its curriculum may be found under the Department of Physical Medicine and Rehabilitation (see page 85).

MASTER OF SCIENCE AND DOCTOR OF PHILOSOPHY. Work leading to master degrees and Doctor of Philosophy degrees is offered, in accordance with the requirements of the Graduate School, in the Departments of Anatomy, Biochemistry, Microbiology, Pathology, Pharmacology, Physiology and Biophysics. A master's degree program is offered by the Department of Surgery.

Students who intend to work toward one of these degrees should confer with the chairman of the department in which they intend to major. Specific requirements for admission to candidacy for advanced degrees are given in the *Graduate School Bulletin*.

LICENSURE

Admission to the practice of medicine in any state is conditional upon the requirements of a state board of medical examiners. Admission to practice in the state of Washington is dependent upon the candidate's having an M.D. degree, completing a one-year rotating internship, and passing the basic science and licensing examinations. For candidates who are already licensed to practice in another state, the licensing examination may be waived by reciprocity with that state or with the National Board of Medical Examiners. In some instances completion of the basic science requirements may be arranged by reciprocity also.

Further information about licensure requirements may be obtained from the State Department of Licenses, Professional Division, Olympia, Washington.

POSTGRADUATE MEDICAL EDUCATION

INTERNSHIPS AND RESIDENCIES

Internships of one-year duration in clinical medicine are available at the University Hospital, the King County Hospital, and the Children's Orthopedic Hospital. All clinical departments participate in the training program for interns in one or more of these institutions. Residency training programs are available in the clinical fields of anesthesiology, cardiology, general surgery, medicine, neurology, neurosurgery, obstetrics, gynecology, orthopedic surgery, pathology, pediatrics, physical medicine and rehabilitation, psychiatry, radiology, and urology. The residency programs vary in duration from two to five years and are integrated, providing for rotation through several of the University affiliated hospitals during this period of training.

POSTDOCTORAL FELLOWSHIPS AND TRAINEESHIPS

Postdoctoral fellowships and traineeships are available in all basic health sciences and clinical departments. They are designed to provide further research and teaching experience for the advanced student who has already obtained his Ph.D. or M.D. degree.

CONTINUING EDUCATION

The School of Medicine functions as a center for continuing medical education for physicians in the region. A series of short courses (in general extending from one day to one week) designed primarily for the general physician is offered at various times throughout the year. The clinical faculty, with the assistance of basic science investigators, plans and gives courses which provide the practicing physician with an opportunity to review fundamental concepts and to go into recent advances in diagnosis and treatment in some depth in specialized fields, such as cardiology, electrolyte and fluid balance, gastroenterology, hematology, infectious diseases, neurology, metabolism, allergy, practical psychiatry, emotional problems in children, gynecologic and obstetric endocrinology, and so forth.

The School cooperates with the Washington State Department of Health and other governmental agencies, physicians' organizations, and voluntary organizations in developing refresher courses in cancer, diseases of the heart, diabetes, alcoholism, safety, and so forth.

Physicians are always welcome to participate in the regular rounds and conferences scheduled in the University Hospital and clinics and the hospitals affiliated with the University in the teaching program.

Refresher courses are extended to other health professions such as medical technologists, physical therapists, and occupational therapists.

Detailed information about such instruction is given in announcements describing the specific courses, the times they are scheduled, the number of students accepted, and the tuition fees.

CONTINUOUS COURSES

The courses listed below are offered throughout the school year.

GROSS ANATOMICAL DISSECTION. Physicians who desire additional individual experience in the dissection of the entire cadaver or parts thereof may make arrangements through the Division of Postgraduate Medical Education and the Department of Anatomy. Laboratory space and anatomical material will be provided (no staff participation).

The fees are in proportion to the amount of gross material supplied.

REVIEW FOR SPECIALTY BOARDS. Physicians who want to review material in preparation for specialty boards may study gross and microscopic material, with descriptions, in the departmental laboratories. Desk space and microscopes are available. This is not a course but a program of individual study, which may be arranged in accordance with individual needs. Inquiries should be directed to the Department of Pathology.

COURSE-NUMBERING SYSTEM

First-year courses for medical students are numbered from 400 to 424, second-year courses from 425 to 449, third-year courses from 450 to 474, and fourth-year courses from 475 to 499. Courses numbered below 400 are given for students in other University curricula, and those numbered 500 and above are open only to students in the Graduate School.

The number in parentheses following the course title indicates the amount of credit each course carries. In most lecture courses a credit is given for each class hour a week during a quarter; laboratory courses generally carry less credit than the work time required. An asterisk in place of a credit number means that the amount of credit is variable. Hyphens between course numbers mean that credit is not granted until the series of courses is completed.

Not all of these courses are offered every quarter. Final confirmation of courses to be offered, as well as a list of times and places of class meetings, is given in the *Yearly Time Schedule*.

BASIC HEALTH SCIENCES

ANATOMY

Chairman: N. B. EVERETT, G511 Health Sciences Building

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 a degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*.

COURSES

- 301 General Anatomy (4)**
Elementary work in human anatomy with lectures, correlated laboratories, and demonstrations. For health education, anthropology, physical education, speech students, and medical technicians; others by permission. Not open to premedical, pre dental, or nursing students.
- Conjoint 317-318 Elementary Anatomy and Physiology (6-6) (See Conjoint Courses, page 78.)**
- 328, 329 Gross Anatomy (6,4)**
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)**
Lecture and laboratory work in microscopic anatomy. For dental students; others by permission.
- 331 Neuroanatomy (2)**
Lecture and laboratory work in neuroanatomy. For dental students; others by permission.
- Conjoint 350-351 Human Function and Structure (6-6) (See Conjoint Courses, page 78.)**
- 401-402-403 Gross Anatomy (8-4-4)** **Bassett**
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)** **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)**
Essentials of microscopic, submicroscopic, and chemical anatomy. Required for first-year medical students. Prerequisite for nonmedical students, permission.
- Conjoint 409 Basis of Neurology (3,5, or 8) (See Conjoint Courses, page 78.)**
- 440 Special Topics in Dissection (1,2, maximum 6)** **Bassett**
Individual work in dissection and study of selected regions of the body. Prerequisite, permission.
- 444 History of the Morphological Sciences (2-3)** **Bodemer**
Growth of animal morphology from antiquity through the nineteenth century, emphasizing development of biological ideas, methodology and other influences contributing to modern disciplines. Prerequisite, permission.
- 498 Undergraduate Thesis(*)**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*)**
For medical students. Prerequisite, permission.
- 505 Advanced General Histology (3)** **Roosen-Runge, Wood**
Comparative study of tissues in selected phyla of vertebrates and invertebrates. Prerequisite, 330, 405 or permission.
- 510 Cytochemistry (4)**
The finer distribution of chemical substances in cells and tissues; methods of cytochemistry and their theoretical basis and validity. Prerequisite, permission.
- 515 Biological X-ray Structure Analysis (3)** **Jensen**
Theory of X-ray diffraction, with emphasis on applications to biological systems. Prerequisite, permission.
- 518 Developmental Neurology (2)** **Bodemer**
Detailed consideration of the problems of development, growth, and regeneration of the nervous system and its functions. (Offered Winter Quarter, 1964.) Prerequisite, Zoology 456 or equivalent.

- 521 Seminar in Molecular and Submicroscopic Anatomy (2)** **Luft, Wood**
The molecular and micellar basis of bodily structure. Prerequisite, permission.
- 525 Brain Dissection (2)** **Everett**
A detailed consideration of the macroscopic anatomy of the human brain. Prerequisite, permission.
- 530 Biological Tracer Techniques (2)** **Everett, Rieko**
Techniques of using radioactive isotopes as tracers in biological research. Prerequisite, permission.
- 531, 532, 533 Electron Microscopy (2-5, 2-5, 2-5)** **Luft**
Theoretical and practical aspects of electron microscopy of biological material, including electron diffraction. Prerequisites, 405-406 or permission.
- 540 Embryology of the Heart (2)** **Blandau**
A detailed study of the embryology of the heart and great vessels during the first eight weeks of life. (Offered Winter Quarter, 1964.) Prerequisite, 404.
- 550 Biological Polarization Microscopy (4)**
Theory, technique, and application of polarization microscopy in biological studies. Prerequisite, permission.
- 555 Mammalian Reproduction (3)** **Blandau, Roosen-Runge**
Fundamental processes of reproductive anatomy and physiology of laboratory animals. Prerequisite, permission.
- 557 Seminar (1-3, maximum 9)**
Prerequisite, permission.
- Conjoint 585 Surgical Anatomy (2-4, maximum 12) (See Conjoint Courses, page 78.)**

COURSES FOR GRADUATES ONLY

- 600 Research (*)**
Prerequisite, permission.
- 700 Thesis (*)**

BIOCHEMISTRY

Chairman: HANS NEURATH, C408 Health Sciences Building

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. The course of advanced study is designed to give each student a firm foundation upon which to base further professional progress. 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. The laboratories of the Department are excellently equipped for modern biochemical research. Students who intend to work toward a degree of Master of Science, or Doctor of Philosophy must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. They must present a bachelor's degree with a major in chemistry or its equivalent, and should have some background in biology. Applicants should communicate with the Chairman of the Department before registration.

COURSES

- 361 Biochemistry (3)**
An introductory one-quarter course in general biochemistry covering basic principles, including the structure and metabolism of biologically important compounds. For students in dentistry, home economics, medical technology, pharmacy, and others. Prerequisite, Chemistry 102 or 232.
- 362 Biochemistry Laboratory (3)**
Laboratory exercises and conferences. Certain experimental aspects of biochemistry of special interest to dental students are considered. For dental students. Prerequisite, 361, which may be taken concurrently.

- 363 Biochemistry Laboratory (2)**
Laboratory exercises in general biochemistry for students in home economics, medical technology, and others by permission. Prerequisite, 361, which may be taken concurrently.
- 401, 402 Biochemistry (5,3)**
Lectures and conferences in the first quarter cover the fundamentals of biochemistry. The second quarter emphasizes metabolism in man. Required for first-year medical students; open to a limited number of students with allied interests. Prerequisites, Chemistry 242 for 401; 401 for 402; and permission.
- 403 Biochemistry Laboratory (3)**
Required for first-year medical students; open to a limited number of students with allied interests. Prerequisites, 401 and 402, and permission.
- 420 Seminar on Biochemistry Literature (1)**
A survey of current biochemical literature. Required of all first-year graduate students in biochemistry.
- 481, 482, 483 Biochemistry (3,3,3)**
Lectures and conferences cover the fundamentals of biochemistry with emphasis upon chemical structure, enzymatic reactions, intermediary metabolism and biochemistry of physiological functions. Recommended for advanced undergraduate or graduate students of chemistry, biochemistry, and various biological sciences. Prerequisites, Chemistry 337 for 481; 481 or permission for 482; 482 or permission for 483; introductory physical chemistry is recommended.
- 484 Biochemistry Laboratory (3)**
Laboratory projects and conferences. For students of biochemistry, chemistry, and various biological sciences. Prerequisites, 481 and 482; the latter course to be taken concurrently.
- 498 Undergraduate Thesis (*)**
For senior medical students. Prerequisite, permission.
- 499 Undergraduate Research (*)**
Investigative work on enzymes, proteins, lipides, intermediary metabolism, physical biochemistry, and related fields. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 520 Seminar (1-3, maximum 9)**
Prerequisite, permission.
- 562 Physical Biochemistry (2)**
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. (Offered 1963-64.) Prerequisites, 483 and Chemistry 357 or permission.
- 563, 564 Proteins (2,2)** **Neurath, Wilcox**
The chemistry and biological activity of proteins are 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. (Offered 1963-64.) Prerequisites, 562 or permission for 563; 563 for 564.
- 565, 566, 567 Enzymes and Enzyme Action (2,2,2)**
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. (Offered 1964-65.) Prerequisites, 483 and Chemistry 357, or permission for 565; 565 for 566; 566 for 567.
- 568 Biochemistry of Lipides (2)** **Hanahan**
The structure and metabolism of sterols, steroids, fatty acids, and the complex lipides will be treated on an advanced level. (Offered Autumn Quarter, 1962.) Prerequisite, 402 or 482 or permission.
- 569 Biochemistry of Nucleic Acids (2)** **Gordon**
Chemistry and structure of nucleic acids, enzymes active on nucleic acids, and the biosynthesis and metabolism of the components of nucleic acids are considered. Current concepts of the replication of nucleic acids including the infectivity of viruses will be discussed. (Offered Winter Quarter, 1963.) Prerequisite, permission.
- 570 Topics in Mammalian Biochemistry (2)** **Krebs**
An advanced treatment of topics related to metabolism in the intact animal; organ function, body pools, hormonal control, energy balance, nitrogen balance, and nutrition. Biochemical changes in certain diseases are discussed. (Offered Spring Quarter, 1963.) Prerequisite, 402 or 482, or permission.
- 583 Advanced Biochemistry Laboratory (4)**
Biochemical preparations and investigations of physical and chemical properties by special techniques, including spectrophotometry, polarimetry, ultracentrifuge, electrophoresis, isotope tracer applications, etc. Prerequisites, 484 and permission.
- 600 Research (*)**
Prerequisite, permission.
- 700 Thesis (*)**

MICROBIOLOGY

Chairman: **CHARLES A. EVANS, G305 Health Sciences Building**

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 leading to a bachelor's degree in the College of Arts and Sciences. The purpose of the undergraduate degree is to prepare the individual to assume the responsibilities of a microbiologist upon graduation and to provide him with the background which will permit him to study for an advanced degree if his capabilities warrant it. Students who intend to work toward a degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. The fields of specialization for advanced degrees are general and medical bacteriology, immunology, parasitology, medical mycology, virology, and physiology of bacteria. Course requirements vary according to the field chosen.

COURSES

- 201 Topics in Microbiology (3)** **Spotts**
Selected topics in microbiology: a course for nonscience majors based on topics of special value for understanding the nature of science, biological phenomena of broad significance, or the nature of microbial processes to man.
- 235 Microbiology for Students of Dentistry (7)** **Holland**
Lecture and laboratory introducing the student to the principles of microbiology. Infectious microorganisms and the flora of the mouth are emphasized. Required for second-year dental students. Students who have had previous training in microbiology may substitute a research problem for the laboratory work. Prerequisite, for nondental students, permission.
- 301 General Microbiology (5)** **Nester**
Microorganisms and their activities. For students of pharmacy, dental hygiene, nursing, home economics, education, and others interested in a one-quarter survey course, with minimal training in chemistry. Prerequisite, two quarters of general chemistry.
- 320 Media Preparation (*, maximum 5)** **Duchow**
Practical work in the preparation of culture media and solutions. Nutritional requirements of microorganisms are considered. For students expecting to enter vocations involving laboratory work with bacteria. Prerequisites, 301 or equivalent and permission.
- 322 Applied Bacteriology (5)** **Sherris**
Practical experience in a public health or clinical laboratory; fifteen hours per week. For students majoring in medical microbiology. Prerequisite, 441-442 or equivalent, and permission.
- 400 Fundamentals of Bacteriology (*, maximum 6)** **Douglas, Ordal**
Basic bacteriology; comparative morphology, taxonomy, physiology of bacteria. For students majoring in microbiology and others interested chiefly in the biological and chemical aspects of microbes. Required for students majoring in microbiology. Recommended for graduate students in biochemistry or biology. Prerequisites, 10 credits in organic chemistry, 10 credits in botany or zoology, and permission.
- 430 Microbial Metabolism (3 or 5)** **Douglas**
The major patterns of fermentative and oxidative metabolism of yeasts and bacteria. For students majoring in microbiology or food science. Prerequisites, 400 or 301, and Chemistry 221 and 232.
- 441-442 Medical Bacteriology, Virology, and Immunology (*, maximum 5-, *, maximum 5)** **Evans, Groman, Henry, Sherris, Weiser**
441- includes a brief survey of general bacteriology and virology; 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 5 credits. Required for second-year medical students. Open to upper-division undergraduates and graduate students. Prerequisites, 10 credits in organic chemistry, 10 credits in botany or zoology, and permission.
- 443 Medical Mycology (*, maximum 2)** **Henry**
Consideration of morphology, physiology, immunology, and epidemiology of the medically important fungi. Offered three weeks of quarter. Required for second-year medical students. Open to upper-division undergraduates and graduate students. Prerequisites, 441-442 or equivalent, and permission.

- 444 Medical Parasitology (*, maximum 4)** **Groman**
Consideration of medically important parasites with emphasis on their biology in relation to the production and prevention of disease. Offered eight weeks of quarter. Required for second-year medical students. Open to upper-division undergraduates and graduate students. Prerequisites, 441-442 or equivalent, and permission.
- 498 Undergraduate Thesis (*)**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*)**
Specific problems in industrial, medical, and general microbiology. Prerequisites, senior standing and permission.

COURSES FOR GRADUATES ONLY

- 510 Physiology of Bacteria (3)** **Whiteley**
Fundamental physiological and metabolic processes of bacteria. (Offered alternate years; offered 1963-64.) Prerequisite, permission of instructor.
- 520 Seminar (1)**
- 530 Comparative Morphology and Physiology of the Higher Bacteria (4)** **Ordal**
Enrichment, isolation, and comparative morphology and physiology of selected representatives of the following groups of bacteria: Nitrobacteriaceae, Rhodobacteriaceae, Caulobacteriaceae, Actinomycetales, Myxobacteriales, Chlamydobacteriales, Caryophanales, and Borrelomycetaceae. (Offered alternate years; offered 1963-64.) Prerequisite, permission.
- 540 Virology (*, maximum 4)** **Evans, Groman, Holland**
Prerequisite, permission. (Offered alternate years; offered 1963-64.)
- 550 Advanced Immunology (*, maximum 4)** **Weiser**
(Offered alternate years; offered 1962-63.) Prerequisites, 441- and permission.
- 600 Research (*)**
- 700 Thesis (*)**

PATHOLOGY

Chairman: EARL P. BENDITT, D505 Health Sciences Building

Pathology is the study of disease processes. The functional manifestations of disease are the expression of underlying morphological and chemical aberrations. Hence, the study of disease involves the application of a wide variety of techniques such as electron microscopy, histo- and cytochemistry, and others, along with the use of advanced concepts of modern biological investigation.

Courses are offered for medical students, dental students, and other students of the health sciences. A program leading to the degree of Doctor of Philosophy in Experimental Pathology is offered through the Graduate School to qualified individuals. Postdoctoral training for qualified persons is also offered in Pathology.

A curriculum leading to the degree of Bachelor of Science in Medical Technology is provided in the Department of Pathology. This curriculum is offered through the College of Arts and Sciences.

COURSES

- 231 General Pathology (5)** **Sreebny, Ross**
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 gross and microscopic anatomy, physiology, and biochemistry is essential to understand 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.
- 310 General Pathology (2)** **Wiegenstein**
Study of causes, processes, and effects of important diseases. Lectures, demonstrations, and discussions. A reasonable knowledge of anatomy, histology, and physiology is required. For students of dental hygiene, physical therapy, and medical technology; others by permission.
- 321 Medical Technology (5)** **Smuckler, Lagunoff, Hougie**
The first half of the course is devoted to the principles and practice of histological, histochemical and electron microscopic tissue technic; the second half is devoted to hematology. (Offered Summer Quarter only.) Prerequisite, permission.

- 322- Medical Technology (6-)** **Smuckler**
Clinical Chemistry I. Completion of three years prescribed curriculum.
- 323- Medical Technology (-6-)** **Smuckler**
Clinical Chemistry II. Prerequisite, permission.
- 424- Medical Technology (-6-)** **Smuckler**
Clinical Chemistry III, assigned projects. Prerequisite, permission.
- 425 Medical Technology (-6)** **Smuckler**
Internship I. Prerequisite, permission.
- 426 Medical Technology (16)** **Smuckler**
Internship II. Prerequisite, permission.
- 430 Autopsy Participation and Review (*)**
Course consists of medical student participation and review of autopsy cases. Autopsies will be done at one of the four hospitals: University Hospital, King County, Veterans Administration, and Children's Orthopedic. Elective open to second-year medical students.
- 431 Microscopic Autopsy Review (*)**
The slides from interesting autopsies will be reviewed by the students individually and then with the instructor. Clinical correlation will be stressed. Elective open to second-year medical students. Limited to ten students.
- 432 Cardiovascular Pathology Conference (*)** **Reichenbach**
This course consists of two parts, a combined medical, surgical, and radiological conference on selected cardiovascular topics by members of the faculty or guest speakers, followed by laboratory review of gross and microscopic cardiovascular pathology. Elective open to first- and second-year medical students. Limited to two students.
- 441- General Pathology (6-)** **Benditt, Prehn**
The purpose of this course is to introduce the student to the basic concepts and the principal pathologic processes. This is achieved by the combination of lectures, laboratory, and demonstrations of human pathologic material and experimentally produced disease. In addition, participation in autopsies by small groups of students is part of the program. This and a demonstration of pathologic specimens in the gross is programmed primarily in the one afternoon session. For medical students; graduate students by permission. A suitable knowledge of anatomy, including histology, physiology, and biochemistry is required. Autopsy session is not required for graduate students. For second-year medical students; graduate students by permission.
- 442-443 Special Pathology (-5-5)** **Mottet, Alvord**
Presents a coherent, systematic survey of the pathological processes affecting each organ system. A detailed review of specific diseases is correlated with basic science information. An attempt is made to present the biology of disease as it affects man. Prerequisite, 441- or equivalent.
- Conjoint 446-447 Laboratory Procedures (4-2) (See Conjoint Courses, page 78.)**
- 470 Surgical Pathology (*)** **Mottet**
Students participate in this course during the period in which they are taking the regular course work in surgery. The objective is to demonstrate fresh gross surgical material and to review microscopic sections from the more interesting material. For third-year medical students; graduate students by permission.
- 476 Clinical Pathological Conference (*)**
Interesting, unusual, or provocative diagnostic cases are taken from the files of the various teaching hospitals each week for clinical review, discussion, differential diagnosis, and correlation with the pathological findings. For third- and fourth-year medical students; graduate students by permission.
- 480 Autopsy Pathology (*)** **Mottet**
Advanced course in autopsy technique. Gross and histologic study of postmortem material. Surgical pathology and clinical pathology. Attendance at and participation in clinicopathological conferences and other hospital activities: King County, Children's Orthopedic, Veterans Administration, and University Hospitals. Elective open to senior medical students.
- 483 Neuropathology (*)** **Alvord, Shaw**
Gross and microscopic study of selected autopsied cases, conference discussions, review of study sets, and experimental project. Elective open to first-, second-, and fourth-year medical students.
- 498 Undergraduate Thesis (*)**
Prerequisite, permission. Elective for medical students.
- 499 Undergraduate Research (*)**
Prerequisite, permission. Elective for medical students.

COURSES FOR GRADUATES ONLY

- 500 Principles of Pathology (4 or 6)**
The material covered is concerned primarily with the fundamental alterations in tissues and organs in disease processes and the results of these changes. This course is open to selected graduate students in the biological sciences by permission.
- 503 Enzymatic Histochemistry (2-3)** **Benditt, Lagunoff**
Development of basic concepts with technical and experimental applications. Elective open to medical students and graduate students. Prerequisite, permission. Limited to six students. Offered alternate Winter Quarters; offered Winter, 1963.

- 504 Determinative Histochemistry (2-3)** **Lagunoff**
Principles and techniques of histochemical identification of proteins, polysaccharides and lipids. Prerequisite, permission. Elective open to medical students and graduate students. Offered alternate Winter Quarters; offered Winter, 1964.
- 520 Seminar (2, maximum 10)**
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 Chairman.
- 521 Seminar in Contemporary Professional Literature (1)**
A review of current literature as applied to the field of pathology. Discussion of presentations by senior members of the Department. Prerequisite, permission of Chairman.
- 551 Experimental Pathology (2-5, maximum 8)**
The purpose of the course is to introduce the student to the fundamental problems in experimental pathology. Both animal experiments and material derived from human disease are utilized. Techniques applicable to particular problems are illustrated. The relationship of alterations and structure, chemistry, and function are emphasized. Such problems as cellular alterations in disease from the fine structure and molecular standpoint, immunology and its relationship to carcinogenesis, allergic encephalitis, mechanisms of inflammation, pathogenesis of arteriosclerosis and other similar problems are covered. Open only to graduate students, fellows, or trainees. Prerequisite, 231 or 441, and/or permission of Chairman.
- 552 Clinical Pathology (2-5, maximum 20)**
A study of the principles and techniques of the usual clinical chemical procedures or of the tests used to study diseases of the hematopoietic system. The control of precision and accuracy is stressed, as is the interpretation of the results obtained. The work in either biochemistry or hematology may be taken in the appropriate sequence. For graduate students and fellows who are assigned to the laboratory in clinical biochemistry.
- 553 Pediatric Pathology (*, maximum 10)**
Assignments according to need and background. By arrangement, for fellows and graduate students.
- 600 Research (*)**
Selected problems arranged in accordance with the student's needs. Prerequisite, permission of Chairman.
- 700 Thesis (*)**

CURRICULUM IN MEDICAL TECHNOLOGY

THE PREPROFESSIONAL PROGRAM

The program of instruction in medical technology is supervised by the Department of Pathology in the School of Medicine. A preprofessional program in medical technology is supervised by the College of Arts and Sciences during the first two years. Students are referred to the *College of Arts and Sciences Bulletin* for course descriptions and credits and for an explanation of the University requirements for English composition, health education, and physical education. The Advisory office of the College of Arts and Sciences is in 121 Miller Hall. Beginning with the Autumn Quarter of the third year advising will be transferred to the Department of Pathology in the School of Medicine.

THE PROFESSIONAL PROGRAM

At the end of the Winter Quarter of the third year, students apply for admission to the eighteen-month period of fulltime instruction in medical technology. During this period they register for the courses Pathology 321, 322, 323, 424, 425, and 426, Medical Technology. The first twelve months of this period consists of full-time classroom and laboratory instruction offered in the School of Medicine. This is followed by approximately six months of full-time instruction and supervised experience in affiliated hospital and public health laboratories.

This program is approved by the Council on Medical Education and Hospitals of the American Medical Association. Graduates are eligible to be examined by the Board of Registry of the American Society of Clinical Pathologists. They are urged to take this examination and become Registered Medical Technologists.

BACHELOR OF SCIENCE IN MEDICAL TECHNOLOGY

Students should choose their electives in order to satisfy the college group requirements. A suggested sequence of required courses is as follows:

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 140	3	Chem. 150 General	4	Chem. 160 General	3
Math 105 General or	5	Chem. 151 Lab	2	Chem. 170 Qual. Anal.	3
Math 155 Algebra	3	Zoology 111 General	5	Zoology 112 General	5
	<hr/> 6 or 8		<hr/> 11		<hr/> 11

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 221 Quant. Anal.	5	Chem. 231 Organic	3	Chem. 232 Organic	3
	<hr/> 5	Chem. 241 Org. Chem		Chem. 242 Org. Chem.	
		Lab.	2	Lab.	2
			<hr/> 5		<hr/> 5

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Micro. 441- Med. Bact. ...	5	Micro. -442 Med. Bact. ...	5	Micro. 443 Mycology ...	2
	<hr/> 5		<hr/> 5	Micro. 444 Parasit.	4
				Biochem. 361 Biochem. ...	3
				Biochem. 361 Biochem. ...	
				Lab.	3
					<hr/> 12

It is suggested that students might elect such courses as Anatomy 301, Pathology 310, and Chemistry 335, 336 and 337, or Biochemistry 481, 482, 483, in place of their respective courses in chemistry and biochemistry. Permission is required for courses in biochemistry and microbiology.

Fourth Year

During the 18-month period of specialized training the student becomes familiar with the common clinical laboratory procedures and with the interpretation of the results obtained. They learn the tests used in the laboratories of clinical chemistry, hematology, serology, urinalysis, microbiology and pathology. Special programs, such as Cytology, Histochemistry, and Electron Microscope Technique, are available as areas of specialization in the last year of training. Further information can be obtained from the Department of Pathology.

PHARMACOLOGY

Chairman: JAMES M. DILLE, F421 Health Sciences Building

Pharmacology deals with the mechanisms whereby modification of physiological function is produced by drugs, and with 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 a degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. They must present a bachelor's degree with a major in any of the sciences, such as zoology, chemistry, physics, pharmacy, psychology, or physiology. Applicants should communicate with the Chairman before registration.

COURSES**234 General Pharmacology (4)**

The action of drugs on physiological functions, 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 General Pharmacology (4-5)

The action of drugs on physiological function, with special reference to the use of drugs in the treatment of disease. Toxicological manifestations of excessive doses of drugs; management and treatment of these poisonous effects. Laboratory experiments and demonstrations. For pharmacy students.

442-443 General Pharmacology (5-4)

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.

498 Undergraduate Thesis (*)

For medical students. Prerequisite, permission.

499 Undergraduate Research (*)

Participation in departmental research projects. For medical students. Prerequisite, permission.

COURSES FOR GRADUATES ONLY**507 Journal Seminar (*, maximum 6)**

Presentation of comprehensive reports on recent medical and scientific literature in fields of current importance. Prerequisites, -443 and permission.

N508 Research Seminar (0)

Research progress reports and reports on results of completed research. Prerequisites, -443 and permission.

509 Survey of Pharmacological Techniques (3)**Dille**

Principles and specific laboratory techniques for the evaluation of drug effects on the basic physiological systems. Elective for second-year medical students. Prerequisites, 442-443 or 301-302 or 234 and permission.

510 Survey of Pharmacological Techniques (3)**Dille**

Continuation of Pharmacology 509. Prerequisite, 509. Open to medical students.

511 Special Pharmacological Techniques (2)

A laboratory treatment of biochemical, biophysical, and surgical approaches employed in pharmacological investigation. Elective for second-year medical students. Prerequisites, 442-443 or 301-302 or 234 or permission.

525 Card ovascular Pharmacology (2)*West**

A didactic consideration of drug action on electrical and mechanical events in the heart and vascular system with clinical correlation. Open to medical students. Prerequisites, 442-443 or 301-302 or 234 and permission. Offered alternate year.

526 Autonomic Pharmacology (2)**Elder**

An advanced treatment of pharmacologic effects on storage, release and action of autonomic transmitter substances. Open to medical students. Prerequisites, 442-443 or 301-302 or 234 and permission. Offered alternate years.

527 Biochemical Pharmacology (2)**Horita**

Biochemical considerations of the mechanisms of action, structure-activity relationships, and metabolism of pharmacologic agents. Open to medical students. Prerequisites, 442-443 or 301-302 or 234 and permission. Offered alternate years.

528 Central Nervous System Pharmacology (2)**Sabawala**

Concepts of the modification of the functions of the central nervous system by drugs. Open to medical students. Prerequisites, 442-443 or 301-302 or 234 and permission. Offered alternate years.

529 Psychopharmacology (2)**Holliday**

The principles and methods of determining the action of drugs modifying human behavior. Open to medical students. Prerequisites, 442-443 or 301-302 or 234 and permission. Offered alternate years.

530 Gastrointestinal Pharmacology (2)**Magee**

A functional basis for the effects of drugs on mechanical and secretory processes within the gastrointestinal tract. Open to medical students. Prerequisites, 442-443 or 301-302 or 234 and permission. Offered alternate years.

531 Toxicology (2)**Loomis**

A descriptive treatment of harmful effects of chemicals on biological tissue and chemical analytical aspects of forensic medicine. Open to medical students. Prerequisites, 442-443 or 301-302 or 234 and permission. Offered alternate years.

600 Research (*)

Participation in research projects already set in progress by members of the Department staff. Directed experience in research investigation. Prerequisites, -443 and permission.

700 Thesis (*)**PHYSIOLOGY AND BIOPHYSICS**

Chairman: THEODORE C. RUCH, G405 Health Sciences Building

Physiology deals with the processes, activities, and phenomena incidental to and characteristic of life and living organisms. Courses in this field are given for medical, dental, pharmacy, and nursing students, and for graduate students.

In biophysics the emphasis is on the physical aspects of organs and systems,

studied by the instruments and methods of thinking used by physicists. A bachelor's degree in physical science or equivalent is required for students specializing in biophysics.

Students who intend to work toward a degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. Students with a bachelor's degree in zoology, psychology, chemistry, engineering, physics, or with an M.D. degree are acceptable as candidates for M.S. and Ph.D. degrees.

COURSES

- 123 Human Physiology (6)** **Woodbury**
Lectures, laboratories, demonstrations, and small group conferences in human physiology stressing applications to dentistry. For dental students.
- Conjoint 317-318 Elementary Anatomy and Physiology (6-6)**
(See Conjoint Courses, page 78.)
- Conjoint 350-351 Human Function and Structure (6-6)** (See Conjoint Courses, page 78.)
- 360 General Human Physiology (5)**
Lecture, laboratory, and laboratory conference instruction in the basic principles and basic laboratory techniques of physiology. For students of pharmacy. Prerequisites, Zoology 112, Chemistry 242 and 333, Physics 102 and 108, Microbiology 301.
- 401-402 Advanced Human Physiology (7-7)** **Patton**
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 409 Basis of Neurology (3,5, or 8)** (See Conjoint Courses, page 78.)
- 411 Introductory Biophysics (4)** **Brown, Woodbury, Young**
A general discussion of physical concepts in physiology including membrane phenomena, control systems, and energy exchange. Prerequisite, B.S. in physical science or permission.
- 416 Biophysics (5)** **Woodbury, Young**
Study of bio-electric phenomena in mathematical and physical terms; volume conductors, simple circuit theory, membrane and electrode potentials, and elementary servomechanism theory. For students with biological background. Prerequisite, permission.
- 424 Introductory Membrane Potentials (3)** **Woodbury**
Ionic basis of electrical activity in excitable tissues. Membrane structure, capacity, resistance. Ion distributions, permeation, active sodium potassium transport. Cable and excitable properties of membrane. Prerequisite, permission.
- 491 Medical Physics (2)** **Brown, Young**
Review of physical principles applicable to medicine. Elective for medical students; graduate students by permission.
- 492 Selected Topics in Physiology and Biophysics (2)**
Seminars or research in collaboration with a faculty member on topics selected by individual arrangement. Elective for medical students; graduate students by permission.
- 493 Techniques in Cardiopulmonary Diagnosis (2)** **Rushmer**
Application of physiological principles in analysis of cardiopulmonary function. Elective for medical students; graduate students by permission.
- 494 Neurological Study Unit (2)** **Physiology, Neuroanatomy, Neurology, Neuropathology, Neurosurgery, and Psychiatry**
Faculty and student discussion of neurological topics illustrated with clinical cases or demonstrations. Elective for medical students; graduate students by permission.
- 498 Undergraduate Thesis (*)**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*)**
For medical students. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 515-516-517 Physiological Proseminar (5-5-5)**
A guided survey of the experimental literature of major topics in physiology. Course conducted as seminar with oral analysis of assigned papers and topics. Prerequisites, 401-402, Conjoint 409, and permission.
- 520 Physiology Seminar (2-5)**
Selected topics in physiology. Prerequisite, permission.
- 521 Biophysics Seminar (2-5)** **Young**
Selected topics in biophysics. Prerequisite, permission.
- 522 Biophysics of External Respiration (2-5)** **Young**
Viscous and elastic properties of chest-lung system; flow of gases in tubes. Generalized alveolar air equations. Principle of infrared absorption and emission type of rapid gas analyzers. Prerequisite, permission.

- 523 Heat Transfer and Temperature Regulation (2-5)** Young
Prerequisite, B.S. in physical science or permission.
- 524 Advanced Membrane Potentials (3)** Woodbury
Quantitative analysis of electrical activity in nerve. Active sodium-potassium transport. Ionic flux equations. Conductance changes. Calculation of the action potential. Prerequisite, permission.
- 525, 526, 527 Advanced Mammalian and Clinical Physiology (2-5, 2-5, 2-5)**
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.
- 528 Physiological Control System (2-5)** Young
Theories of nonlinear mechanics and their applications to physiological control systems. Prerequisite, B.S. in physical science or permission.
- 529 Motoneuron Physiology (4)** Towe, Woodbury
Electrical properties of surface membrane; excitatory and inhibitory reactions and their ionic mechanisms; properties of the spike potential; interaction of synaptic responses. Prerequisites, 515-516-517, 424, and permission.
- 530 Synapse and Reflex Seminar (4)** Patton
A guided survey of the literature pertaining to reflex and synaptic physiology. Course is conducted as seminar with students giving oral reports on assigned topics. Prerequisite, 401-402, 515-516-517, and permission.
- 532-533 Principles of Physiological Instrumentation (4-4)** Young
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.
- 534 Applied Physiological Instrumentation (2-5)**
Study and use of research instruments applicable to the nervous system (stimulators, amplifiers, and oscilloscopes), the cardiovascular system (cinéfluorograph, electro- and stetho-cardiograph, oximeter, strain gauge manometers, etc.), and respiratory and metabolic activity (flow meters, minute volume integrator, infrared and paramagnetic gas analyzers, cardiotachometer, thermocouples, gradient calorimeter). Prerequisites, 532 and permission.
- 535 Operative Techniques in Neurophysiology (2-5)** Patton, Smith
Deafferentation, decerebration, and Sherrington reflex preparation, osteoplastic bone flap, Horsley-Clarke apparatus, and reconstruction of lesions; primate colony and operating room management. Prerequisite, permission.
- 536 Behavioral Techniques in Neurophysiology (2-3)** Smith, Towe
Study and use of behavioral methods applicable to nervous system studies, quantification of activity and physiological variables, interpretation of neural lesions and chronic electrode implants. Prerequisite, permission.
- 550 Cortical Potentials (4)** Towe
Properties of continuous and evoked cortical potentials and their interactions. Relationship of cortical unit activity to cortical potentials. Prerequisites, 515, 519, and permission.
- 600 Research (*)**
Prerequisite, permission.
- 700 Thesis (*)**

PREVENTIVE MEDICINE

Chairman: J. THOMAS GRAYSTON, B506 Health Sciences Building

Preventive Medicine is concerned with the means of spread and control of communicable disease, the application of statistics to biological problems, and the nature and control of environmental factors affecting human health.

Courses are provided for medical and nursing students. In addition, the department offers courses for a four-year curriculum leading to a Bachelor of Science degree in the College of Arts and Sciences (see the *College of Arts and Sciences Bulletin*).

COURSES

- 323 Introduction to Public Health Principles and Practices (3)** Wilkey
A survey of principles, practices, and the agencies concerned. This basic course is required of all preventive medicine majors.
- 410 Preventive Medicine, Implications for Nursing (2)** Merritt
Statistics, epidemiology, public health administration, and certain public health programs are considered in further detail than in 323. Required of senior nursing students in the basic nursing curriculum. Prerequisite, 323.
- 420 Introduction to Epidemiology and Biostatistics (3)** Alexander, Bennett
Descriptive, analytic, and experimental epidemiology as presented in examples from the field of communicable disease. Includes descriptive statistics as applicable in epidemiology. Prerequisites, 323, Microbiology 301 or permission, or graduate standing.

- 422 Introduction to Environmental Health (3)** **Hatlen**
Relationship of man to his environment, how it affects his physical well-being, and what he can do to influence this environment for the protection of his health. Emphasis on environmental factors involved in transmission of communicable diseases and hazards due to exposure to chemical and physical materials in our environment. Prerequisite, 323 or 461 or permission, or graduate standing.
- 424 Public Health Programs (3)** **Martin, Merritt**
Current problems and programs of major concern in the following areas: maternal and child health, accident prevention, mental health, chronic diseases, and medical economics. Prerequisite, 323 or 461 or permission, or graduate standing.
- 425 Introduction to Preventive Medicine (1)** **Alexander, Bennett, Grayston**
Lectures on principal communicable diseases of man, with emphasis on methods for their control. Required for second-year medical students.
- 440 Water and Waste Sanitation (4)** **Hatlen**
Advanced study of the sanitary control of water supplies and sewage and refuse disposal, with emphasis on the knowledge and skills utilized by the sanitarian. Prerequisite, 422 or permission.
- 441 Milk and Food Sanitation (4)** **Hatlen**
Advanced study of the sanitary control of the production, processing, and distribution of milk and food. Prerequisite, 422 or permission.
- 442 Vector Control and General Sanitation (3)** **Hatlen**
Advanced study of the control of rodents and arthropod vectors of disease; the control of environmental utilities, including plumbing, swimming pools, bathing beaches, recreation areas, housing, schools, and other topics of general sanitation. Prerequisite, 422 or permission.
- 450 Measurement and Control of Air Pollution (2)** **Broyss**
Description of methods for air pollution research and control, including field survey techniques, stack sampling, continuous monitoring, and use of control equipment. Administrative problems are also discussed. For preventive medicine majors; others by permission.
- 453 Industrial Hygiene Techniques (3)** **Broyss**
Field and industrial laboratory testing procedures for chemical and physical hazards as employed by industrial health workers. Prerequisite, permission.
- 460J Field Training in Health Education (5)**
Four and one-half 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. (Offered Summer Quarter only.) Prerequisite, permission.
- 461 School and Community Health Programs (5)** **Mills, Reeves**
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. Prerequisite, junior standing.
- 463 Community Organization for Health Education (3)**
Trends and problems in community health education, including community organization. Prerequisite, 323 or 461, or permission.
- 464 Community Health Education Techniques (3)**
Practice in the techniques of working with groups; preparation and use of visual education materials. Prerequisite, 323 or 461, or permission.
- 470 Introduction to Biometry (3)** **Bennett**
Statistical methods used in the compilation, interpretation, and presentation of vital data. Prerequisite, permission.
- 472 Applied Statistics in Health Sciences (2-4)** **Bennett**
Application of statistical techniques to biological and medical research; design and interpretation of experiments. Prerequisite, permission.
- 475 Clerkships and Seminar (*)**
A half-term of case-oriented study of the management of complex health problems, emphasizing the utilization of community health agencies in the care of patients. Required for fourth-year medical students.
- 476 Sample Survey Techniques (3-5)** **Bennett**
Methods appropriate for conducting and analyzing results of sample surveys. (Offered when demand is sufficient.) Prerequisite, permission.
- 477 Statistical Methods in Biological Assay (3)** **Bennett**
Methods appropriate to estimation of the dose-effect relationship; biological standardization; microbiological assay; design of experiments. (Offered when demand is sufficient.) Prerequisite, permission.
- 478 Practice of Epidemiology (3)**
Participation in the work of the Division of Acute Communicable Disease Control of the Seattle-King County Department of Public Health, including field investigations of important or unusual disease outbreaks. Senior medical student elective.
- 480 Public Health Problems (*, maximum 6)**
Special assignments in the field of public health. Prerequisite, permission.
- 482 Field Practice in Public Health (2-6)**
An assignment to a local health department for supervised application of public health practices. Prerequisite, permission.

- 483 Field Practice in Public Health (6)**
An assignment to a local health department for practice in program planning. Prerequisite, permission.
- 484 Field Practice in Public Health (3)**
An assignment to a local health department for training in the utilization of community resources. Prerequisite, permission.
- 490 Public Health Administration (3)** **Bucove**
Public health administration, including philosophy, legal aspects, program and fiscal planning, personnel management, and public relations. Prerequisite, 420, 422, 424, or permission.
- 492 Problems in International Health (2)**
Conference and discussion based on a survey of international health organizations and the services offered by regions and countries. Prerequisite, permission.
- 498 Undergraduate Thesis (*)**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*)**
Prerequisite, permission.

CONJOINT COURSES AND MEDICAL PRACTICE

CONJOINT COURSES

Conjoint courses are offered cooperatively by departments in the School of Medicine. They are designed to integrate 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

- 317-318 Elementary Anatomy and Physiology (6-6)** **Skahen**
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 and Biophysics. For nursing and dental hygiene students; others by permission only.
- 350-351 Human Function and Structure (6-6)** **Skahen**
An intermediate course integrating anatomy, histology, physiology, and biochemistry of the human body. Offered by the Departments of Anatomy and Physiology and Biophysics. For master's degree candidates in psychology and other students not majoring in anatomy or physiology. Prerequisite, permission.
- 490 Public Health Administration (3)** **Bucove**
An advanced course in the anatomy of the central nervous system and its correlation with neurophysiology. Offered by the Departments of Anatomy and Physiology and Biophysics. Required for first-year medical students. Prerequisite for graduate students, permission.
- 426-427 Introduction to Physical Diagnosis (4-9)**
Introduction to clinical medical sciences. The student is taught the techniques of interview, 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, Physical Medicine and Rehabilitation, Psychiatry, and Surgery. Required for second-year medical students.
- 446-447 Laboratory Procedures (4-2)**
Lectures on the principles of some of the common clinical laboratory tests and on their use in diagnosis and in following the course of therapy. The laboratory work demonstrates technical details, sources of error, and relative accuracy of certain of these tests, and it provides an opportunity for the students to perform some of the tests they will use in subsequent ward duty. Offered by the Departments of Pathology and Medicine. Required for second-year medical students. Prerequisite for graduate students, permission.
- 585 Surgical Anatomy (2-4, maximum 12)**
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, permission.

MEDICAL PRACTICE

COURSES

- 401 History of Medicine (*)** **Haviland**
An introduction to the historical background of medicine including ethics and economics following orientation in the field; student and faculty participation in informal seminar-type presentation and discussion is emphasized. Open to all medical students.

- 475 Externship in General Practice (*)** **Aagaard**
A period of two to six weeks of work with a selected general practitioner to give a firsthand view of the interests and problems presented in medical practice. Open to fourth-year medical students.
- 481 Medical Ethics, Economics, and Legal Medicine (*)** **Aagaard**
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.
- 483 Hospital Extension Service (*)**
Students are assigned home-care cases for which they are responsible under the guidance of the instructor. Open to third- and fourth-year students.

CLINICAL MEDICAL SCIENCES

ANESTHESIOLOGY

Chairman: JOHN J. BONICA, RR205 University Hospital

The Department of Anesthesiology has broad responsibilities for the teaching of medical students throughout their four years of undergraduate training. Members of the Department participate in the teaching of applied anatomy to students during their first year. During the second year members of the Department who also have joint appointments in physiology and pharmacology participate in teaching of students in these areas. During the clinical years the students are taught the basic principles of anesthesiology, including artificial respiration and resuscitation. Instruction is provided by means of lectures, conjoint courses, and clinical clerkships. In addition the Department carries out a very active training program for interns and residents in anesthesiology and affords residents in surgery, obstetrics, and oral surgery some experience in anesthesiology.

COURSES

- 480 Clinical Clerkship (*)** **Bonica**
Each fourth-year medical student is assigned to anesthesiology for a period of four weeks, half days. During this time he participates actively in the management of surgical, obstetric, and medical patients who require anesthesiologic care. The various techniques of general, regional, and psychologic analgesia and anesthesia are demonstrated in the operating room, and subsequently the student carries out these various procedures under the supervision of the staff. Laboratory demonstrations are used to emphasize certain important anatomic, physiologic, and physical problems that may arise during clinical anesthesia. The student participates in the pre- and post-anesthetic management of patients. Required for fourth-year medical students.
- 486 Externship in Anesthesiology (*)** **Bonica**
The student is given an opportunity to study and obtain experience in clinical anesthesia in depth. During the period of six weeks he obtains experience in all techniques of inhalation anesthesia, regional anesthesia, intravenous anesthesia, and the pre- and post-anesthetic care of surgical and obstetric patients and in the management of special anesthesiologic problems encountered in general surgery, orthopedics, neurosurgery, urologic surgery, pediatric surgery, cardiovascular surgery, and obstetrics. He is also given ample opportunity to participate in the care of patients with special medical problems such as intractable pain, chronic pulmonary insufficiency, and peripheral vascular disease. Elective for medical students. Prerequisite, permission.
- 498 Undergraduate Thesis (*)**
For medical students. Prerequisite, 499.
- 499 Undergraduate Research (*)**
Specific research problems relating to pulmonary, cardiovascular, renal, and central nervous system functions and their alteration by anesthetic agents and techniques. For medical students. Prerequisite, permission.
- 520 Anesthesiology Seminar (5)** **Bonica**
Anesthesiology conferences, lectures, and symposia on advanced anesthesiologic topics.

MEDICINE

Chairman: ROBERT H. WILLIAMS, BB557 University Hospital

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.

range of medical problems that are responsible for the hospitalization of infants and children. In the fourth year students may take advantage of an advanced clinical clerkship or sub-internship during the elective period, and receive conjoint instruction in pediatrics throughout much of the year.

Instruction is provided by means of conjoint courses, lectures, and clinical clerkships.

COURSES

401 Samples of Clinical Medicine (*)

Elective course in which select patients will be shown to illustrate problems in clinical

COURSES

404 Human Growth and Development (*)

Deisher

An opportunity is provided to observe and closely follow an infant and his family throughout one or two years. The influence of constitutional and environmental factors on growth and development will be demonstrated in individual interviews and group discussions with members of the pediatric staff. Open to first- and second-year medical students.

Conjoint-426-427 Introduction to Physical Diagnosis (4-9) (See Conjoint Courses, page 78.)**465 Clinical Clerkships (*)**

An eight-week general pediatrics inpatient and outpatient clerkship. Students are divided between the pediatric facilities at the University Hospital and the Children's Orthopedic Hospital and work under the supervision of members of the departmental faculty. Required for third-year medical students.

480 Senior Pediatric Elective Clerkship (*)

Outpatient, inpatient, newborn, and emergency room experiences. Participation in house staff teaching conferences. Clinical investigational projects, if desired.

481 Research in Child Growth and Development (*)

Aldrich, Deisher

Pursuit of short-term projects in growth and development by student under guidance of Child Health Center staff, including special behavior problems in childhood. Open to senior medical students. Prerequisite, permission.

482 Pediatric Endocrinology and Metabolic Disease (*)

Kelley

Special research problems in pediatric endocrinology and teratology will be undertaken in the laboratory and/or clinic. The problem will depend on the student's interests. Open to all medical students. Prerequisite, permission.

483 Clinical Experience in Problems of Well Child Care (*)

Aldrich, Deisher

Further experience at the Child Health Center in the common problems met in clinical practice among well children from infancy through adolescence. Open to senior medical students. Prerequisite, permission.

484 Clinical Pediatrics (*)

Aldrich

Assignment of hospital wards or newborn nursery at University Hospital, King County Hospital, and Children's Orthopedic Hospital. Open to senior medical students. Prerequisite, permission.

485 Clinical Problems in Mental Retardation (*)

Aldrich, Deisher

Experience in multi-disciplined evaluation of the retarded child and study of the community management of this problem. Open to senior medical students. Prerequisite, permission.

486 Pediatric Cardiology (*)

Guntheroth

Experience with diagnostic techniques, medical and surgical therapy of children with heart disease. Emphasis on physical diagnosis, electrocardiography, and cardiac radiology. Open to senior medical students. Prerequisite, permission.

487 Pediatric Neurology

Swanson

An advanced course in neurology with emphasis on neurological disease in the immature nervous system. Experience in special diagnostic techniques will be available. Prerequisite, permission.

488 Congenital Defects (*)

Shurtleff

An advanced course in pediatrics providing experience in the clinical diagnosis and management of structural and metabolic congenital defects. Prerequisite, permission.

489 Pediatric Outpatient Clinics (*)

Aldrich

Elective clerkship includes diagnosis and management in the general medical and subspecialty pediatrics clinics of the University Hospital. Prerequisite, permission.

490 Adolescent Development (*)

Hammar

An advanced pediatric clerkship dealing with special problems of the adolescent. Senior medical students are offered an experience in a multidisciplinary clinic at University Hospital. Prerequisite, permission.

496 Concept of the Child (3)

Deisher, Tjossem

An advanced course for students who desire a more complete understanding of the child through integration of the viewpoints of pediatrics, preventive medicine, psychology, psychiatry, nutrition, social work, and nursery education. For nonmedical students. (Formerly Conjoint 496.) Prerequisite, permission.

498 Undergraduate Thesis (*)

Aldrich

For medical students. Prerequisite, permission.

499 Undergraduate Research (*)

Aldrich

An opportunity to work in the laboratory on problems related to pediatrics. Open to first- and second-year medical students. Prerequisite, permission.

COURSE FOR GRADUATES ONLY

505 Physical Growth of the Well Child (2)

Nine weekly seminars (eighteen hours). Presentation by departmental staff of relationships between growth and development and diseases of childhood as they pertain to dental health. For graduate students in dentistry. Prerequisite, permission.

- 493 Problems in Fluid Balance and Kidney Disease (*)**
Students will see complicated diagnostic problems in fluid and electrolyte balance on the renal service of the University Hospital. Fourth-year medical student elective.
- 498 Undergraduate Thesis (*)**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*)**
Case studies, with laboratory research. For medical students. Prerequisite, permission.

OBSTETRICS AND GYNECOLOGY

Chairman: CHARLES A. HUNTER, BB617 University Hospital

The Department of Obstetrics and Gynecology represents the field of normal and complicated obstetrics, growth and development of the unborn fetus, medical and surgical diseases of women, endocrinology as it is peculiar to the female, and the preventive phases of obstetrics and gynecology.

COURSES

Conjoint-426-427 Introduction to Physical Diagnosis (4-9) (See Conjoint Courses, page 78.)

- 466 Introduction to Obstetrics and Gynecology (*)**
Lectures on embryology, physiology, and endocrinology of the pelvic organs; pregnancy and parturition; diseases associated with pregnancy; etiology, pathology, symptomatology, and diagnosis of gynecological conditions.
- 476 Obstetric Externship (*)**
Student to be assigned to one of two hospitals: Madigan Army Hospital or Providence Hospital. All terms, twelve days, full time.
- 479 Obstetric and Gynecological Investigation (*)**
The investigation may cover any one of the following fields: uterine muscle physiology, toxemias of pregnancy, hormone assays in obstetrics and endocrinology, obstetric and gynecologic oncology. All terms. By arrangement.
- 480 Clinical Clerkships (*)**
The student spends eight weeks as a clinical clerk on obstetrics and gynecology at the University Hospital and at the King County Hospital. On the obstetrical service the student actively participates in the deliveries and closely follows the management of all obstetric patients. In the gynecology service the student makes ward rounds and actively participates in the medical or surgical management of the inpatient gynecologic patients. In addition, he is assigned to the obstetric and gynecologic outpatient clinics which afford him the opportunity to learn the office problems of the specialty. Required for fourth-year medical students.
- 481 Senior Seminar (*)**
Current literature in obstetrics and gynecology, oncology, and research as it pertains to obstetrics and gynecology. Selected presentations of research done in our department will also be presented from time to time. All terms, one hour weekly by arrangement.
- 484 Endocrinology of Reproduction (*)** **Herrmann**
The biochemistry of steroids. Steroid metabolism as related to clinical problems. Diagnosis and treatment of endocrine disorders. Case studies with special emphasis on modern methods of investigation.
- 498 Undergraduate Thesis (*)**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*)**
Discussion of methods used in obstetrics and gynecology research. Several specific projects relating to the most fascinating and intriguing problems of the specialty will be dealt with.

PEDIATRICS

Chairman: ROBERT A. ALDRICH, BB807 University Hospital

The student is instructed about the role of growth and development in the emotional and physical responses of infants and children during health and illness.

In the second year the student is oriented toward the principal problems that appear at various ages from infancy through adolescence. The third year is primarily devoted to developing the student's ability to recognize and treat the broad range of medical problems that are responsible for the hospitalization of infants and children. In the fourth year students may take advantage of an advanced clinical clerkship or sub-internship during the elective period, and receive conjoint instruction in pediatrics throughout much of the year.

Instruction is provided by means of conjoint courses, lectures, and clinical clerkships.

COURSES

- 404 Human Growth and Development (*)** **Deisher**
An opportunity is provided to observe and closely follow an infant and his family throughout one or two years. The influence of constitutional and environmental factors on growth and development will be demonstrated in individual interviews and group discussions with members of the pediatric staff. Open to first- and second-year medical students.
- Conjoint-426-427 Introduction to Physical Diagnosis (4-9) (See Conjoint Courses, page 78.)**
- 465 Clinical Clerkships (*)**
An eight-week general pediatrics inpatient and outpatient clerkship. Students are divided between the pediatric facilities at the University Hospital and the Children's Orthopedic Hospital and work under the supervision of members of the departmental faculty. Required for third-year medical students.
- 480 Senior Pediatric Elective Clerkship (*)**
Outpatient, inpatient, newborn, and emergency room experiences. Participation in house staff teaching conferences. Clinical investigational projects, if desired.
- 481 Research in Child Growth and Development (*)** **Aldrich, Deisher**
Pursuit of short-term projects in growth and development by student under guidance of Child Health Center staff, including special behavior problems in childhood. Open to senior medical students. Prerequisite, permission.
- 482 Pediatric Endocrinology and Metabolic Disease (*)** **Kelley**
Special research problems in pediatric endocrinology and teratology will be undertaken in the laboratory and/or clinic. The problem will depend on the student's interests. Open to all medical students. Prerequisite, permission.
- 483 Clinical Experience in Problems of Well Child Care (*)** **Aldrich, Deisher**
Further experience at the Child Health Center in the common problems met in clinical practice among well children from infancy through adolescence. Open to senior medical students. Prerequisite, permission.
- 484 Clinical Pediatrics (*)** **Aldrich**
Assignment of hospital wards or newborn nursery at University Hospital, King County Hospital, and Children's Orthopedic Hospital. Open to senior medical students. Prerequisite, permission.
- 485 Clinical Problems in Mental Retardation (*)** **Aldrich, Deisher**
Experience in multi-disciplined evaluation of the retarded child and study of the community management of this problem. Open to senior medical students. Prerequisite, permission.
- 486 Pediatric Cardiology (*)** **Guntheroth**
Experience with diagnostic techniques, medical and surgical therapy of children with heart disease. Emphasis on physical diagnosis, electrocardiography, and cardiac radiology. Open to senior medical students. Prerequisite, permission.
- 487 Pediatric Neurology** **Swanson**
An advanced course in neurology with emphasis on neurological disease in the immature nervous system. Experience in special diagnostic techniques will be available. Prerequisite, permission.
- 488 Congenital Defects (*)** **Shurtleff**
An advanced course in pediatrics providing experience in the clinical diagnosis and management of structural and metabolic congenital defects. Prerequisite, permission.
- 489 Pediatric Outpatient Clinics (*)** **Aldrich**
Elective clerkship includes diagnosis and management in the general medical and subspecialty pediatrics clinics of the University Hospital. Prerequisite, permission.
- 490 Adolescent Development (*)** **Hammar**
An advanced pediatric clerkship dealing with special problems of the adolescent. Senior medical students are offered an experience in a multidisciplinary clinic at University Hospital. Prerequisite, permission.
- 496 Concept of the Child (3)** **Deisher, Tjossem**
An advanced course for students who desire a more complete understanding of the child through integration of the viewpoints of pediatrics, preventive medicine, psychology, psychiatry, nutrition, social work, and nursery education. For nonmedical students. (Formerly Conjoint 496.) Prerequisite, permission.
- 498 Undergraduate Thesis (*)** **Aldrich**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*)** **Aldrich**
An opportunity to work in the laboratory on problems related to pediatrics. Open to first- and second-year medical students. Prerequisite, permission.

COURSE FOR GRADUATES ONLY

- 505 Physical Growth of the Well Child (2)**
Nine weekly seminars (eighteen hours). Presentation by departmental staff of relationships between growth and development and diseases of childhood as they pertain to dental health. For graduate students in dentistry. Prerequisite, permission.

PHYSICAL MEDICINE AND REHABILITATION

Chairman: JUSTUS F. LEHMANN, CC814 University Hospital

The Department of Physical Medicine and Rehabilitation provides instruction for medical students, interns, and residents in the comprehensive approach to rehabilitation problems. This includes special diagnostic and evaluative procedures; methods and rational for use of physical therapy, occupational therapy, and other paramedical specialties; and advanced investigation of special problems encountered in the field. In addition, the Department conducts a residency training program for the specialty of Physical Medicine and Rehabilitation.

The Department offers a curriculum in Occupational Therapy (see pages 85 and 86) and a curriculum in Physical Therapy (see pages 87 and 88).

COURSES

- N107 Introduction to Occupational Therapy (0)** **Hume**
Orientation to occupational therapy as a paramedical specialty. Elementary concepts of treatment-through-activity and their application in various disability areas. Relationship of occupational therapy to allied specialties such as nursing, physical therapy, social work.
- 290 Pre-Occupational Therapy Clerkship (2)**
Supervised observation and work with patients in local occupational therapy clinics concurrent with lectures on professional ethics and on elementary techniques of occupational therapy. Prerequisite, permission.
- 302 Terminology (1)** **Brunner**
Common terms, abbreviations, prefixes, and suffixes used in medicine and various term usage in the field of physical medicine and rehabilitation. Required for occupational therapy students and physical therapy students, others by permission.
- N306 Introduction (0)**
Orientation; history, scope of physical medicine and rehabilitation; relationships of physical therapy, occupational therapy, nursing, rehabilitation counseling, social service and other allied services in carrying out the team concept of a complete rehabilitation program. Required for physical therapy students, others by permission.
- 320-321 Medical Science (4-4)** **Staff of Departments of Medicine, Obstetrics and Gynecology, Physical Medicine and Rehabilitation, Radiology, Surgery**
Lectures in medical science fields related to: general surgery, obstetrics and gynecology, internal medicine, neurology, physical medicine and rehabilitation, orthopedics, rheumatology, and roentgenology. Required for occupational therapy students and physical therapy students, others by permission.
- 332 Pathologic Physiology for Physical Therapists and Occupational Therapists (5)** **Lehmann, Stolov**
Emphasis on normal and pathologic physiology of the circulatory, respiratory, central nervous and musculo-skeletal systems as basis for treatment in occupational therapy and physical therapy. Required for occupational therapy students and physical therapy students, others by permission. Prerequisites, Anatomy 301, Zoology 208.
- 342 Advanced Kinesiology (3)** **Lehmann**
Study of joint motion and muscle function in relation to both the normal and abnormal state. Analysis is made of specific techniques employed in the field of physical medicine and rehabilitation. Required for physical therapy students, others by permission.
- 350-351 Function of the Locomotor System (3- or 4-)(-3 or-4)** **Lehmann, Stolov**
Functions of musculo-skeletal system as applied to normal and pathologic patterns of motion. Emphasis on upper extremity, shoulder girdle, lower extremity and trunk. Anatomy of peripheral-vascular and peripheral-nervous system. Required for occupational therapy students and physical therapy students, others by permission. Prerequisites, Anatomy 301, Zoology 208.
- 350L-351L Anatomy Laboratory for Occupational Therapists (1-1)** **Shevlin**
Study of musculo-skeletal, peripheral-vascular and peripheral-nervous systems from projected material. Concurrent with 350-351. Required for occupational therapy students, others by permission.
- 380 Occupational Therapy Theory I (4)** **Hume, Shevlin**
Study of fundamentals applicable to all areas of treatment with particular emphasis on the use of occupational therapy in the treatment of physical disabilities. Correlated with 342. Prerequisite, third-year occupational therapy students.
- 408 Tests and Measurements (3)** **McMillan, Rathbun**
Methods of performing, recording, and interpreting test procedures used in physical medicine and rehabilitation; measurement of joint motion, evaluation of muscle strength through manual tests, and posture evaluation. Laboratory. Required for physical therapy students, others by permission.
- 416 Ethics and Administration (2)** **Brunner**
Basic principles of medical ethics, professional organizations and obligations of a physical therapist, and the administration of a physical therapy department. Required for physical therapy students, others by permission.

- 451 Anatomy Dissection for Physical Therapists (4)** **Redford**
Dissection of musculo-skeletal, peripheral-vascular and peripheral-nervous systems, including gross anatomy of other areas. Required for occupational therapy students and physical therapy students, others by permission.
- 461 Massage (3)** **Brunner**
History of massage, methods of application, indications and contraindications, with the physiological effects on various systems of the body. Laboratory. Required for physical therapy students, others by permission.
- 463-464 Modality Treatments (4-5)** **Brunner, Rathbun**
Theory, technique, demonstration and practice in the use of the physical agents employed in physical therapy which include thermotherapy, actinotherapy, hydrotherapy, low-frequency and high-frequency currents, and ultrasound. Required for physical therapy students, other by permission.
- 466-467 Advanced Biophysical and Physiological Effects of Modalities (2-2)** **Lehmann**
Biophysical principles of equipment employed in physical therapy, physiological effects produced. Required for physical therapy students, others by permission.
- 468 Therapeutic Activities I (1-5)** **Hume**
Laboratory study of materials and techniques in a variety of handicrafts as they are used in occupational therapy. Includes a study of the design and fabrication of splints, self-help devices, etc. Prerequisite, fourth-year occupational therapy students.
- 469 Therapeutic Activities II (1-5)** **Hume**
Laboratory survey of special skills used in occupational therapy (recreation skills, industrial activities, etc.). Adjusted to meet the needs of the individual student. Prerequisite, third-year occupational therapy students.
- 470-471-472 Therapeutic Exercise (3-3-3)** **McMillan**
Methods of application, physiologic and therapeutic effects of exercises commonly used for treatment purposes in physical therapy. Opportunities are provided for supervised clinical practice of skills, and special attention is given to correlation of techniques to appropriate age level and handicap. New developments from the field are analyzed and evaluated. Required for physical therapy students, others by permission.
- 476 Physical Restoration, Ambulation, and Transfer Activities (3)** **Rathbun**
Instruction in theory and methods of physical restoration of the severely handicapped patient. Laboratory demonstration, practice, and supervised clinical practice in: selection, care and use of wheelchairs, crutches, canes, walkerettes, and other assistive devices; training in use of braces and prostheses; special problems in the area of activities of daily living. Required for physical therapy students, others by permission.
- 477 Occupational Therapy Clinical Affiliation in Physical Disabilities (1-6, maximum 6)** **Shevlin**
Directed and supervised clinical practice in the Occupational Therapy Clinics of the University Hospital Rehabilitation Center or other affiliated hospitals. Required for fourth-year occupational therapy students.
- 481 Occupational Therapy Theory II (3)** **Shevlin**
Emphasizes the total rehabilitation of the physically disabled patient. Includes a study of the various professions and agencies and organizations involved in the comprehensive care of the physically disabled. Prerequisite, fourth-year occupational therapy students.
- 482 Occupational Therapy Theory III (3)** **Hume**
A study of the application of occupational therapy in special fields: pediatrics (including cerebral palsy); geriatrics; patients with special problems (blind, deaf, mentally retarded, etc.). Prerequisite, fourth-year occupational therapy students.
- 483 Occupational Therapy Theory IV (3)**
A study of the principles and techniques of occupational therapy in the treatment of the psychiatric patient. Prerequisite, fourth-year occupational therapy students.
- 484 Occupational Therapy Theory V (2)** **Shevlin**
Principles of administration, organization, and supervision as applied in the management of occupational therapy programs. Prerequisite, fourth-year occupational therapy students.
- 486 Special Techniques and Procedures (3)** **Rathbun**
Special problems encountered in clinical affiliations, discussions and demonstrations of special problems, tests, and operating procedures. For physical therapy students, others by permission.
- 492 Occupational Therapy Clinical Affiliation in General Medicine and Surgery and/or Tuberculosis (1-8, maximum 8)** **Shevlin**
Directed and supervised clinical practice in Occupational Therapy Clinics for general medical and surgical patients. Arranged in University Hospital or other affiliated hospitals. Required for fourth- or fifth-year occupational therapy students.
- 493 Occupational Therapy Clinical Affiliation in Pediatrics (1-4, maximum 4)** **Shevlin**
Directed and supervised clinical practice in a pediatric occupational therapy service. Arranged in University Hospital or other affiliated hospitals. Required for fifth-year occupational therapy students.
- 494 Occupational Therapy Clinical Affiliation in Psychiatry (1-6, maximum 6)** **Shevlin**
Directed and supervised clinical practice in Psychiatric Occupational Therapy Clinics in University Hospital or other hospitals approved for occupational therapy teaching. Required for fifth-year occupational therapy students.

495 Clinical Affiliations in Physical Therapy (12)

Twelve to fifteen weeks with 600 minimum working hours. Clinical application of physical therapy techniques under supervision in the Physical Therapy Departments of affiliated hospitals. Required for physical therapy students.

496 Electromyography and Electrodiagnosis (*)

Elective work in clinical electromyography and other electro-diagnostic methods with lecture-demonstrations involving selected cases in the laboratories. Prerequisite, permission.

498 Undergraduate Thesis (*)

Prerequisite, permission.

499 Undergraduate Research (*)

a) Research for undergraduate medical students. Participation in clinical and basic research projects in the department. b) Research projects with special reference to modality treatment and physical therapy techniques for physical therapy students. Research projects with special reference to occupational therapy techniques for occupational therapy students. Prerequisite, permission.

520 Seminar (1-5)

Conferences, seminars, discussions of advanced physical medicine and rehabilitation topics. Prerequisite, permission.

CURRICULUM IN OCCUPATIONAL THERAPY

The Department of Physical Medicine and Rehabilitation offers courses leading to the degree of Bachelor of Science in Occupational Therapy in the School of Medicine. This program has been accredited by the American Occupational Therapy Association and the Council on Medical Education and Hospitals of the American Medical Association.

PHILOSOPHY AND OBJECTIVES

The curriculum in Occupational Therapy is planned to allow the student a broad base of liberal arts and humanities which will give him an awareness of social change and a feeling of responsibility for recognizing and meeting social needs, both as an individual and as a member of a health profession.

The student must appreciate the role of work in human development and its relation to human values. He must learn the basic principles behind the use of activity for the improvement of conditions of mental and physical illness and inadequacy.

Self-development is encouraged to promote sound and ethical attitudes and effective interpersonal relationships.

It is emphasized to the student that the use of judgment is inherent in the effective application of his skill and knowledge, and every effort is made to develop in him the habit of investigation and continued study.

THE PROFESSIONAL PROGRAM

Students are admitted to the curriculum at the junior level and must have completed the following courses or their equivalent, with a cumulative grade-point average of 2.50:

Anatomy 301	General Anatomy
Art 109	Design
Chemistry 101, 102	General and Organic Chemistry
Psychology 100, 101	General and Adjustment Psychology
Sociology 110	Survey of Sociology
Zoology 208	Elementary Human Physiology

A total of thirty-seven quarter credits of varied skills are required, to be chosen from the Arts (Fine and Applied), from Education, from Recreation, or from other departments of the University, upon approval by the Occupational Therapy adviser. The following basic skills courses are usually required of occupational therapy students at the University of Washington as a part of the above requirement:

Art 201	Ceramic Art
Education 182	General Shop for Industrial Education Teachers
Education 280, 383-	Fundamentals of Woodwork for Industrial Education Teachers and Advanced Woodwork
Home Economics 329	Hand Weaving

When an adequate portion of skills courses are completed in the preoccupational therapy program, the student has the opportunity to complete three months of clinical affiliations during Winter Quarter of the senior year and also has a greater opportunity for upper-division electives in the junior and senior years.

SUMMARY OF THE THIRD- AND FOURTH-YEAR PROGRAMS

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Phys. Med. & Rehab. 302		Phys. Med. & Rehab. 320-		Phys. Med. & Rehab. 321	
Terminology	1	Medical Science	4-	Medical Science	4
Phys. Med. & Rehab. 332		Phys. Med. & Rehab. 351		Phys. Med. & Rehab. 342	
Pathologic Physiology . . .	5	Function of Locomotor		Advanced Kinesiology . . .	3
Phys. Med. & Rehab.		System	-3 or -4	Phys. Med. & Rehab. 380	
350- Function of		Anat. 331 Neuroanatomy . . .	2	OT Theory I	4
Locomotor System . . .	3-4-	Phys. Med. & Rehab.		Psychol. 305 Abnormal	
Phys. Med. & Rehab.		-351L Function of		Psychology	5
350L- Function of		Locomotor System Lab -1			
Locomotor System Lab. 1-		Phys. Med. & Rehab.			
Electives*	5	469 Therapeutic			
	15-16	Activities II	1-5		
			12-16		

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Phys. Med. & Rehab.		Phys. Med. & Rehab. 477		Phys. Med. & Rehab. 483	
468 Therapeutic		Clinical Training in		OT Theory IV	3
Activities I	1-5	Physical Disabilities . . .	1-6	Phys. Med. & Rehab. 484	
Phys. Med. & Rehab. 481		Psychiat. 451 Principles		OT Theory V	2
OT Theory II	3	of Personality Develop-		Peds. 496 Concept of	
Phys. Med. & Rehab. 482		ment	2	the Child	3
OT Theory III	3		6-8	Psychiat. 452 Clinical	
Psychiat. 450 Principles				Psychiatry	2
of Personality Develop-				Educ. 383- Advanced	
ment	2			Woodwork	3-
Electives*	4-5			Electives*	2-3
	15-16				15-16

*Students are advised to choose the majority of electives in the third and fourth years from the behavioral sciences.

CLINICAL AFFILIATIONS

A minimum of nine months total of clinical affiliations are required, to include physical disabilities, psychiatry, pediatrics, general medicine and surgery, and/or tuberculosis. Part of these affiliations are given at the University Hospital and part must be taken in other institutions. Students are given an opportunity to select from approved teaching programs throughout the country.

THE PREPROFESSIONAL PROGRAM

Students at the University of Washington should register in the College of Arts and Sciences as preoccupational therapy majors. High school students should arrange their current course of study for admission to that College. Transfer students should consult the Division of Occupational Therapy at University Hospital to determine their eligibility for the preprofessional or professional program. University of Washington freshmen should enroll for the orientation course Physical Medicine and Rehabilitation N107 Autumn Quarter. Sophomores take Physical Medicine and Rehabilitation 290 with permission from the Division of Occupational Therapy adviser.

CURRICULUM IN PHYSICAL THERAPY

The Department of Physical Medicine and Rehabilitation offers courses leading to the degree of Bachelor of Science in Physical Therapy in the School of Medicine.

The curriculum is approved by the American Physical Therapy Association and by the Council on Medical Education and Hospitals of the American Medical Association. Students are admitted to the Physical Therapy curriculum on the junior level, where they will receive instruction, training, and clinical experience in physical therapy. Prior to enrollment in the curriculum, a student must have completed, with a cumulative grade-point average of 2.50, a two-year program of courses providing a broad educational background, as well as the prerequisites for the curriculum in physical therapy.

PHILOSOPHY AND OBJECTIVES

The Curriculum in Physical Therapy has as one of its major objectives the development of a broad academic background with considerable emphasis on liberal education. Ample opportunity is provided for growth in many areas of interest. An equally important objective is the acquisition of knowledge and skills fundamental to the field of physical therapy. Emphasis is placed on the development of habits of individual study and the ability to make sound judgments. Consideration is given to growth in the areas of social and professional relationships. Facility in effective techniques of communication and teaching are given special attention. The four-year educational program is designed to meet these objectives.

The Advisory and Evaluation Committee of Physical Therapy requires the following courses given at the University of Washington. Students taking pre-physical therapy work at other institutions may compare these courses with those given in their schools by checking the course descriptions given in the *College of Arts and Sciences Bulletin*.

QUARTER CREDITS

Anatomy 301	4
Chemistry 100 and/or 101, 102.....	10 or 15
Mathematics 101, 103, 104, or 105.....	3 or 5
Microbiology 301	5
Physics 170, 170L	6
Psychology 100, 101	10
Psychiatry 267	2
Sociology 110	5
Speech 100	5
Zoology 118, 118L, or 208.....	5-6

The Advisory and Evaluation Committee of Physical Therapy recommends that students choose electives with the aim of broadening their background in human relationships and understanding.

High school students desiring to enter the curriculum in physical therapy at the University of Washington should arrange their current course of study to meet the requirements for admission to the College of Arts and Sciences.

CURRICULUM IN PHYSICAL THERAPY

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 100 Chem. Science or Chem. 101 General ...	5	Chem. 102 General and Organic	5	Engl. 103 Composition ..	3
Engl. 101 Composition ...	3	Engl. 102 Composition ...	3	Physics 170 & 170L	
Health Educ. 110 or 175..	2	Speech 100 Basic Speech Improvement	5	Introduction to Health Science Physics & Lab..	6
Math. 101, 103, 104, or 105	3-5	Phys. Educ. Activity	1	Sociol. 110 Survey	5
Phys. Educ. Activity ...	1	Approved Electives	2	Phys. Educ. Activity	1
Approved Electives ...	2-5				
	<hr/> 16-20		<hr/> 16-19		<hr/> 15-18

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Psychol. 100 General . . . 5		Micro. 301 General . . . 5		Anat. 301 General . . . 4	
Approved Electives . . . 10		Psychiatry 267 Introduction to Mental Hygiene. 2		Zool. 208 Elementary Human Physiology . . . 5	
	15-18	Psychol. 101 Adjustment. 5		Approved Electives . . . 6	
		Approved Electives . . . 3			15-18
			15-13		

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Phys. Med. & Rehab. 302 Terminology . . . 1		Phys. Med. & Rehab. 320- Medical Science . . . 4-		Phys. Med. & Rehab. N306 Introduction . . . 0	
Phys. Med. & Rehab. 332 Pathologic Physiology for PT and OT . . . 5		Phys. Med. & Rehab. -351 Function of the Locomotor System . . . -4		Phys. Med. & Rehab. -321 Medical Science . . -4	
Phys. Med. & Rehab. 350- Function of the Locomotor System . . . 4-		Anat. 331 Neuroanatomy . . . 2		Phys. Med. & Rehab. 342 Advanced Kinesiology . . 3	
Nursing 315 Nursing for Physical Therapists . . . 2		Nursing 316 Nursing for Physical Therapists . . . 2		Phys. Med. & Rehab. 451 Anatomy Dissection for PT. 4	
Approved Electives . . . 3		Approved Electives . . . 15		Path. 310 General . . . 2	
	15			Approved Electives . . . 2	
					15

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Phys. Med. & Rehab. 408 Tests & Measurements . . 3		Phys. Med. & Rehab. 463- Modality Treatments . . . 4-		Phys. Med. & Rehab. 416 Ethics & Administration . 2	
Phys. Med. & Rehab. 461 Massage 3		Phys. Med. & Rehab. -467 Advanced Biophysical & Physiological Effects of Modalities . . . -2		Phys. Med. & Rehab. -464 Modality Treatments . . -5	
Phys. Med. & Rehab. 466- Advanced Biophysical & Physiological Effects of Modalities . . . 2-		Phys. Med. & Rehab. -471- Therapeutic Exercise . . -3-		Phys. Med. & Rehab. -472 Therapeutic Exercise . . -3	
Phys. Med. & Rehab. 470- Therapeutic Exercise . . 3-		Phys. Med. & Rehab. 476 Physical Restoration . . . 3		Phys. Med. & Rehab. 486 Special Techniques and Procedures . . . 3	
Approved Electives . . . 4		Approved Electives . . . 3		Approved Electives . . . 2	
	15		15		15
		FOURTH QUARTER	CREDITS		
		Phys. Med. & Rehab. 495 Clinical Affiliations . . . 12			

COMPARISON OF CURRICULA IN OCCUPATIONAL AND PHYSICAL THERAPY

The educational programs in Occupational Therapy and in Physical Therapy share a common need for studies in human anatomy and physiology with a special emphasis on the musculo-skeletal and nervous systems and a need for basic studies in pathological physiology and medical sciences. In these areas of study, the two curricula share identical courses. In other areas, the two curricula are independent programs, with separate faculties for instruction in the professional courses and separate Advisory and Evaluation Committees.

The application procedures, student promotion policies, and fees are departmental policies which apply to both curricula except where exceptions are specifically noted.

APPLICATION PROCEDURE

For entrance to the Autumn Quarter, the applicant must initiate the following steps on or before March 1: (1) Arrange a personal interview with a member of the teaching staff of the division; (2) Submit formal application to the Advisory and Evaluation Committee of the division concerned, c/o Department of Physical Medicine and Rehabilitation, Room CC814 University Hospital. (Application forms are available from the Department.); (3) Arrange for official transcript(s) to be sent directly from the registrar(s) of previous college(s) to the Advisory and Evaluation Committee, including complete record with grades and credits to date. (When college transcripts do not include a complete list of high school courses and

credits, such a list must be submitted with the application. Also include a list of courses the applicant is currently taking or will take to complete preprofessional requirements. An official record of grades for such courses must be submitted when available.); (4) An unmounted recent photograph, 2x2 inches, is desirable but not required.

PROCESSING OF APPLICATIONS

The Advisory and Evaluation Committee bases its decision on the objective evaluation of applicant's residence, preprofessional training, evidences of scholarship, and evidences of personal qualification for the work. The Committee or any one of its members may request a personal interview with the applicant to supplement the above information.

NOTIFICATION

The Committee gives written notice to the applicant as soon as possible after a decision is made. Within two weeks after a candidate has been notified that he is accepted, the Comptroller of the University requires a deposit of \$50.00. This deposit is applied to the tuition for the first quarter. It is refundable only in cases of withdrawal for bonafide illness, failure to complete basic preprofessional requirements, induction into military service, or failure to pass the physical examination required of all students at the time of registration.

STUDENT ACHIEVEMENT AND PROMOTION

The University grade-point system is used. Students are notified of their grades at the end of each quarter.

A student must maintain an average of 2.50, and a cumulative average of 2.50 is required for graduation. If the work in a course is incomplete, a grade of I may be given. This Incomplete must be removed before September 15 if the student is to advance into the next year's class.

At the end of each academic year the Advisory and Evaluation Committees evaluate the accomplishment of the student during the year and determine his fitness for promotion. When promotion is not recommended, the student is subject to dismissal from the curriculum. The Advisory and Evaluation Committees reserve the right to dismiss a student from the curriculum for any reason it deems sufficient. A student is advanced only when his general attitude, scholastic progress, and personal attributes are considered satisfactory.

CLASS SCHEDULES

The curriculum in physical therapy and the curriculum in occupational therapy operate on the quarter system of the University. There are three 11-week quarters in the third and fourth years.

Occupational Therapy requires a minimum of six months or two quarters of additional clinical affiliation. Physical Therapy requires three months of clinical practice which is completed in the summer quarter of the senior year.

TUITION AND FEES FOR THIRD AND FOURTH YEARS

All tuition and fees are payable at the time of registration. The University reserves the right to change any of its fees without notice. The following is a table of charges per quarter for the six quarters of academic work in the curriculum of physical therapy and in the curriculum of occupational therapy.

	<i>Tuition</i>	<i>Incidental Fee</i>	<i>Other Fees*</i>	<i>Total</i>
Resident	\$ 65.00	\$37.50	\$8.50	\$111.00
Nonresident	\$125.00	\$82.50	\$8.50	\$216.00

* Other fees consist of Student Activities, \$2.50; ASUW Bond Redemption, \$3.50; HUB Bond Redemption, \$1.00; Building Fund, \$1.50.

THE FOLLOWING ARE THE CHARGES FOR CLINICAL TRAINING:**Summer Quarter (both curricula)**

Resident and

Nonresident	—	\$82.50	\$2.50	\$ 85.00
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Autumn, Winter, and Spring Quarters (Occupational Therapy students only)

Resident	\$ 65.00	\$15.00	None	\$ 80.00
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Nonresident	\$125.00	\$50.00	None	\$175.00
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EXEMPTIONS, SPECIAL FEES, AND REFUND OF FEES (Same as for medical students, see pages 47 and 48.)

PSYCHIATRY

Chairman: HERBERT S. RIPLEY, BB867 University Hospital

The Department of Psychiatry aims to provide students of medicine, nursing, psychology, social work, education, and others concerned with human problems with a scientific grasp of psychiatric principles so that they will be able to evaluate interpersonal relationships and use to the greatest advantage their potentialities for understanding and dealing with personality reactions.

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)** **Davies**
A survey of the development of personality and a consideration of minor emotional problems in children and adults. For nonmedical students. Not open to students who have taken 450 or 451.
- 400 Human Personality Development and Behavior (1,1,1)**
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. Comparative personality development is illustrated by animal and human behavior. Required for first-year medical students.
- Conjoint 426-427 Introduction to Physical Diagnosis (4-9) (See Conjoint Courses, page 78.)**
- 430 Psychopathology (2)** **Bakker, Hampson, Orr, Ripley, Sobel**
Abnormalities of behavior, thinking, and feeling, and the structural and psychological factors that produce them. Anxiety, depression, elation, withdrawal, repression, compensation, projection, and other personality reactions are discussed. Required for second-year medical students.
- 440 Physiology of Emotions (*)** **Holmes**
Seminar based on discussion of selected reading of original articles from psychophysiologic and psychosociologic literature. Designed to orient and interest students for participation in current or future research projects. Elective for first- and second-year medical students only. Prerequisite, permission.
- 441 Individual Psychological Testing (*)** **Preston**
Instruction in the administration and interpretation of the Rorschach, Thematic Apperception, and Wechsler-Bellevue Test results with patients in psychiatric wards or in out-patient clinics. Elective for second-year medical students only. Prerequisite, permission.
- 442 Culture and Illness (*)** **Jackson**
Examination of several social systems with regard to the manner in which patterns of illness are developed, maintained, or modified by cultural elements. A lecture-discussion course with guided reading. Elective for first- and second-year medical students only. Prerequisite, permission.
- 443 Seminar in Theories of Personality (*)** **Hampson**
A consideration of major contemporary theories of personality and their relevance to psychiatry. Elective for medical students only.
- 450 Principles of Personality Development (2)** **Kaufman**
Discussion of the principles of personality development and the problems most commonly met. Consideration will be given to the physiologic, psychologic, and cultural factors from infancy through adolescence. For nonmedical students. Not open to students who have taken 267. Prerequisite, senior or graduate standing.

- 451 Principles of Personality Development (2)** **Heilbrunn**
Continuation of 450. Consideration will be given to the physiologic, psychologic, and cultural factors from maturity through old age. For nonmedical students. Not open to students who have taken 267. Prerequisite, 450 or permission.
- 452 Clinical Psychiatry (2)** **Schwartz**
Discussion of clinical psychiatry considering causation, prevention, treatment, and rehabilitation. Not open to students who have taken 457 or 557. For nonmedical students. Prerequisite, 267 or 451 or permission.
- 465 Clinical Clerkships (*)**
Four weeks of closely supervised experience on a psychiatric inpatient service. The student is responsible for diagnostic evaluations of patients with a variety of psychiatric disorders at the University Hospital, King County Hospital, and Veterans Administration Hospital. He is introduced to the principles of the use of psychologic tests, ward milieu management, group psychotherapy, and the physical and pharmacologic treatments. Clinical conferences with discussion of psychoses, psychoneuroses, and psychosomatic disorders are held. Lectures are given throughout the year. Required for third-year medical students.
- 475 Psychiatric Externship (*)**
Three or six weeks of work at a state psychiatric hospital where the student has an opportunity to learn from firsthand experience and active participation the methods used in caring for seriously ill patients. Elective for fourth-year medical students only. Prerequisite, permission.
- 480 Clinical Diagnosis and Treatment (*)**
Individually supervised outpatient experience with adults and children is obtained in the Outpatient Departments at the University Hospital, King County Hospital and at the Community Psychiatric Clinic. Emphasis is placed on an understanding of the psychodynamics of minor mental and emotional problems, the therapeutic interaction between the doctor and patient, and the simpler methods of counselling and psychotherapy. Lectures are given throughout the year. Required for fourth-year medical students.
- 490 Advanced Clinical Psychiatry (*)**
Clinical work, which may include inpatient and outpatient experience, is arranged to accommodate the particular interests of students. The objective is to give more prolonged and intensive experience than is possible in the required fourth-year work. Opportunities for this experience are available at the University Hospital, Seattle Veterans Administration Hospital, the Community Psychiatric Clinic, and King County Hospital. Elective for fourth-year medical students only. Prerequisite, permission.
- 491 Seminars and Conferences in Psychiatry (*)** **Ripley**
Special seminars and conferences on a variety of topics can be arranged to accommodate the particular interests of students. Opportunity will be afforded to gain experience in the theory of the interview and the doctor-patient relationship. Elective for medical students only. Prerequisite, permission.
- 492 Behavioral Science Study Unit (*)** **Holmes**
A variety of topics will be presented under the sponsorship of the Department of Psychiatry, with participation of faculty members from the Division of Neurosurgery and the Departments of Pediatrics, Pharmacology, Physiology and Biophysics, Psychology, and Sociology. When practicable, selected patients will illustrate topics presented. Elective for medical students only. Prerequisite, permission.
- 498 Undergraduate Thesis (*)**
Supervised library, clinical, or experimental work. Elective for medical students only. Prerequisite, permission.
- 499 Undergraduate Research (*, maximum 15)**
Special projects in various aspects of clinical and laboratory psychiatry, including work in psychoses, psychoneuroses, psychosomatic disorders, child psychiatry, geriatrics, social psychiatry, and psychological testing can be arranged with the instructor. Elective for fourth-year medical students only. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 553 Psychodynamics and Psychopathology (2)** **Heilbrunn**
Heredity, constitution, physical changes, and family and social relationships as determinants in psychodynamics are discussed. Attention is paid to defense mechanisms such as anxiety, depression, resentment, evasion, withdrawal, repression, projection, and overcompensation as commonly encountered in psychopathology. For nonmedical students. Prerequisite, 267 or 451 or permission.
- 558 Seminar: Interviewing (2)**
Case studies are presented by individual students for discussion of the psychodynamics and methods of dealing with personality problems. For graduate students who are having practical experience in interviewing. For nonmedical students. Prerequisite, permission. (Not offered 1962-63.)
- 559 Child Psychiatry (2)** **Kaufman**
Series of discussions and lectures dealing with psychopathology of children. For nonmedical students. Prerequisite, 267 or 451 or permission.
- 565 Biological Foundations of Psychiatry (2)** **Heilbrunn**
Anatomical and physiological factors involved in various forms of psychopathology. For nonmedical students. (Not offered 1962-63.) Prerequisite, permission.

RADIOLOGY

Chairman: MELVIN M. FIGLEY, SS230 University Hospital

The courses given by this department are designed for students in the Graduate School and the School of Medicine. Some are concerned with the basic aspects of ionizing radiations, their measurement, control, and principles of safe application. Other courses are concerned with their application to the diagnosis of human disease and the control of human cancer.

Conjoint-426-427 Introduction to Physical Diagnosis (4-9) (See Conjoint Courses, page 78.)

COURSES

- 465 Diagnostic Radiology (*)** **Figley, Phillips**
A series of lectures for medical students describing in general principle and some detail the applications of radiological methods to clinical diagnostic problems. Prerequisite, third-year medical students.
- 475 Therapeutic Radiology (*)** **Parker**
A series of presentations for medical students with the Departments of Surgery, Medicine, and Pathology on the clinical aspects of the major human cancers and their control with surgery or radiation.
- 480 Experimental Radiation Dosimetry (3)** **Baltzo**
Radiological instrumentation, standards and techniques pertinent to measurement and control of human exposure to ionizing radiation in X-ray and isotope applications. Prerequisite, Physics 473 or Chemistry 395 or permission.
- 485 Radiation Dosimetry (4)** **Myers, Roesch**
The measurement of radiation energy loss relationships in gases and solids, detection techniques and circuits, units, consideration of human exposure limits. Prerequisite, permission.
- 493 Special Problems in Radiological Health (2 or 4, maximum 8)** **Baltzo**
Observation and participation in research and clinical use of radiation emitters. Prerequisite, permission.
- 494 Clerkship: Diagnostic Radiology (*)** **Figley**
Observation, instruction, and supervised participation in clinical fluoroscopy, radiography, film interpretation, and X-ray conferences. Prerequisites, senior standing and permission.
- 495 Clerkship: Therapeutic Radiology (*)** **Parker**
Observation, instruction, and supervised participation in clinical radiation therapy including clinical examination, treatment planning and administration, and conferences. Prerequisites, senior standing and permission.
- 498 Undergraduate Thesis (*)**
The student may write a thesis in either therapeutic or diagnostic phases of radiology. Prerequisite, permission.
- 520 Radiology Seminar (2)**
- 604 Research (*, maximum 12)**

The following Radiology courses are offered at the Center for Graduate Study at Richland, Washington.

- R400 Radiobiology (3)** **Bair**
This course requires only a minimum background in chemistry and does not presume any prior study of biology. Chemical, biological, and genetic effects of irradiation on unicellular and multicellular organisms, tolerance and dosage limits, effect of internal emitters, radiological ecology. Prerequisites, degree in science or engineering, Physics R323, or permission. (Offered Autumn, 1962)
- R485 Radiation Dosimetry (4)** **Roesch, Myers**
The measurement of radiation energy loss relationships in gases and solids; detection techniques and circuits; units; consideration of human exposure limits. Prerequisite, permission. (Offered Winter, 1963.)

SURGERY

Chairman: HENRY N. HARKINS, BB477 University Hospital

In the Department of Surgery, instruction is carried on during all four years of the medical student's training and is integrated with that of the other departments in the School of Medicine. In the first year, lectures are given concerning a few selected basic surgical applications of biology. In the second year, emphasis is placed on surgical physical diagnosis. In the third year, the inpatient clerkship in general surgery forms the core of the entire program. The student is assigned

patients and handles all aspects of care except direction of treatment. In the fourth year, attention is paid to the surgical subspecialties; neurosurgery, orthopedics, and urology. Special studies in general surgery, experimental surgery, ophthalmology, otolaryngology, and other surgical specialties are offered as electives.

The purpose of the undergraduate instruction in surgery is to provide the student with a basic background of surgical principles and surgical diagnosis and a knowledge of surgical diseases.

In addition to the basic undergraduate instruction, a fully certified surgical residency program is available in general surgery and the surgical specialties. Those participating in these residency programs may work toward a degree of Master of Science by meeting the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. Performance of a fundamental experimental research problem of high caliber is an additional requirement for this advanced degree.

COURSES

Conjoint 426-427 Introduction to Physical Diagnosis (4-9) (See Conjoint Courses, page 78.)

465 Clinical Clerkships (*)

Third-year students will be assigned to the surgical services of the King County Hospital, Veterans Administration Hospital, or University Hospital. The student will gain experience in both inpatient and outpatient care of the patient seen on the surgical service. The student's responsibility for inpatients will consist of a complete initial workup, routine laboratory studies, and day-to-day participation in their diagnostic and therapeutic care. Particular attention will be given to the correlation of basic science material and clinical disease. Instruction in surgical pathology will be provided. Operating room experience will also be included. Seminars will be conducted weekly in each of the surgical specialty areas. Required for third-year medical students.

475 Preceptorship in Orthopedics (*)

Anderson, Gloyd

Student will follow a preceptor in all his work to better understand the pathophysiology and management of problems of the musculo-skeletal system. Elective for medical students. Prerequisite, permission Division and Department.

476 Pediatric Orthopedic Clerkship (*)

Students will be assigned to the orthopedic service at Children's Orthopedic Hospital where they will have the opportunity to study problems of the musculo-skeletal system in patients on an inpatient and outpatient basis. The student becomes an integral part of the service and assists in patient care; attends rounds, seminars, and correlative anatomy conferences. Elective for medical students. Prerequisite, permission Division and Department.

477 Electroencephalography Laboratory (*)

Chatrian

Introduction to EEG techniques and interpretation as well as the opportunity to obtain superficial acquaintance with neurophysiological techniques. Elective for medical students. Prerequisite, permission Division and Department.

478 Neurosurgery Research (*)

Chatrian, Foltz, Kelly, Ward, White

Investigation of special problems as an intimate member of the research team in the neurosurgical laboratory. Research to lead to a thesis if desired. Elective for medical students. Prerequisite, permission Division and Department.

479 Clinical Neurosurgery (*)

Foltz, Kelly, Ward, White

Student serves clinical clerkship as active extern on neurosurgery ward at University Hospital or affiliated hospital. Elective for medical students. Prerequisite, permission Division and Department.

480 Surgery Clerkship-Selective Elective: Neurosurgery, Orthopedics, Urology (*)

Time is divided between the inpatient and outpatient services of two of these divisional specialties; affords student opportunity to explore in depth the various diagnostic techniques and therapeutic management offered to patients in these surgical specialties. Two specialties required for fourth-year medical students.

481 Surgical Externship in Ophthalmology and Otolaryngology (*)

Passmore, and Lineback, Madigan; Cain, U.S.P.H. Hospital

At Madigan Hospital, individual externship training in outpatient department of ophthalmology and otolaryngology; the student attends hospital conferences and meetings. At U.S.P.H. Hospital, externship in otolaryngology in outpatient clinic (visits average 600 per month); the student utilizes own diagnostic abilities, performs or assists instructor in all phases of patient workups and care; attends ward rounds and conferences. Elective for medical students. Prerequisite, permission Division and Department.

482 Externship in General Surgery (*)

Baker, Savage, Speir

Students assigned inpatient cases on general surgery services. Responsible for patient workups, follow assigned patients to Operating Room. Participates in ward rounds, and surgical conferences. Selected hospitals. Elective for medical students. Prerequisite, permission Division and Department.

- 483 Urology Research (*)** **Ansell**
The student participates in current urologic research projects under supervision of full-time staff. Certain specific problems may be elected by the student. Elective for medical students. Prerequisites, permission Division and Department.
- 484 Clinical Urology (*)** **Ansell**
Student participates in the full activities of the service including ward rounds, conferences, diagnostic procedures, surgery, and case presentations and is assigned to one of three teaching hospitals where he shares with house staff in responsibility for the care of patients on this service. Elective for medical students. Prerequisite, permission Division and Department.
- 485 Cardiovascular Surgery (*)** **Dillard, Merendino, Winterscheid**
Students actively engage in the care and treatment of inpatient and outpatient surgical cardiovascular cases. They will work closely with the cardiovascular team on preoperative diagnostic studies, in the operating room, and postoperative patient care. Elective for medical students. Prerequisite, permission Division and Department.
- 487 Animal Surgery (*)** **Stevenson**
Participating students perform as a surgical team approximately six complete representative procedures in animal laboratory under standard operating room conditions, utilizing standard operating room techniques. Special conference precedes each session. Elective for medical students. Prerequisite, permission.
- 498 Undergraduate Thesis (*)**
Offered to those students who have engaged in summer research in any division of the Department of Surgery. Provides time for extension of such projects and opportunity to study and prepare for completion of thesis on selected surgical subjects. Elective for medical students. Prerequisites, summer research and permission from the Division and Department.
- 499 Undergraduate Research (*)**
(Subject to approval.)

COURSES FOR GRADUATES ONLY

- 520 General Surgery Seminar (5)** **Harkins, Merendino, Nyhus, Stevenson**
Conferences, seminars, and round-table discussions of advanced surgical topics and recent literature in the field.
- 521 Orthopedic Research Seminar (*)** **Akeson, Anderson, Clawson**
Each week a current laboratory topic is discussed with members of the attending and resident staff. Active participation of the student is required. Prerequisite, graduate student.
- 522 Orthopedic Seminar (*)** **Clawson**
Seminar in current topics of orthopedic interest. Prerequisite, senior medical student or graduate student.
- 585 Surgical Anatomy (2-4, maximum 12) (See Conjoint Courses, page 78.)**
- 590 Surgical Experimental Techniques (5)** **Harkins, Merendino, Nyhus, Stevenson**
Basis for graduate research and advanced thesis work.
- 598 Seminar in Urology (*)**
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 (*)**
- 700 Thesis (*)**

ROSTER OF STUDENTS IN MEDICINE

Degrees of Doctor of Medicine Conferred, June 11, 1960

CLASS OF 1960

- ALLEN, William C., Bothell
University of Washington
Mountain View Hospital
- ANDERSON, James L., Seattle
B.A., University of Washington
Doctors Hospital
- ANDERSON, Robert W., Hilo, Hawaii
B.A., College of Puget Sound
Wayne County General Hospital
- ANDERSON, William F., Tacoma
B.A., Pacific Lutheran College
Pierce County Hospital
- ANGLE, Herbert G., Jr., Shelton
B.A., University of Washington
Harbor General Hospital
- BELL, Eldon E., Snohomish
B.S., University of Washington
Minneapolis General Hospital
- BELL, Jack W., Seattle
University of Washington
Sacramento County Hospital
- BOSWELL, John W., Fairbanks, Alaska
Stanford University
University of Washington
Santa Clara Hospital
- BOYER, Garry O., Spokane
B.S., Washington State College
Highland Alameda County Hospital
- BRANDT, Alan D., Spokane
B.S., University of Idaho
Orange County Hospital
- BRAY, Ronald E., Seattle
University of Washington
King County Hospital
- CALLERO, Vern L., Seattle
Gonzaga University
B.S., Seattle University
Providence Hospital
- CONNELLY, Glenn Hart, Jr., Portland,
Oregon
University of Washington
B.S., Oregon State College
San Francisco Hospital
- CORBETT, Ronald K., Spokane
B.A., University of Washington
University of California Hospitals
- CURRIN, Douglas R., Clarkston
B.A., Washington State College
University of California Hospitals
- DAUS, Joseph K., Seattle
B.S., Washington State College
San Francisco Hospital
- DIPPE, Donald W., Grand Forks, N.D.
B.A., B.S., University of North Dakota
University of Illinois
U.S. Public Health Service, Staten Island
- DOBBS, Larry S., Kirkland
Harvard University
B.A., University of Washington
King County Hospital
- DUNPHY, Barry E., Lynnwood
B.A., Yale University
U.S. Navy, San Diego
- EVANGER, Arden E., Camas
Willamette University
B.A., University of Washington
U.S. Public Health Service, Staten Island
- FERGUSON, Donald E., Klamath Falls,
Oregon
B.S., Whitworth College
General Hospital of Fresno County
- FORGAARD, Dean M., Seattle
University of Washington
B.S., Washington State College
Minneapolis General Hospital
- FREEMAN, Melvin I., Seattle
B.S., University of Washington
VAH, Los Angeles
- GAUB, Margaret L., Seattle
B.S., University of Washington
Jackson Memorial Hospital
- GAUGER, Grant E., Seattle
B.S., University of Washington
Deaconess Hospital
- HALL, George A., Missoula, Montana
Montana State University
B.S., University of Washington
U.S. Army, Letterman General Hospital
- HALL, George M., Edmonds
University of Minnesota
B.S., University of Washington
St. Lukes Hospital
- HARRIS, Arthur K., Camas
B.S., University of Washington
Minneapolis General Hospital
- HEUPEL, Alden R., Eureka, S.D.
B.A., Sioux Falls College
M.A., University of South Dakota
Santa Barbara Cottage Hospital
- HILLMAN, R. S. Lyle, Mountain, N.D.
B.A., B.S., University of North Dakota
U.S. Navy, San Diego
- HOLLINGSWORTH, Kennan H., Bellevue
B.S., University of Washington
- HUNT, Hal H., Denver, Colorado
University of Washington
University of California
B.A., Whitman College
Children's Orthopedic Hospital
- JOHNSON, George M., Bismarck, N.D.
B.A., B.S., University of North Dakota
St. Lukes Hospital
- JONES, Dwaine L., Edmonds
University of Washington
U.S. Navy, Oakland
- KENNEDY, John B., Everett
University of Washington
B.A., Stanford University
University of Texas Medical Branch
Hospital
- KNORR, William C., Kent
University of Washington
Eastern Washington College of Education
B.A., Pacific Lutheran College
King County Hospital
- KNUTSON, Lyman B., Miles City, Montana
University of Utah
B.S., Utah State Agricultural College
King County Hospital
- KOKENGE, LeRoy F., Yakima
B.S., Gonzaga University
Strong-Memorial-Rochester Municipal
Hospital
- LESTER, Edward L., Port Angeles
B.S., Washington State College
King County Hospital
- LUEHRS, James G., Mercer Island
U.S. Naval Dental Technician School
University of Washington
U.S. Navy, Oakland
- McKINLAY, Glenn W., Spokane
Washington State College
B.S., Whitworth College
St. Lukes Hospital

- MAHNKE, James H., Walla Walla
B.A., Harvard College
University of Minnesota Hospital
- MANRING, Daniel A., Spokane
B.S., Washington State College
U.S. Navy, San Diego
- MATHESON, David L., Seattle
B.A., Central Washington College of
Education
University of Texas Medical Branch
Hospital
- MEZISTRANO, Joseph S., Seattle
B.S., University of Washington
University of Kansas Medical Center
- MORLOCK, Noel L., Oak Harbor
University of Washington
Detroit Receiving Hospital
- MORRIS, Ralph L., Mossyrock
B.A., University of Washington
University Hospital
- MULFORD, Beatrice A., Onalaska
Lower Columbia Junior College
B.A., Pacific Lutheran College
Ancker Hospital
- MURPHY, Solbritt S., Stockholm, Sweden
University of Washington
Royal Charles Institute of Medicine
Children's Orthopedic Hospital
- MYERS, Lafe H., Jr., Richland
B.A., University of Washington
U.S. Navy, San Diego
- NELSON, Leslie G., Everett
B.S., Seattle Pacific College
Los Angeles County Hospital
- NIELSEN, Tore K., Tacoma
B.A., Pacific Lutheran College
Ancker Hospital
- NORMANN, Sigurd J., Edmonds
University of Washington
University of California Hospital
- PHILLIPS, Clarence A., Jr., Oklahoma
City, Okla.
B.A., University of Washington
U.S. Public Health Service, Seattle
- PROCTOR, Merton D., Great Falls,
Montana
Carleton College
San Diego Junior College
University of Washington
Virginia Mason Hospital
- RALSTON, L. Atley, Sheridan, Wyoming
B.A., Whitman College
University of Kansas Medical Center
- RICE, Edwin G., Grand Forks, N.D.
B.A., B.S., University of North Dakota
Minneapolis General Hospital
- RUDY, Lloyd W., Jr., Wenatchee
B.S., Washington State College
University of California Hospital
- SHERARD, Donald J., Seattle
B.A., Yale University
King County Hospital
- SIGURDSON, Thorbjorg, Edmonds
University of Washington
R.N., Ancker Hospital Training School for
Nurses
U.S. Public Health Service, Staten Island
- SMITH, Robert F., Seattle
University of Washington
B.S., Seattle Pacific College
Denver General Hospital
- SORENSEN, Lowell E., Pierre, S.D.
B.S., South Dakota State College
B.S., University of South Dakota
Doctors Hospital
- TENNYSON, Eugene H., Bremerton
B.A., Whitman College
King County Hospital
- THOMPSON, Gale E., Libby, Montana
Montana State College
B.A., Pacific Lutheran College
U.S. Army, Madigan General Hospital
- TURNER, David L., E. Stroudsburg, Pa.
B.S., Whitworth College
St. Lukes Hospital
- TWISS, Richard D., The Dalles, Oregon
Gonzaga University
University of California Hospital
- WATSON, Milton R., Walla Walla
B.A., Whitman College
Santa Clara County Hospital
- WILHYDE, David E., Tacoma
Whitman College
B.S., College of Puget Sound
University of Chicago Hospital
- WOOD, Edward M.
Texas Technological College
B.S., Oregon State College
Ph.D., Cornell University
Pierce County Hospital
- WRIGHT, Bruce C., Newport
B.A., Whitman College
King County Hospital
- YOUNG, Gary J., Camas
University of Portland
B.S., University of Washington
St. Vincents Hospital
- ZASKE, Merlin R., Vancouver
Clark Junior College
University of California Hospital

Degrees of Doctor of Medicine Conferred, June 10, 1961

CLASS OF 1961

- ALMQUIST, Edward E., Seattle
University of Washington
Strong-Memorial-Rochester Municipal
Hospital
- AMBUR, Richard F., Seattle
B.S., Seattle University
University of Utah Affiliated Hospital
- ANDERSON, Lennart L., Seattle
B.A., University of Washington
Highland Alameda County Hospital
- BADER, Max C., Seattle
University of Washington
U.S. Public Health Service Hospital,
Seattle
- BASKIN, Michael S., Tacoma
University of Washington
University of California Hospital
- BOROZAN, Bronko, Butte, Montana
B.A., University of Washington
Edward J. Meyer Memorial Hospital
- BRUNTON, Robert I., Walla Walla
B.A., Whitman College
Harbor General Hospital
- CASEY, Kenneth L., Olympia
B.A., Whitman College
The New York Hospital
- CHAMPION, William M., Seattle
B.S., University of Washington
King County Hospital
- CLIFFORD, Joseph C., Great Falls,
Montana
B.S., College of Great Falls
U.S. Public Health Service, Seattle

- COCHRAN, Gerald E., Seattle
University of Washington
Orange County General Hospital
- CONNER, Patrick L., Hoquiam
B.A., Whitman College
Mountain View General Hospital
- CRIM, Eleanor C., Fargo, N.D.
B.A., University of Washington
King County Hospital
- DALEN, James E., Seattle
B.S., Washington State College
M.A., University of Michigan
V and VI Medical Boston University
- DALTON, John J., Norfolk, Nebraska
Norfolk Junior College
Creighton University
B.A., University of Washington
Santa Clara County Hospital
- DAVIES, John R., Simms, Montana
Montana State University
University of Washington
Santa Clara County Hospital
- DAVIES, Raymond O., Jr., Spokane
B.S., University of Idaho
U.S. Naval Hospital
- EELKEMA, Robert C., Grand Forks, N.D.
B.S., University of Minnesota
D.V.M., University of North Dakota
U.S. Public Health Service, Seattle
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B.A., Pacific Lutheran College
U.S. Public Health Service, Staten Island
- GHIGLERI, Richard E., Wallace, Idaho
B.S., Seattle University
Stritch School of Medicine
Army Medical Service Hospital
- GIMLETT, David M., Tacoma
B.A., Stanford University
Harvard University
B.S., University of Washington
Mountain View General Hospital
- GLICKMAN, Kenneth I., Seattle
B.S., University of Washington
University of Utah Affiliated Hospitals
- GOLLNICK, Lea V., Seattle
B.S., University of Washington
Philadelphia General Hospital
- GRANT, Gray B., Seattle
B.S., University of Washington
Highland Alameda County Hospital
- GREENE, Larry M., Seattle
B.A., University of Washington
Orange County General Hospital
- GULDJORD, Knute M., Poulsbo
B.S., Washington State College
Harbor General Hospital
- HANSEN, Sigvard T., Jr., Yakima
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King County Hospital
- HAYNES, James M., Seattle
B.A., University of Washington
Bellevue Second Medical Division, Cornell
University
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Cleveland Metropolitan General Hospital
- HOLCENBERG, John S., Seattle
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Barnes Hospital
- HOLLINGSWORTH, Ralph R., Kelso
Lower Columbia Junior College
B.S., University of Washington
Boston University Straight Specialties
- HUNTINGTON, HOWARD W., Tacoma
B.A., St. Olaf College
Good Samaritan Hospital
- JACKLIN, Alexander J., Seattle
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University of California
San Diego County General
- JENSEN, Hanne M., Copenhagen, Denmark
University of Copenhagen
University of Washington Hospital
- JOHNSON, Rick L., Kelso
B.S., Washington State College
Philadelphia General Hospital
- KAMM, Ralph F., Lebanon, Illinois
B.S., University of Washington
North Carolina Memorial Hospital
- KEENE, John E., Yakima
B.S., Washington State College
University of Texas Medical Branch
Hospital
- KENNEY, G. James, Jr., Gig Harbor
B.A., University of Washington
Providence Hospital
- KRAUSE, Ronald L., Snohomish
B.A., Whitman College
Minneapolis General Hospital
- LEECH, Richard W., Bothell
B.A., University of Washington
Wayne County General Hospital
- LEWIS, Karsten C., Albany, Oregon
University of Washington
University of Oregon Medical School
- LOOP, Maj T., Stockholm, Sweden
Royal Medical School of Uppsala
Medical School of Lund
University of Chicago
Children's Orthopedic Hospital
- LOTTSFELDT, Fredrik I., Kirkland
University of Wisconsin
University of Washington
University of Minnesota Hospital
- MCALISTER, Robert, Seattle
Princeton University
King County Hospital
- MELTON, Russell W., Veradale
B.A., Gonzaga University
U.S. Naval Hospital, Oakland
- MILLETT, David W., Seattle
B.S., Seattle University
Minneapolis General Hospital
- MILNER, John E., Bremerton
B.S., U.S. Military Academy
University of Washington
Peter Bent Brigham Hospital
- MURPHY, William P., Seattle
Los Angeles City College
Los Angeles State College
University of Washington
Orange County General Hospital
- ODELL, Rollin W., Jr., Seattle
B.S., University of Washington
University Hospital-Ann Arbor
- OGDEN, Frank W., Honolulu, Hawaii
B.S., Seattle Pacific College
Army Medical Service Hospital-Brooke
General Hospital
- OWENS, Delwin T., Jr., Joseph, Utah
University of Utah
Weber College
B.S., University of Washington
Sacramento County Hospital
- PELTER, William M., San Diego, California
B.S., University of Nevada
University of Washington
Santa Clara County Hospital
- PETERSON, Norman E., Seattle
University of Washington
Philadelphia General Hospital
- POWELL, William J., Coeur d'Alene, Idaho
Northern Idaho Junior College
Gonzaga University
University of Washington
Cincinnati General Hospital

- PRICE, Richard F., Gig Harbor
B.S., College of Puget Sound
Cleveland Metropolitan General Hospital
- RAHE, Richard H., Seattle
Princeton University
Bellevue Second Medical Division—Cornell University
- RANDOLPH, Gerald G., Richland
B.S., The Citadel
King County Hospital
- RANEY, James O., Tacoma
B.S., Washington State College
Edward J. Meyer Memorial Hospital
- SHORT, Denis S., Grand Coulee
B.A., Central Washington College of Education
Medical College of Virginia Hospital Division
- STROM, Clarence G., Everett
B.A., Pacific Lutheran College
Minneapolis General Hospital
- SULLIVAN, Frank W., Kennewick
B.A., University of Washington
Mary Imogene Bassett Hospital
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University of Washington
VAH, Los Angeles
- VAN der WEKEN, Duane W., Everett
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Orange County General Hospital
- VON SEGGERN, James G., Huron, S.D.
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- WANG, Hugh H., Honolulu, Hawaii
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University of Washington Hospital
- CLASS OF 1962**
- AMY, Bruce M., Spokane
B.A., Pacific Lutheran College
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B.A., University of Washington
- ANDERSON, W. Dale, Covina, California
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- BACKUS, Frank I., Prosser
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- BENSUSEN, Charles I., Seattle
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- BINTLIFF, Sharon J., Beaumont, Texas
B.A., Rice Institute
M.A., University of Texas
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B.S., University of Washington
- BRADEN, John P., Seattle
B.S., University of Washington
- BRASSEUR, Roosevelt G., Miles City, Montana
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B.S., University of North Dakota
- BROWN, William R., Spokane
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B.A., Gonzaga University
- CARLSON, Robert L., Snohomish
Washington State College
B.A., Central Washington State College
University of Washington
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- CRILL, Wayne E., Nampa, Idaho
B.S., College of Idaho
- DELZELL, Allen W., Vermillion, S.D.
B.A., B.S., University of South Dakota
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B.S., University of Washington
- DRISCOLL, Thomas A., Spokane
Notre Dame University
Gonzaga University
- ENDEN, James A., Aberdeen
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- EVANS, Kirk E., Olympia
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- FITZ, Rudolph G., Jr., Nampa, Idaho
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- GARD, Kenley E., Vancouver
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Queen's University, Canada
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- GOFFE, Bernard S., Eugene, Oregon
B.S., University of Washington
- GUYER, Robert E., Seattle
B.A., University of Washington
- HANSEN, Thomas J., Spokane
B.S., Whitworth College
- HARDY, William E., Seattle
B.S., Saint Mary's College
- HARRIS, Stanley E., Spokane
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- HECHT, William H., Seattle
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- HIGGENS, Michael H., Ellensburg
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- HONDA, James I., Seattle
B.S., Seattle University
- HOSKINS, Blaine L., Dayton
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- JARVIS, David B., Puyallup
B.A., Yale University
- JUDGE, Terrence P., Helena, Montana
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- KNORR, James E., Kent
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- KYLLO, John E., San Diego, California
B.A., Wisconsin State College
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- LAWRENCE-BERREY, Robert E., Walla Walla
B.A., Whitman College
- LEITCH, Cecil M., Grand Forks, N.D.
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B.S., University of North Dakota
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- LILLIBRIDGE, Clinton B., Olympia
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- MacLEAN, James B., Spokane
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OBENCHAIN, Dean F., Boise, Idaho
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B.S., State University of South Dakota

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University of Oregon
University of Washington

O'HARA, Brian A., Vancouver
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PREWITT, Charles D., Twisp
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Education

RADACK, Morris L., Avon, S.D.
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B.M., State University of South Dakota

REDFIELD, William J., Bellevue
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B.A., Stanford University

REEDY, Michael K., Seattle
University of Chicago
B.A., University of Washington

SACHS, Marshall H., Seattle
B.A., University of Washington

SCHEYER, Stanley C., Tacoma
Stanford University
University of Washington

SCHIMMELBUSCH, Werner H., Seattle
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SCHWINDT, Robert R., Castle Rock
Pacific Lutheran College
University of Washington

SEYMOUR, Paul D., Centralia
Centralia Junior College
University of Washington

SHEA, Michael W., Spokane
B.A., Gonzaga University

SMITH, Donald C., Aberdeen
Grays Harbor Junior College
University of Washington

SMITH, Michael R., Spokane
University of Notre Dame

STERN, Robert, Spokane
B.A., Harvard College

TAYLOR, Neal, Burley, Idaho
B.S., Brigham Young University

TURNER, Eugene F., Seattle
Shasta College
Westmont College
B.A., University of Washington
University of South Dakota

WALDRON, Frank D., Tacoma
D.V.M., Washington State College
Central Washington College of Education

WALKUP, Gary L., Richland
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B.S., University of Washington

WENNERBERG, Richard P., Longview
B.S., Stanford University

WERTHMANN, Florian J., Fall City
B.S., Rensselaer Polytechnic Institute
Ohio State University
University of Washington

WONG, Guy Y., Seattle
B.A., University of Washington

ZUEGE, Robert H., Ottawa, Illinois
B.A., Harvard University

CLASS OF 1963

ANDERSON, Robert D., Seattle
University of Washington
B.S., Brigham Young University

ANDERSON, Seth E., Jr., Tacoma
B.A., Pacific Lutheran University

BERNHARD, Dan C., Seattle
B.S., University of Wisconsin

BOETTCHER, William G., Sitka, Alaska
B.S., Washington State University

BOWEN, Joyce M., Taylorsville, Miss.
Mississippi Southern College
Jones Junior College
B.S., Mississippi State University
University of Colorado

BOYCE, Noble E., Jr., Mercer Island
B.A., Whitman College

BROUGHTON, Tom W., Seattle
University of Washington

BRUNZELL, John D., Spokane
B.A., Whitman College
University of Washington

CANTY, Charles R., Jr., Butte, Montana
B.A., Carroll College

CHARD, Ronald L., Pomeroy
B.S., Washington State University
Duke University
University of Washington

CHINN, Joseph, Seattle
B.A., Yale University
University of Washington

CHINN, Mullan A., Seattle
B.S., University of Washington

DELATEUR, Barbara J., Hoquiam
University of Washington
Maryhurst College
B.S., St. Louis University

DICKERSON, Ben R., Spokane
B.A., Eastern Washington College of
Education
Oregon State College
University of California, Los Angeles
Gonzaga University

DONAHOO, Stanley E., Seattle
University of Washington

ELLINGSEN, Donald A., Spokane
B.S., Washington State University

FALL, Gordon F., Seattle
B.S., University of Washington

FAUCHALD, Nils, Jr., Mercer Island
B.A., Yale University

FOSS, Donald L., Fergus Falls, Minn.
Concordia College
B.S., University of North Dakota

FRAGOLA, Louis A., Jr., Seattle
B.S., University of Connecticut
University of Washington

FRANK, Peter G., Shelton
B.S., University of Washington

FRITZ, Kirkland J., Marquette, Mich.
Northern Michigan College
B.A., Pacific Lutheran College

GOWING, Burton R., Seattle
B.S., University of Washington

GRANT, Frederick J., Seattle
B.A., University of Washington

GREEN, Ralph R., Seattle
B.A., University of Washington

GROESBECK, Clarence J., Seattle
Central Washington College of Education
B.S., University of Washington

- HANSEN, Peter O., Cheney
Eastern Washington College of Education
- HARRINGTON, Robert L., Seattle
Gonzaga University
B.S., Washington State University
B.A., University of Washington
- HAUGLAND, David O., Seattle
University of Washington
- HEGGE, Donald W., Elgin, N.D.
University of Washington
B.S., University of North Dakota
- HETTER, Gregory P., Philadelphia, Pa.
University of Gothenburg
B.A., Royal University of Uppsala
- HODGE, Janet M., Bellingham
B.S., University of Washington
- HOFELDT, Fred D., Parma, Idaho
B.S., College of Idaho
- HONSINGER, Richard W., II, Palouse
B.S., Washington State University
- HOUK, Robert L., Seattle
University of Washington
- HOWELL, William B., Lynden
University of Washington
- HULL, Paul Q., Seattle
B.S., University of Washington
- JACOBSON, Robert B., Elgin, N.D.
B.A., B.S., University of North Dakota
- JOHNSTON, Gerald P., Spokane
B.A., Gonzaga University
- JONES, Albert L., Spokane
B.S., Whitworth College
- KAMMER, Darrell A., Jr., Puyallup
B.S., College of Puget Sound
- KAPELOWITZ, Robert F., Sharp Park,
California
University of Alaska
B.A., University of Washington
- KAY, Kenneth G., Seattle
University of Washington
- KEMP, Aaron W., Seattle
B.S., Washington State University
University of Washington
- KINZIE, John D., Tonasket
B.A., LaVerne College
- LEHMAN, Richard H., Seattle
B.S., University of Washington
B.S., State University of South Dakota
- MATHESON, George W., Chehalis
B.A., University of Washington
- MCCOY, Claude O., Seattle
B.S., Seattle Pacific College
- MCDONALD, George B., Jr., Richland
University of Washington
B.A., Whitman College
- MCDONALD, Herbert B., Spokane
B.A., Gonzaga University
- McFARLANE, Claude L., Tacoma
B.S., College of Puget Sound
- MILLARD, Philip R., Everett
B.S., Washington State University
- MUSTO, David F., Seattle
B.A., University of Washington
M.A., Yale University
- NAGLE, John P., Jr., Pullman
B.S., Washington State University
- PIM, Kenneth L., Seattle
B.S., University of Washington
- REED, Thomas H., LaPine, Oregon
B.A., Whitman College
- REMBE, Armin M., Seattle
B.A., University of Washington
- ROLLINS, William H., Seattle
B.A., Whitman College
- RONNING, Arvid I., Bainville, Montana
B.A., St. Olaf College
B.S., M.A., University of South Dakota
- RUDD, Theodore H., Tieton
B.S., Washington State University
- SALISBURY, Robert B., Seattle
B.S., University of Washington
- SCHWARZ, Merle R., American Falls,
Idaho
B.A., Pacific Lutheran College
- SCOTVOLD, Marvin J., Alderwood Manor
University of Washington
- SELLS, Clifford J., Longview
B.A., Pacific Lutheran College
- STANLEY, Garrit E., Oak Harbor
B.S., Seattle Pacific College
- STRUM, Donald H., Seattle
B.S., University of Washington
- SULLIVAN, Clyde E., Jerome, Idaho
B.S., College of Idaho
- SULLIVAN, Robert W., Butte, Montana
B.S., Gonzaga University
- SYTMAN, Alexander L., Seattle
B.S., University of Washington
- THOMAS, David B., Seattle
B.S., University of Washington
- THOMAS, Neil F., Pullman
University of Hawaii
B.S., Utah State University
M.A., Washington State University
University of Idaho
Idaho State College
- THOMSON, Pate D., Oakland, California
San Francisco State College
University of California
B.S., University of South Dakota
- TRUNKEY, Donald D., St. John
B.S., Washington State University
- VALL-SPINOSA, Arthur, Bellevue
B.A., Whitman College
- WAKEFIELD, William C., Seattle
B.S., Washington State University
University of Washington
- WEITLAUF, Harry M., Seattle
B.A., B.S., University of Washington
- WESTRUM, Lesnick E., Roy
B.S., Washington State University
- WHITE, Asher A., Jr., Minneapolis, Minn.
B.A., Amherst College
University of Minnesota
- WHITE, Beverly J., Seattle
University of Washington
- WHITE, Lon R., Boise, Idaho
Boise Junior College
University of Washington
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University of Washington
- WINTER, William W., Seattle
University of Washington
- WYMER, Michael E., Bremerton
B.A., Whitman College

CLASS OF 1964

- BARKER, Edward A., Whitefish, Montana
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- BIRKELAND, Fredric M., Bellevue
B.S., University of Washington
- BLEAKMAN, Robert O., Missoula, Montana
B.S., Montana State College
- BOZARTH, William R., Lewiston, Idaho
B.A., Harvard University
- BOWE, Richard G., Seattle
B.S., University of Washington
- BROBECK, Alan G., Seattle
University of Washington

- BUCHANAN, Richard F., Salem, Oregon
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- BURDICK, Robert E., Sequim
B.S., Washington State University
- CAUDILL, Robert G., Omak
B.S., University of Washington
- CLARKE, Ronald R., Oakland, California
Southern Oregon College
Pacific Lutheran University
B.A., University of Washington
- COMBS, John W., La Grande, Oregon
B.A., University of Washington
- CONNOLLY, M. Estelle, Seattle
B.A., University of Washington
- DAVIS, John H., Wenatchee
University of Washington
- DICKSTEIN, Stephen S., Seattle
B.A., University of Washington
- EASTON, John D., Everett
B.S., Washington State University
- ESPELAND, Duane H., Everett
Everett Junior College
B.A., University of Washington
- GERSTENBERGER, Duane F., Everett
B.A., University of Washington
- GILKEY, Gareth H., Aurora, Ill.
B.A., DePauw University
- GOLD, Raelene J., Seattle
B.A., University of Washington
- HAMMERMEISTER, Karl E., Puyallup
B.S., University of Washington
- HENNES, David M., Seattle
University of Vienna
University of Washington
B.S., Notre Dame
- HENRY, Melvin L., Everett
B.S., College of Puget Sound
- HONGLADAROM, Thawarm, Seattle
B.S., University of Washington
- HUDSON, Leonard D., Everett
B.S., Washington State University
- HULL, Larry, Nampa, Idaho
B.A., Northwest Nazarene College
- INGHAM, George W., Olympia
Stanford University
- JACOBSON, John D., Arlington
B.A., Pacific Lutheran University
- JAMES, Charles F., Lubbock, Texas
Texas Technological College
B.A., University of Washington
- JAMISON, Camille E., Portland, Oregon
Multnomah Bible College
B.A., Seattle Pacific College
- JOHNSON, Stephen L., Juneau, Alaska
B.S., Massachusetts Institute of Technology
B.A., University of Washington
- JOHNSON, William R., Seattle
B.A., University of Washington
- KIETZER, Glenn J., Camas
B.A., University of Washington
- KITSOS, Constantine N., Seattle
University of Washington
- KLINT, Kenneth, Sequim
College of Puget Sound
Whitworth College
B.A., Central Washington College
- LACEY, Conley G., Spokane
Carroll College
- LELAND, Harold B., Seattle
Graceland College
University of Washington
- MADENWALD, Malcolm B., Bellingham
B.A., Western Washington College of
Education
- MARGOLIS, James A., Seattle
B.S., University of Washington
- MCDONALD, James P., Richland
Southern California Bible College
B.S., University of Washington
- McGILL, Charles R., Tacoma
B.S., College of Puget Sound
- MILLER, Gilbert T., Spokane
B.S., Gonzaga University
- MITCHELL, William B., Kendrick, Idaho
B.S., University of Idaho
- MULLEN, James B., Seattle
B.A., Stanford University
University of Washington
- MYHRE, Oddvar A., Ethiopia
La Sierra College
Walla Walla College
Eastern Oregon College
B.S., College of Puget Sound
- NAGLE, Raymond B., Bremerton
B.S., Washington State University
- NEIMAN, Paul E., Seattle
University of Washington
- NESLAND, Robert S., Kent
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- NIELSEN, Louis T., Spokane
B.S., Washington State University
- OTTESON, Evan L., Minneapolis, Minn.
B.S., Whitworth College
- PEARSON, Derald G., Portland, Oregon
University of Washington
- PETERSON, John L., Seattle
University of Washington
B.S., Dartmouth College
George Washington University
- PHILLIPS, Michael T., Emmett, Idaho
B.S., College of Idaho
- RAICHLE, Marcus E., Aberdeen
University of Washington
- RICKER, Frank Michael, Union, Oregon
Eastern Oregon College
University of Oregon
- RIVKIN, Saul E., Seattle
B.A., University of Washington
- ROSENGREN, Harold N., Seattle
Dixie College
University of Washington
- ROYS, David S., Seattle
B.A., Linfield College
University of Washington
- RUARK, Sylvan R., Tonasket
Laverne College
B.A., University of Washington
- SAKUDA, David H., Honolulu, Hawaii
B.A., Columbia University
Tufts Medical
- SCHUSTER, Joseph A., Seattle
B.A., University of Washington
- SMITH, Gilbert A., St. Ignatius, Montana
B.A., Montana State College
- SMITH, Randall W., Tacoma
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- STRAIT, Gail B., Spokane
B.S., Washington State University
- TAYLOR, Pete L., Sequim
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University of Washington
- THAL, Alan D., Seattle
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- WEBER, Donald C., Tacoma
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- WEGNER, Glen E., Kendrick, Idaho
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- BAERG, Richard D., Seattle
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Pacific Lutheran College
- BARTLETT, Gerald L., Salem, Oregon
B.A., Seattle Pacific College
- BEEMER, Richard K., Paulsbo
Olympic Junior College
University of Maryland (overseas)
University of Washington
- BITSEFF, Edward L., Burlington
Rollins College
University of Washington
- BOYCE, John K., Bellevue
B.A., Whitman College
- BOYLON, James L., Camas
B.S., University of Washington
- BROOKS, George F., Seattle
Whitman College
B.A., University of Washington
- CALHOUN, David C., Orofino, Idaho
College of Puget Sound
- CARLSON, Edwin J., Aberdeen
Grays Harbor Junior College
University of Washington
- CONGER, John D., Nezperce, Idaho
B.S., Seattle University
- CROWLEY, James R., Oakesdale
University of Washington
- DASSEL, Steven W., Sumner
B.S., University of Washington
- DAVIS, Josephine P., Seattle
B.S., University of Washington
- DEAL, Edson F., Nampa, Idaho
B.S., University of Puget Sound
- DOUGLAS, Smith W., III, Richland
Oklahoma Baptist University
Columbia Basin College
B.A., University of Washington
- DOUPE, David W., Bellevue
B.A., Johns Hopkins University
- ELLINGSEN, Bruce A., Spokane
Washington State University
- FORSGREN, Robert W., Bozeman, Montana
Montana State College
- FROSTAD, Alvin L., Kettle Falls
Eastern Washington College of Education
Whitworth College
- FRY, Bill W., Valparaiso, Indiana
B.A., Valparaiso University
B.S., Purdue University
University of Washington
- GIACOBazzi, Peter F., Seattle
B.S., Oregon State College
- GILLILAND, Kenneth G., Abilene, Kansas
B.A., Pacific Lutheran College
- GOSLIN, Judith L., Seattle
B.A., Wellesley College
- HALL, Phillip L., Anacortes
B.S., Washington State University
- HAMILTON, Glen W., Goldendale
Abilene Christian College
- HEILBRUNN, Mark R., Seattle
B.A., Reed College
University of Washington
- HIGGINS, Robert W., Pullman
B.S., Washington State University
- HILL, Wayne L., Dayton
B.A., Pacific Lutheran University
- HILLEBOE, John W., Billings, Montana
Eastern Montana College of Education
B.A., University of Washington
- HOSHAW, Thomas C., Boise, Idaho
B.A., University of Pennsylvania
- HOUGHTON, Henry S., II, Seattle
B.A., Whitman College
- HOVLAND, David N., Seattle
University of Washington
- HUBER, Gary L., Millwood
B.S., Washington State University
- JOHNSON, Ruth C., Richland
B.A., Whitman College
Northwestern University
- KENNEDY, Ross D., Chehalis
B.A., Whitman College
University of Washington
- KEY, Jerry L., Cashmere
B.A., Linfield College
- KUHNS, Lawrence Robert, Fairbanks,
Alaska
University of Alaska
- LAMEY, Jack R., Everett
Stanford University
B.S., University of Washington
- MATTSON, Marlin Roy A., Bellingham
B.A., University of Washington
- MAY, James M., Seattle
University of Washington
- McGILL, Kenneth C., Tacoma
B.S., University of Puget Sound
- MEAGHER, Thomas F., Seattle
Yale University
- MERTENS, Benny F., Merryville, La.
Washington State University
B.S., Gonzaga University
- MESSETT, Raleigh C., Seattle
B.A., University of Washington
- NELSON, George E., Everett
B.A., Linfield College
- NOKES, Rosalain J., Seattle
B.S., Seattle University
- NOTSKE, Robert N., Seattle
B.S., Seattle University
University of San Francisco
- PEARCE, Ronald G., Spokane
University of Washington
- PIERCE, John H., Seattle
B.S., Yale University
- POMAJEVICH, Jean D., Missoula, Montana
B.A., Montana State University
Seattle Pacific College
- PRINDLE, Kirk H., Jr., Carpinteria, Calif.
B.A., Whitman College
San Francisco State College
- REICH, William P., Billings, Montana
Eastern Montana College of Education
B.A., Montana State University
- RHODES, Donald B., Ellensburg
B.A., University of Washington
- RYAN, Thomas M., Alameda, California
B.A., Gonzaga University
- SANDE, Merle A., Mt. Vernon
B.S., Washington State University
- SCHRODER, Paul E., Spokane
B.A., Gonzaga University
M.A., University of Washington
- SCHWESINGER, Wayne H., Olympia
B.S., St. Martin's College
- STEPHENS, Burl C., Cheyenne, Wyoming
Anchorage Community College
University of Washington
- STOUT, Karen J., Rochester
University of Washington

STROMBERG, Don D., Idaho Falls, Idaho
Idaho State College
University of Southern California
B.A., University of California

SUCHOSKI, Joseph F., Jr., Seattle
Seattle University

TENNICAN, Patrick O., Seattle
B.S., University of Washington

TERRY, Irvin L., Jr., Seattle
B.S., Seattle University
M.S., University of Washington

THOMPSON, Arthur R., III, Kansas City,
Missouri
B.A., Amherst College
University of Washington

TIERNEY, Jerry H., Reardan
B.S., Washington State University
University of Washington

TSOI, Andrew M., Hong Kong
Northcote Training College
B.S., Whitworth College

TUCKER, Kenneth R., Bozeman, Montana
Walla Walla College
B.A., Whitman College
University of Washington

TULIN, Robert W., Sequim
Olympic Junior College
University of Washington
B.A., Washington State University

VATH, Raymond E., Havre, Montana
B.S., College of Great Falls
University of Washington

VON STUBBE, William F., Seattle
B.A., University of Washington

WHIPPLE, Bruce G., Bellingham
B.S., Wheaton College

WILLIAMS, Preston P., Ellensburg
Central Washington College of Education

WINEMILLER, Jay H., Wenatchee
University of Washington

WONG, Terry C. Y., Honolulu, Hawaii
B.A., Johns Hopkins University

ROSTER OF STUDENTS IN MEDICAL TECHNOLOGY

CLASS OF 1962

ANDERSON, Joyce, Seattle
DUNSMORE, Carol, Tacoma
ENG, Mary Chin, Bellingham
ERNICK, Alice, Cle Elum

GASKELL, Marilyn, Seattle
JARVIS, Sandra Moulton, Seattle
PATRICELLI, Lorene, Seattle
POWELL, Patience Wheeler, Deming

CLASS OF 1961

Degree of Bachelor of Science in Medical Technology conferred June 1961

DICKEVICH, Ruth Linda Forsman,
Seattle

HARLINGTON, Floyd, Jr., Naches

KAYLOR, Ann Whitfield, Seattle

MCCOUBREY, Pamela Grace Phares,
Seattle

MELVILLE, Sherrin Isabelle, Union Gap

MUNNS, Rubye Layne, Pomeroy

PLATT, Kay Jeanne, Chelan

SASAI, Marilyn H. Nagamine, Seattle

TAKAHARA, Louise Misako, Seattle

WHITE, Dorothy Laura, Tacoma

YOSHIOKA, Karen Tomoko, Tacoma

CLASS OF 1960

Degree of Bachelor of Science in Medical Technology conferred June 1960

GRISWOLD, Roberta Jean, Spokane

KRUSE, Arlene Ann, Seattle

LILLIBRIDGE, Jacqueline Jo Struthers,
Walla Walla

LINDE, Patricia Alice Campbell, Seattle

LOBBEREGET, DeAnne Marie,
Mercer Island

MENARD, Virginia Louise, Seattle

STOVER, Janis Ann, Seattle

SUDMAN, Dorothea Marie, North Platte,
Nebraska

WELLS, Shirley Ann, Seattle

ROSTER OF STUDENTS IN OCCUPATIONAL THERAPY

CLASS OF 1961

Degree of Bachelor of Science in Occupational Therapy conferred June 1961

DECKER, Mary Christine, Seattle

CLASS OF 1962

EARLEY, Kathleen, Tacoma

GOULDING, Carol Beth, Seattle

CLASS OF 1963

ANDERSON, Betty Jean, Seattle

GUTHRIE, Susan, Selah

HARLOCK, Sylvia, Steilacoom

HARROP, Patricia, Seattle

PEARSON, Mary Jo, Bremerton

SWADENER, Sally Hean, Seattle

WOODSIDE, Ann Margit, Seattle

ROSTER OF STUDENTS IN PHYSICAL THERAPY

CLASS OF 1960

Degree of Bachelor of Science in Physical Therapy conferred June 1960

DAMMEIER, Arrol Anne, Gig Harbor
DAVIES, Laurie Ann, Chehalis
ESHELMAN, Donna Mae, Seattle
INMAN, Douglas Allen, Everett

LEWIS, Donald Wayne, Richland
REID, Betty J. Burton, Bellevue
VAN DIVORT, Judith Philbrick,
Bellingham

CLASS OF 1961

Degree of Bachelor of Science in Physical Therapy conferred June 1961

ADAMS, Judith Esther, Seattle
ALFRED, Judith Payson, Plattsburg, N.Y.
CARMIGNANI, Merlina Dominca, Seattle
COURTION, Bonnie Jeanne, Kirkland
PERKINS, Harold Doyle, Seattle

ROMSTAD, Karen Dell, Seattle
SCHMITZ, Arlene Marie, Mt. Angel, Ore.
STANG, Ingri, Seattle
WEIMER, Bonnie Kate, Anchorage, Alaska

CLASS OF 1962

ELDRIDGE, Dale Raymond, Mercer Island
MOORE, Ann Sharon, Seattle
MUNROE, Patricia Kay, Seattle

OLASON, Eva Lou Ann, Bellingham
PERKINS, Barbara Gail, San Antonio

CLASS OF 1963

CHISMAN, Karen Frances, Seattle
ESPEDAL, Carl Edward, Aberdeen
HUDGINS, Kay Jean, Seattle
LO, Pearl Chun-Chu, Hong Kong
LUDY, Margaret Aldens, Seattle
MUNROE, Judith Ann Louise, Bellingham
OLESON, Janice Kay, Seattle

OWENS, Beverly Jean, Mt. Home, Idaho
PITCHER, Barbara Sue, Seattle
QUIST, Helen Patricia, Spokane
STEEN, Barbara Eleanor, Seattle
SWEENEY, Ruth Angela, Lewiston, Idaho
TOTEY, Norman James, Everett

BULLETIN • UNIVERSITY OF WASHINGTON



SCHOOL OF NURSING

1962-1964

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes three general bulletins; bulletins of the colleges and schools; Summer Quarter Bulletin; the bulletin of the Center for Graduate Study at Hanford; and bulletins of the Division of Correspondence Study and the Division of Evening Classes.

INTRODUCTION TO THE UNIVERSITY, one of the general bulletins, is especially prepared for new and prospective students. It lists all the University curricula, with their admission requirements, and presents information on other phases of student life, including services for students, student activities, and expenses. UNIVERSITY RULES AND REGULATIONS, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as registered students. HANDBOOK OF SCHOLARSHIPS, the third general bulletin, lists the various scholarships available.

Curricula, courses, and scholarship requirements in each field of study are described in the college and school bulletins. Each of these bulletins also discusses services, organizations, and expenses as they relate to students in the particular college or school.

Requests for copies of any of the bulletins should be addressed to the Addressograph Service.

General Bulletins

HANDBOOK OF SCHOLARSHIPS (RESTRICTED DISTRIBUTION)

INTRODUCTION TO THE UNIVERSITY

UNIVERSITY RULES AND REGULATIONS (FOR REGISTERED STUDENTS ONLY)

Bulletins of the Colleges and Schools

COLLEGE OF ARCHITECTURE AND URBAN PLANNING

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF BUSINESS ADMINISTRATION

SCHOOL OF DENTISTRY

COLLEGE OF EDUCATION

COLLEGE OF ENGINEERING

COLLEGE OF FISHERIES

COLLEGE OF FORESTRY

GRADUATE SCHOOL

SCHOOL OF LAW

SCHOOL OF MEDICINE

SCHOOL OF NURSING

COLLEGE OF PHARMACY

SCHOOL OF SOCIAL WORK

Other Bulletins

SUMMER QUARTER

CENTER FOR GRADUATE STUDY AT HANFORD

CORRESPONDENCE STUDY

EVENING CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
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CALENDAR

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

WINTER QUARTER, 1963

REGISTRATION PERIOD

OCT. 29-Nov. 27	Advance Registration only for students in residence Autumn Quarter, 1962. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
JAN. 2-4	In-Person Registration for students in residence Autumn Quarter, 1962, who did not complete Winter Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
JAN. 2-4	In-Person Registration for former students not in residence Autumn Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 1.</i>
DEC. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
DEC. 20	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
JAN. 2-4	In-Person Registration for ALL new students.
JAN. 4	Last day to register for Winter Quarter, 1963. Note application deadlines.
JAN. 7-11	Change of Registration by appointment only.

ACADEMIC PERIOD

JAN. 7—MONDAY	Instruction begins
JAN. 11—FRIDAY	Last day to add a course
FEB. 21—THURSDAY	Last day to submit applications for advanced credit examinations
FEB. 22—FRIDAY	Washington's Birthday and Founder's Day holiday
MAR. 9—SATURDAY	Advanced credit examinations
MAR. 15-21	Final examinations
MAR. 21—THURSDAY	Quarter ends

SPRING QUARTER, 1963**REGISTRATION PERIOD**

JAN. 28-FEB. 21	Advance Registration only for students in residence Winter Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
MAR. 26-28	In-Person Registration for students in residence Winter Quarter, 1963, who did not complete Spring Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
MAR. 26-28	In-Person Registration for former students not in residence Winter Quarter, 1963. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is March 1.</i>
MAR. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
MAR. 15	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
MAR. 26-28	In-Person Registration for ALL new students.
MAR. 28	Last day to register for Spring Quarter, 1963. Note application deadlines above.
APRIL 1-5	Change of registration by appointment only.

ACADEMIC PERIOD

APRIL 1—MONDAY	Instruction begins
APRIL 5—FRIDAY	Last day to add a course
MAY 10—FRIDAY	Last day to submit applications for advanced credit examinations
MAY 25—SATURDAY	Advanced credit examinations
MAY 30—THURSDAY	Memorial Day holiday
JUNE 7-13	Final examinations
JUNE 9—SUNDAY	Baccalaureate Sunday
JUNE 13—THURSDAY	Quarter ends
JUNE 15—SATURDAY	Commencement

SUMMER QUARTER, 1963**REGISTRATION PERIOD**

General In-Person Registration for ALL students (*by appointment only*):

June 6, 7, and 10
June 17 through 21

New students. Admission to the University is a prerequisite for registration in Summer Quarter classes. Complete credentials must be filed with the Office of

Admissions by May 15 to be considered for admission with *Regular* standing. See *Summer Quarter Bulletin* regarding admission as a nondegree *Summer Quarter Only Student* (undergraduate) or as a *Transient Graduate Student*. New (entering) students will be mailed Registration Appointments with their Official Notice of Admission.

Students in residence Spring Quarter, 1963:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates.....	Monday, April 22, 8 a.m. to 5 p.m.
Juniors.....	Tuesday, April 23, 8 a.m. to 5 p.m.
Sophomores.....	Wednesday, April 24, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 25, 8 a.m. to 5 p.m.

Former Students not in residence Spring Quarter, 1963:

Former Students not in residence Spring Quarter, 1963, may obtain an Application for Appointment or Permit by writing to, or calling in person at, the Registrar's Office, Room 109, Administration Building, or telephoning 543-5920, beginning April 22 and preferably *no later than May 15*. Registration may be delayed by later application. Registration materials cannot be prepared until an application is received. The application deadline for term "a" and full Summer Quarter is June 17.

All students in the Schools of Law, Dentistry, and Medicine must file an Application for Registration Permit, although no appointment date is necessary.

ACADEMIC PERIOD

JUNE 24—MONDAY	Instruction begins
JUNE 25—TUESDAY	Last day to add a course for the first term
JUNE 28—FRIDAY	Last day to add a course for the full quarter
JULY 3—WEDNESDAY	Last day to submit applications for advanced credit examinations for first term
JULY 4—THURSDAY	Independence Day holiday
JULY 20—SATURDAY	Advanced credit examinations
JULY 24—WEDNESDAY	Final examinations and first term end
JULY 25—THURSDAY	Second term begins
JULY 26—FRIDAY	Last day to add a course for the second term
AUG. 2—FRIDAY	Last day to submit applications for advanced credit examinations for second term
AUG. 17—SATURDAY	Advanced credit examinations
AUG. 23—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1963

REGISTRATION PERIOD

MAY 6-29	Advance Registration only for students in residence Spring Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 10-26	In-Person Registration for students in residence Spring Quarter, 1963, who did not complete Autumn Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.

SEPT. 10-26	In-Person Registration for former students not in residence Spring Quarter, 1963. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is September 1.</i>
JULY 15	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 11-26	In-Person Registration for ALL new students.
SEPT. 26	Last day to register for Autumn Quarter, 1963. Note application deadlines.
SEPT. 30-OCT. 4	Change of Registration by appointment only.

ACADEMIC PERIOD

SEPT. 30—MONDAY	Instruction begins
OCT. 4—FRIDAY	Last day to add a course
NOV. 1—FRIDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1964, due at Registrar's Office
NOV. 11—MONDAY	State Admission Day holiday
NOV. 22—FRIDAY	Last day to submit applications for advanced credit examinations
NOV. 27-DEC. 2	Thanksgiving recess (6:30 p.m. to 7:30 a.m.)
DEC. 7—SATURDAY	Advanced credit examinations
DEC. 11-17	Final examinations
DEC. 17—TUESDAY	Quarter ends

WINTER QUARTER, 1964**REGISTRATION PERIOD**

Nov. 4-22	Advance Registration only for students in residence Autumn Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
DEC. 30-JAN. 2	In-Person Registration for students in residence Autumn Quarter, 1963, who did not complete Winter Quarter, 1964, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
DEC. 30-JAN. 2	In-Person Registration for former students not in residence Autumn Quarter, 1963. Appointments and Permits

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

to register may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Appointments or Permits is December 1.*

- DEC. 1 Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
- DEC. 20 Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
- DEC. 30-JAN. 2 In-Person Registration for ALL new students.
- JAN. 2 Last day to register for Winter Quarter, 1964. Note application deadlines above.
- JAN. 6-10 Change of Registration by appointment only.

ACADEMIC PERIOD

- JAN. 6-MONDAY Instruction begins
- JAN. 10-FRIDAY Last day to add a course
- FEB. 21-FRIDAY Last day to submit applications for advanced credit examinations
- FEB. 22-SATURDAY Washington's Birthday and Founder's Day holiday
- MAR. 7-SATURDAY Advanced credit examinations
- MAR. 13-19 Final examinations
- MAR. 19-THURSDAY Quarter ends

SPRING QUARTER, 1964

REGISTRATION PERIOD

- FEB. 3-21 Advance Registration only for students in residence Winter Quarter, 1964. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
- MAR. 24-26 In-Person Registration for students in residence Winter Quarter, 1964, who did not complete Spring Quarter, 1964, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
- MAR. 24-26 In-Person Registration for former students not in residence Winter Quarter, 1964. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Appointments or Permits is March 1.*
- MAR. 1 Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
- MAR. 15 Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.

MAR. 24-26	In-Person Registration for ALL new students.
MAR. 26	Last day to register for Spring Quarter, 1964. Note application deadlines above.
MAR. 30-APRIL 3	Change of Registration by appointment only.

ACADEMIC PERIOD

MAR. 30—MONDAY	Instruction begins
APRIL 3—FRIDAY	Last day to add a course
MAY 8—FRIDAY	Last day to submit applications for advanced credit examinations
MAY 23—SATURDAY	Advanced credit examinations
MAY 30—SATURDAY	Memorial Day holiday
JUNE 5-11	Final examinations
JUNE 7—SUNDAY	Baccalaureate Sunday
JUNE 11—THURSDAY	Quarter ends
JUNE 13—SATURDAY	Commencement

SUMMER QUARTER, 1964**REGISTRATION PERIOD**

General In-Person Registration for ALL students (*by appointment only*):

June 1 through 4
June 11, 12, 15, 16, 17, 18, 19

New students. Admission to the University is a prerequisite for registration in Summer Quarter classes. Complete credentials must be filed with the Office of Admissions by May 15 to be considered for admission with *Regular* standing. See *Summer Quarter Bulletin* regarding admission as a nondegree *Summer Quarter Only Student* (undergraduate) or as a *Transient Graduate Student*. New (entering) students will be mailed Registration Appointments with their Official Notice of Admission.

Students in residence Spring Quarter, 1964. Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

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Juniors	Tuesday, April 21, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 22, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 23, 8 a.m. to 5 p.m.

Former students not in residence Spring Quarter, 1964, may obtain an Application for Appointment or Permit by writing to, or calling in person, at the Registrar's Office, Room 109, Administration Building, or telephoning 543-5920, beginning April 20 and preferably *no later than May 15*. Registration may be delayed by later application. Registration materials cannot be prepared until an application is received. The application deadline for term "a" and full Summer Quarter is June 15.

All students in the Schools of Law, Dentistry, and Medicine must file an Application for Registration Permit, although no appointment date is necessary.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

ACADEMIC PERIOD

JUNE 22—MONDAY	Instruction begins
JUNE 23—TUESDAY	Last day to add a course for the first term
JUNE 26—FRIDAY	Last day to add a course for the full quarter
JULY 3—FRIDAY	Last day to submit applications for advanced credit examinations for first term
JULY 18—SATURDAY	Advanced credit examinations
JULY 22—WEDNESDAY	Final examinations and first term end
JULY 23—THURSDAY	Second term begins
JULY 24—FRIDAY	Last day to add a course for the second term
JULY 31—FRIDAY	Last day to submit applications for advanced credit examinations for second term
AUGUST 15—SATURDAY	Advanced credit examinations
AUGUST 21—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1964**REGISTRATION PERIOD**

MAY 11-29	Advance Registration only for students in residence Spring Quarter, 1964. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 1-24	In-Person Registration for students in residence Spring Quarter, 1964, who did not complete Autumn Quarter, 1964, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
SEPT. 1-24	In-Person Registration for former students not in residence Spring Quarter, 1964. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is August 15.</i>
JULY 15	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
AUGUST 28	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 2-24	In-Person Registration for ALL new students.
SEPT. 24	Last day to register for Autumn Quarter, 1964. Note application deadlines.
SEPT. 28-OCT. 2	Change of Registration by appointment only.

ACADEMIC PERIOD

SEPT. 28—MONDAY	Instruction begins
OCT. 2—FRIDAY	Last day to add a course

OCT. 30—FRIDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1965, due at Registrar's Office
NOV. 11—WEDNESDAY	State Admission Day holiday
NOV. 20—FRIDAY	Last day to submit applications for advanced credit examinations
NOV. 25-30	Thanksgiving Recess (6 p.m. to 7:30 a.m.)
DEC. 5—SATURDAY	Advanced credit examinations
DEC. 8—TUESDAY	Final examinations
DEC. 15—TUESDAY	Quarter ends

For further information concerning subsequent quarters, inquire at the Registrar's Office.

OBSERVANCE OF UNIVERSITY RULES AND REGULATIONS

It is the University's expectation that a student will follow University rules and regulations as they are stated in the Bulletins. In instances where no appeal procedure is spelled out and the student is persuaded that a special set of circumstances makes appeal reasonable, he may appeal the application of specific rules or regulations to the office of the dean of the school or college in which he is enrolled in the case of an academic matter, or to the Office of the Dean of Students in the case of a nonacademic matter. These offices will either render a decision on the appeal or refer the student to the proper office for a decision.

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

ADMINISTRATION

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GENERAL INFORMATION

GENERAL INFORMATION

NURSING EDUCATION AT THE UNIVERSITY began in 1917 with the introduction of a prenursing program developed in response to the need for expanded educational opportunities for young women. The early offerings in nursing consisted of a few public health nursing courses for graduates of hospital schools of nursing. Under the leadership of Mrs. Elizabeth S. Soule, the opportunities in nursing education were extended, and both undergraduate and graduate programs were developed. The Department of Nursing Education, which was established in 1921, became the School of Nursing in the College of Arts and Sciences in 1934. In 1945, it became an autonomous professional school in the Division of Health Sciences, with Mrs. Soule as its first Dean. The Division, which includes the Schools of Dentistry, Medicine, and Nursing, the College of Pharmacy, and the University Hospital, was established to coordinate and reinforce the work of each of these units in its development, research, and teaching activities and to plan cooperatively for the education of young men and women in the health professions.

The School of Nursing offers programs leading to the degrees of Bachelor of Science in Nursing, Master of Arts, and Master of Nursing. Individually planned post-master's programs are available and a minor in nursing on the doctoral level is offered for students matriculated in another discipline. In addition, the School offers supplementary work in psychiatric and public health nursing, courses in specific clinical subjects for affiliating students in other schools of nursing, and courses of general interest to any University student.

All programs of the School, undergraduate and graduate, are fully approved by the Accrediting Service of the National League for Nursing. Both baccalaureate programs are approved for preparation for public health nursing.

PHILOSOPHY AND OBJECTIVES

The School of Nursing acknowledges its responsibility for the quality of its educational programs and for promoting effective nursing service for the people of the state of Washington through teaching, research, and public service.

UNDERGRADUATE PROGRAMS

The faculty believe that the qualified student brings to the professional school a background from which she makes her individual contribution to nursing. Opportunity for self-direction in the management of her own life is a part of personal and professional growth. Diversified interests promote cultural and emotional maturity. Breadth of academic background, which is gained through the use of all of the resources of the University, contributes to fulfillment of professional responsibilities and personal interests. The physical, biological, and social sciences and the humanities are recognized as essential aspects of professional nursing education.

The professional nurse is characterized by: (1) ability to give complete nursing care in all fields; (2) effective use of basic communication skills in organizing, planning, and directing the work of others; (3) cooperative relationships with allied professional and citizen groups for the improvement of total health services; (4) maintenance of personal identity; and (5) satisfaction in her daily life as she serves her community, upholds the ideals of the nursing profession, and works toward its continued improvement and growth.

Curricular offerings are planned to develop the professional nurse who is able to give complete nursing care within the framework of the physician's therapeutic design, to carry out nursing procedures skillfully and with understanding, to exercise discriminative judgment and insight, and to assist in the prevention of disease and in the conservation of physical and mental health in the community. Better learning occurs where sound psychological principles are utilized. Correlated theory and clinical practice are offered in the care of the physically and mentally ill in the hospital and in the home, and in teaching, treatment, rehabilitation, prevention, and health conservation for all age groups. Nursing experiences are planned to provide for continuity, sequence, and integration in all areas in order to effect gradual broadening and deepening of understandings, values, and skills. Individual counseling and supervision are directed toward helping the student to develop her personal and professional potentialities. This broad background of education facilitates the student's continuing professional development following graduation and provides the foundation for graduate study.

GRADUATE PROGRAMS

In the conduct of its graduate programs, the faculty believe that the School has an obligation to provide an environment and climate in which any qualified graduate student in nursing may engage in study directed toward individual goals of advanced professional competence. The curricula, while containing a nucleus of required courses, should be sufficiently flexible to enable the student to meet individual needs and enlarge the view she holds of her profession and its relationship to society.

Graduate study connotes that the student will increasingly assume independent responsibility for learning, scholarly investigation, and communication of the outcome of research.

The School of Nursing believes that it should promote and foster opportunities for individual, group, intra- and interdisciplinary study and research, and for sharing the contributions which students engaged in graduate study can make to one another, to the School, and to the profession.

The School of Nursing believes that the functions of the teacher in graduate education are to provide the environment and the climate within which the learner can learn, to guide and counsel, and to share his knowledge with the learner.

In order to qualify for a graduate degree, the student should be able to work effectively with others to meet the health needs of people and, since research in nursing is essential for the continuing growth of the profession, be able to use a scientific approach in solving nursing problems and to communicate findings in an appropriate manner. Graduate work should be directed toward intensive study in a selected area (or areas) of nursing. It is recognized that the level of accomplishment in clinical nursing, teaching, or supervision will vary for each student. Graduate study in any area of nursing implies that a student, regardless of age and kind or amount of experience, will be basically competent in nursing and in any major clinical field elected for graduate study.

The faculty believe that the constantly changing concepts and practices in nursing and the ever increasing demands for nurses with graduate education support the convictions that: (1) the maximum freedom which is consistent with sound educational practice should be permitted graduate students in nursing, in order that individuals with varying degrees of ability and experience may have equal opportunities to progress; and (2) that creative and critical thinking should

be stimulated and disciplined by the study and practice of research methods, through conducting individual research and reporting findings.

EDUCATIONAL RESOURCES

The rich instructional and research facilities and services of the University contribute in many ways to the quality of the School's programs in nursing and provide a stimulating environment in which to learn. Nursing education draws both upon these diverse University resources and upon excellent clinical facilities of a number of cooperating hospitals and public health agencies in the community.

The Health Sciences Building, which is located at the south end of the campus near the Portage Bay Yacht Basin, houses the administrative units of the Schools of Nursing, Dentistry, and Medicine and a variety of classrooms, research and laboratory facilities, a library, and an auditorium. The University Hospital, adjacent to the Health Sciences Building, was opened in May, 1959, and has a 300-bed capacity. It provides extensive inpatient and outpatient departments; thus it is an excellent teaching and research facility for students in nursing and other health sciences fields.

The undergraduate and graduate clinical teaching programs of the School of Nursing are conducted in a variety of hospitals and community agencies which cooperate with the School through making their facilities available for student instruction. In addition to the University Hospital, the School uses the general facilities of King County Hospital System, with a bed capacity of 450 in King County Unit I and 220 in Unit II; Swedish Hospital, with a bed capacity of 377; Virginia Mason Hospital, with a bed capacity of 217; and The Doctors' Hospital, with a bed capacity of 187. Hospitals offering health care for selected individuals or specific illnesses include the Children's Orthopedic Hospital, with a capacity of 200 beds; Firland Sanatorium, with a capacity of 431; and the state mental hospitals, Northern State Hospital, capacity 2,273, Western State Hospital, capacity 3,007, and Eastern State Hospital, capacity 2,361. The psychiatric unit of the United States Veteran's Administration Hospital in Seattle, capacity 80 beds, provides an additional facility in this area. Experience in community health nursing is arranged through the public health departments of Seattle-King County, Tacoma-Pierce County, Snohomish County, Kitsap-Bremerton County, Benton-Franklin County, Clark-Skamania County, Bellingham-Whatcom County, and the City of Spokane. Other community facilities are used, as necessary, to provide selected learning experiences for students.

The University libraries contain over a million books and acquire 65,000 more each year. They currently receive 17,000 periodicals. The Henry M. Suzzallo Library, opened in 1926, houses the main collection, the general catalog, the reference division and documents section, current periodicals, the science room, and the reserve book room. Twenty branch libraries for special academic subjects are located in other buildings. Among these is the Health Sciences Library, which serves the schools and departments in the Division of Health Sciences. A collection of 100,000 volumes especially chosen for the general education of the undergraduate will be located in an addition to the Suzzallo Library, to be completed in 1963.

ADMISSION REQUIREMENTS OF WASHINGTON RESIDENTS*

Undergraduate programs offered by the University lead to the baccalaureate degree; students, therefore, are admitted when, in the judgment of the University, they appear qualified to pursue a degree program with a reasonable probability of

* *Resident*: defined for purposes of admission and/or assessment of fees as an individual who has been domiciled in the state of Washington for one year immediately prior to his registration. The domicile of a minor is that of his parents or his legal guardian. The children of federal employees residing within the state of Washington and the children and spouses of staff members of the University are considered as residents for tuition purposes.

success. In making this judgment, the University's Board of Admissions considers the applicant's total record, including such factors as scholastic achievement in a college preparatory program, recommendations of the high school principal or counselor, rank in class, and scores on any nationally administered tests associated with college entrance.

ADMISSION WITH FRESHMAN STANDING

Scholastic Criteria. Scholastic achievement is measured largely in terms of the criteria listed below. All students entering the University are expected to meet these criteria. Nonresidents and students who enter with advanced standing will find additional criteria in subsequent sections.

1. Graduation with a diploma from a high school accredited by the Washington State Department of Public Instruction, or from an out-of-state high school accredited by its state university and state department of public instruction or by the regional accrediting association of the area.
2. Achievement of an over-all high school grade-point average of at least 2.50 in courses completed after September, 1960, and a grade-point average of at least 2.00 in courses completed prior to September, 1960. Grade-point averages are based on a four-point system in which A = 4, B = 3, C = 2, D = 1, E = 0. An adjustment to this system is made, as necessary, in the computation of grade-point averages earned at other institutions.
3. Completion of a college preparatory program of at least 16 units to include the following:

a. English	at least 3 units
b. One foreign language	at least 2 units
c. College preparatory mathematics	at least 2 units
d. One laboratory science	at least 1 unit
e. Social science	at least 2 units
f. Electives from the above subjects	at least 2 units

Additional electives may be chosen from any subjects acceptable for high school graduation.

High School Electives. Because an appropriate choice of high school electives serves to strengthen a student's preparation, the University will give this part of her academic record the same careful attention it gives to other aspects of her qualifications. Students who expect to enter the School of Nursing should plan their high school electives carefully, both to lay the foundations for their general education which will be continued at the college level and to insure that they are adequately prepared to begin their study in the School of Nursing. Students should select subjects in English, languages, social sciences, natural sciences, mathematics, and fine arts which will provide a well-rounded preparation for college study.

Since a knowledge of mathematics is of increasing importance in the changing technology of our society, it is advisable for students to include at least an additional $\frac{1}{2}$ unit of algebra in the electives specified in "f" above. Students planning to enter the School of Nursing are advised to select chemistry as their first laboratory science and biology or physics as an elective in preparation for the professional nursing program. A fourth unit in English also will be found helpful.

Accelerated, Honors, and Advanced Placement Courses. The University encourages qualified students to extend themselves academically by taking advantage of advanced, accelerated, and honors courses offered by their high schools. Successful participation in such challenging opportunities assures superior academic preparation. The University of Washington grants placement and/or credit in selected subjects, at the discretion of the University department concerned, on the basis of scores earned in College Entrance Examination Board Advanced Placement Exam-

inations and on the basis of placement examinations administered to entering students (see Required Tests and Examination, page 22).

The University recognizes college preparatory courses given in the junior high school and assigns them the same value as equivalent courses offered by the high school.

ADMISSION WITH ADVANCED STANDING

A qualified student in good standing at an accredited institution may apply for admission with advanced standing. This applies particularly to the student wishing to transfer from another basic collegiate nursing program and to the student entering the graduate nurse baccalaureate program. Such an applicant is expected to have the same high school preparation as the student who enters as a freshman. With fewer than 45 acceptable credits, an applicant must present a grade-point average of 2.50 in high school work completed after September, 1960; a 2.00 grade-point average in such work completed prior to that date; and a 2.00 cumulative average in all college work. With 45 or more acceptable credits, an applicant is expected to present a cumulative and last-term grade-point average of at least 2.00. Applicants to the graduate nurse baccalaureate program must be graduates of an approved junior college or hospital school of nursing.

Transfer of Advanced Credit from Other Institutions. The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted. The general regulations concerning the transfer of credits are as follows:

1. The advanced standing for which an applicant's training appears to fit him is granted tentatively on admission. Definite advanced standing is not determined before the end of the student's first quarter in the University. The maximum that may be accepted from other colleges and universities is 135 quarter credits, or senior standing. Transfer credit will not be allowed in the senior year.

2. Transfer credits will be accepted for upper-division credit *only* when earned at an accredited four-year degree-granting institution.

3. Transfer credits from institutions accredited for less than four years will not be accepted in excess of the accreditation of the school concerned.

4. Transfer of junior college credit shall apply on the 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 to completion of the first two years in the University. In no case shall the transfer of junior college credit to the University exceed 90 quarter credits exclusive of physical education activity credits.

5. The maximum number of credits obtainable by acceptance of Armed Forces training schools credits will be 30. All such credits will be counted as extension credits and will be included in the 90-credit maximum allowed toward the bachelor's degree, but none will apply toward the work of the senior year.

6. A maximum of 45 credits earned in extension and correspondence courses at other institutions may be transferred, but none of the credits can apply in the senior year. Extension and correspondence credits from schools that are not members of the National University Extension Association are accepted only after examination.

7. Credits earned in evening and extension classes or correspondence courses at this University are accepted after the student has satisfactorily completed 35 credits of work in residence (that is, registered in regular University classes). A maximum of 90 extension and/or correspondence credits is acceptable; the 90 credits may include the 45 extension and/or correspondence credits allowable from other institutions or may consist entirely of courses taken in this University's Division of Evening Classes or Division of Correspondence Study. All credits earned in advanced-credit examinations and all acceptable Armed Forces training schools credits must be counted in the 90 extension credit maximum. Up to 10 evening

class or correspondence course credits from this University can apply toward the work of the senior year.

8. For work done in unaccredited institutions, extended secondary programs in institutions whose standing is unknown, and for work with private teachers, University credit is granted only after examination. Applications for advanced credit examinations must be filed during the first quarter in residence.

9. No credit will be granted 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. The prescribed written permission is effective only if obtained before registration. Nothing in this rule makes mandatory the granting of any credit by the University.

ADMISSION OF SPECIAL STUDENTS AND AUDITORS

Non-high school graduates who are 21 or older and legal residents of Washington may apply to the Board of Admissions for admission with special standing. With their application they must submit all available records of secondary school and college study. Special students may register in and take for credit whatever courses the dean of the college permits, but may not participate in student activities or receive degrees. By fulfilling conditions specified by the Board of Admissions, special students may change their status to that of regular students and may receive degrees.

Persons 21 or older may register as auditors in nonlaboratory courses or the lecture sessions of laboratory courses by obtaining the consent of the dean of the college and the instructors of the courses. Auditors do not participate in class discussion or laboratory work. They may receive credit for audited courses only by enrolling in them as regular students in a subsequent quarter.

ADMISSION OF NONRESIDENTS*

ADMISSION OF NONRESIDENTS TO UNDERGRADUATE STANDING

Applications from nonresidents will be considered, but first preference is given to legal residents of the state of Washington and to sons and daughters of University of Washington alumni residing outside the state.

Nonresident applicants are selected on the basis of their preparation and scholastic standing. In general, a freshman applicant must be eligible to enter the university of his own state, and must satisfy the foregoing scholastic criteria with a 3.00 (B) grade-point average, or place in the upper 25 per cent of his graduating class.

An applicant for admission with advanced standing with fewer than 45 college credits must have a cumulative grade-point average of at least 3.00 in standard college courses as well as a high school grade-point average of at least 3.00, or have been in the upper fourth of his class. An applicant presenting more than 45 credits for advanced standing must present a 2.70 grade-point average in standard college courses. For regulations on transfer of credit, see page 19.

Sons and daughters of University of Washington alumni are admitted according to resident standards but are required to pay the regular nonresident tuition fees. Applicants for admission to curricula in which the University serves on a regional basis will be accorded special consideration by the Board of Admissions.

* *Nonresident: an applicant whose credentials are received from a school or college located outside the state of Washington. An applicant who believes himself eligible for resident status may apply for reclassification through the Office of Residence Classification, which has final authority in determining such status.*

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Applicants for admission with graduate or advanced undergraduate standing are expected to meet the same general requirements as nonresidents of Washington educated in American schools. However, they must file their credentials before March 1 to be considered for admission Autumn Quarter, or six months before the opening of another quarter in which they may wish to enroll. In addition, they must demonstrate a satisfactory command of English and must have sufficient funds available in the United States to meet their expenses.

The official record of the Canadian student is the matriculation certificate or university admission certificate of his province. Canadian and foreign students who have been in university attendance must have official transcripts forwarded as required of all students. High school graduates and university transfer students must meet the scholarship requirements for nonresident students. See page 20.

UNDERGRADUATE ADMISSION, EXCEPTIONAL CASES

See page 49.

ADMISSION TO THE GRADUATE SCHOOL

Basic requirements for admission to the Graduate School are a bachelor's degree from an institution of recognized standing, graduation from an approved school of nursing, a grade-point average of 3.00 in junior and senior years of college work, approval of the Graduate School, and approval of the School of Nursing. For complete information, see the *Graduate School Bulletin*.

ADMISSIONS PROCEDURE

Requests for Application for Admission forms and correspondence regarding admission to any college or school of the University, undergraduate or graduate, should be addressed to the University of Washington, Office of Admissions, Seattle 5, Washington. Graduates of high schools in the state of Washington may obtain this form from their principals or advisers.

Students may apply, through their high schools, on completion of the first semester of the senior year. Those who are qualified will be issued notices of early, or conditional, admission which becomes valid on graduation with a grade-point average of no less than 2.50 for the final semester. Others also will be notified of their admission status. Scores on a nationally administered college aptitude test are not required. However, they are helpful in evaluating a borderline student's probability of success.

Applications and required transcripts must be filed with the Office of Admissions prior to the following dates in order to be assured of consideration for admission to the quarter for which application is being made: July 15 for Autumn Quarter, December 1 for Winter Quarter, March 1 for Spring Quarter, May 15 for Summer Quarter.

In addition to the completed application form to the University, an applicant for advanced undergraduate standing or graduate standing in nursing must complete an application to the School of Nursing. The form may be obtained from, and must be returned directly to, the School of Nursing. An official transcript from each high school, school of nursing, or college attended is required of an applicant for advanced undergraduate standing, and two official transcripts from each college or university and school of nursing, if not part of a university, attended are required of an applicant for graduate standing.

All records become a part of the official file and can be neither returned nor duplicated for any purpose. Failure to submit complete credentials will be con-

sidered a serious breach of honor, and may result in permanent dismissal from the University.

The University assumes no responsibility for applicants who come to the campus before they have been officially notified of their admission.

VETERANS

Veterans and children of deceased veterans should meet the general admission criteria and follow the general procedures outlined for all applicants. Tuition exemptions and other benefits available to them are detailed on pages 49 and 50. Applications for, and questions about, government aid should be addressed to the Veterans Administration Regional Office.

REGISTRATION

PROCEDURE

A leaflet giving general information and preliminary instructions for registration is mailed with the Notice of Admission. New students are given appointments when they are notified of admission, and they receive complete directions for registering at the time of registration.

New students to the School of Nursing, particularly those with advanced undergraduate or graduate standing, are urged to plan an appointment with an adviser, to develop a program of studies prior to their registration date.

All students currently in school who plan to register for a succeeding quarter (Summer Quarter excepted) must register by Advance Registration and pay fees by the stated deadline. Students are held responsible for knowing and observing registration procedures, dates, and deadlines which appear in the bulletins, in "Official Notices" in the *Daily*, and on campus bulletin boards.

Students expecting to return to the University after an absence of a quarter or more (excluding Summer Quarter) must register by In-Person Registration. The required registration appointment may be obtained by writing to, calling at, or telephoning the Registrar's Office at the time specified in the Calendar, but *in no case* later than the stated deadline (see pages 4-11).

REQUIRED TESTS AND EXAMINATIONS

WASHINGTON PRE-COLLEGE TESTING PROGRAM

This differential guidance test battery is required of all entering freshmen, including those transferring to the University with fewer than 45 credits. It is also required of transfer students who have not completed courses which are equivalent to English 101 (English Composition) or Mathematics 101 (Intermediate Algebra). High school seniors are advised to arrange through their high schools to take this test in the spring, when it is offered throughout the state of Washington. Nonresidents of Washington may take the test at the time of their registration according to instructions mailed with the notice of admission. Sample copies are not available. Special, foreign, and blind students, and auditors are exempted.

The several parts of this test have been selected because of their proven value for the prediction of grades most likely to be earned by a student. Since results of the test are used by departmental advisers as an aid in assigning students to appropriate sections in English composition and other subjects, the student should bring a copy of the results with him when he comes for his first conference with his counselor or adviser.

GRADUATE NURSE EXAMINATION

Applicants to the graduate nurse baccalaureate program must take the National League for Nursing Graduate Nurse Examination before, or as soon as possible after, entering the School of Nursing. An application form and directions for completing this requirement may be obtained from the School of Nursing or the National League for Nursing. The examination is given in various parts of the country on established dates.

MEDICAL EXAMINATION

A student entering the University for the first time, or returning to the University after an absence of more than one calendar year, or who has previously attended Summer Quarter classes but is entering regular University classes for the first time, is required to submit to the Student Health Service (Hall Health Center) a form containing his health history and a report of a physical examination by a physician. The form will be sent to new students by the Office of Admissions, and to returning former students by the Registrar. This examination, which is required before a student may register, is taken at the student's expense. A chest X ray, also required of the above students, is given at the Student Health Service without charge.

With the exception of Canadian students, who will follow the above instructions, foreign students must take the required physical examination at the Student Health Service when they arrive on the campus.

ADVISING

After notification of admission, and before registration date, the student should seek assistance from the School of Nursing in the selection of courses for her first academic program. An academic adviser, one of the faculty, is designated for each level of program in the School.

The student will find the first meeting with her adviser much more profitable if the material sent to her has been studied before arrival on campus. The advisers of the School will make every effort to help the student plan a program of studies to fit her individual needs within the educational policy of the School and to assist her in solving her academic problems. The student is urged to discuss the opportunities available to her at the University with her family and her fellow students, and, after she has begun her study at the University, with the faculty who conduct her classes, as well as the adviser to whom she is assigned. She is expected to inform herself, by studying the *School of Nursing Bulletin* and the *Yearly Time Schedule*, of the availability of various courses and programs of study, so that her meetings with her adviser may be devoted to an informed and intelligent discussion of genuine academic questions and of the proper direction for her educational development.

Students contemplating admission to the University and wishing further information about programs offered or direction in planning their programs are urged to write for assistance.

REGISTERED CREDITS ALLOWED EACH QUARTER

Except with the consent of the Dean, no student may be registered for less than 12 credits (or the equivalent) or more than 16 credits (or the equivalent) or the number called for in the prescribed curriculum, exclusive of physical education activity courses and lower-division military, naval, or air science courses. In no case may a student be registered for, or receive credit for, more than 20 credits (or the equivalent) of work, exclusive of physical education activity courses, and lower-division military, naval, or air science courses. Work taken in noncredit courses or to remove entrance deficiencies, or concurrently in evening classes, by correspondence study, or in another collegiate institution, must be included in the computation of the total registered credits allowed.

CHANGES OF REGISTRATION

After students have registered, they cannot change their schedules except with permission of the Dean of the School. No student is permitted to make a registration change that involves entering a new course after the first calendar week of the quarter. After that time, no student may register without the consent of the Dean and the instructor whose class the student wishes to enter.

WITHDRAWALS FROM COURSES OR FROM THE UNIVERSITY

See pages 50 and 51.

CONTINUATION IN THE UNIVERSITY AND THE SCHOOL OF NURSING**SCHOLARSHIP**

Grade points per credit are awarded on the following basis: a grade of A earns 4 points; B, 3 points; C, 2 points; D, 1 point. The grade of E or EW signifies failure, and the grade point is 0. The quarterly and cumulative grade-point averages are computed by multiplying the grade point received in a course by the total number of credits the course carries, totaling these values, and dividing by the total number of credits the student attempted. A course for which any of the following symbols is recorded is not considered in determining the grade-point average: I, N, S, W, PW, X. Grade-point averages are calculated on the basis of all grades received in courses which carry academic credit, including courses repeated. Grades received in repeated courses do not cancel or replace any other grades. Only University of Washington residence credits will be used in these computations.

A cumulative grade-point average of 2.00 is required for continuation in the School of Nursing with full standing. Students falling below 2.00 are placed on academic probation.

ACADEMIC PROBATION

Academic probation is essentially a warning to the student that she must show improvement if she is to remain in the University. Any undergraduate student who has completed three or more quarters in the University and whose cumulative grade-point average is below 2.00 will be placed on academic probation. Any undergraduate student who has completed not more than two quarters at the University will be placed on probation when her cumulative grade-point average is below 1.80. The Dean of the School will notify the student as soon as possible that she is on probation. Such action will be noted permanently on the student's official academic record.

An undergraduate student on academic probation will be dropped from the University: (1) if she fails to attain at least a 2.00 for the following quarter's work; or (2) if she fails to attain a 2.00 cumulative average at the end of the two subsequent quarters. Only under exceptional circumstances will a student dropped under low scholarship rules be readmitted to the University. Such a student will be readmitted only at the discretion of the dean of the school or college to which she seeks admission, and if readmitted, will enter on academic probation. Such a student will be dropped: (1) if she fails to attain a 2.00 for the following quarter's work; or (2) if she fails to attain a 2.00 cumulative average at the end of two quarters. She will be removed from probation at the end of the quarter in which her cumulative grade-point average reaches 2.00 or better.

A senior who has completed the required number of credits for graduation but whose work in what would normally be her final quarter places her on probation will not receive a degree until she has been removed from probation. A senior who has completed the required number of credits for graduation but whose work in her last quarter results in her being dropped for low scholarship may not receive a degree until she has been readmitted and removed from probation.

LICENSURE

Students may be admitted to the graduate nurse baccalaureate program or to the master's program in nursing prior to completion of the state board professional examination, but for continuation in either program, students must be licensed to practice nursing in a state or country.

HEALTH CARE

A program of health care is planned for students in nursing. This includes periodic health examinations, chest X rays, and inoculation for smallpox, tetanus, poliomyelitis, and diphtheria. Students are expected to assume initiative in following the health program.

PROFESSIONAL RESPONSIBILITY

Majors in nursing are held responsible for knowing and adhering to the rules and regulations of the University of Washington and the School of Nursing. Because the School has a responsibility to the public and to the profession of nursing, it must require of its graduates not only adequate knowledge of nursing theory and practice, but also the qualifications which are important to a professional nurse. Maintenance of good relationships with patients and co-workers, a well adjusted mental outlook, and a sincere interest in people are considered requisite for a successful nursing career. Good physical health is another necessary factor for continuing success in nursing.

The School of Nursing reserves the privilege of retaining only those students who, in the judgment of the faculty, satisfy the requirements of scholarship, health, and personal suitability for nursing.

QUALIFICATIONS FOR GRADUATION

Students should apply during the first quarter of the senior year for a Bachelor of Science in Nursing degree. If not more than ten years have elapsed since the date of a student's entry into the school or college in which she is to graduate, she may choose to graduate under the requirements set out in either the bulletin published by the appropriate school or college most recently prior to the date of her entry, or that published most recently prior to her anticipated date of graduation; provided, that when, in the opinion of the faculty of the school or college or a departmental chairman or a dean acting for such faculty, substantial changes have been made in the curriculum since the student's entry, the student's choice shall be subject to the approval of the appropriate faculty, departmental chairman, or dean. Disapproval of the student's choice shall be faculty action and subject to the procedures of the *Faculty Code*. All responsibility for fulfilling graduation requirements shall rest with the student concerned. No student whose standing is in any way provisional can have an application for degree accepted.

Graduate nurse baccalaureate students who have not had psychiatric nursing as part of their previous nursing program must fulfill the requirement before the application for degree can be submitted. Arrangements for fulfilling this requirement may be made with the program adviser.

UNIVERSITY REQUIREMENTS

The University credit requirement for graduation is 180 academic credits (including Health Education 110 or 175) and the required quarters of physical education activity. At least 60 of the 180 credits must be in upper-division courses, those numbered 300 and above. Advanced ROTC courses do not count as upper-division credit, and no more than 18 credits in advanced ROTC courses may be counted toward graduation.

Physical Education Activity Courses. Students who enter the University as freshmen are required to complete one physical education activity course each quarter for the first three quarters of residence. In fulfilling the foregoing requirement, *all* students must pass a swimming test or satisfactorily complete one quarter of swimming. In fulfilling the three-quarter requirement, no activity course may be repeated for credit. Regulations concerning activity courses may be found on page 51.

Health Courses. All students who enter the University as freshmen are required to take Health Education 110 (women) or 175 (men) within the first three quarters of residence. The health education course requirement may be satisfied by passing a health-knowledge examination offered during the autumn registration period. Successfully passing this test exempts the student from the requirement but does not grant credit for the courses. Veterans with one year of active service are exempt from this requirement.

ESTIMATE OF YEARLY EXPENSES

The figures given below are minimum estimates for an academic year, which includes Autumn, Winter, and Spring Quarters. Living costs and personal expenses vary widely with the needs of the individual student.

Tuition, Incidental, and Other Fees

Full-time resident student	\$300.00
Full-time nonresident student	600.00

Athletic Admission Ticket (optional) 6.50

Health and Accident Insurance (optional) 17.25

Extra Service Charges and Rentals 38.50

Military uniform deposit, breakage ticket, and locker charges

Books and Supplies 90.00

Board and Room

Room and meals in Men's Residence Halls	720.00
Room and meals in Women's Residence Halls	660.00-765.00
Room and meals in fraternity or sorority house	670.00-760.00

(including dues and social fees)

Initial cost of joining is not included; this information may be obtained from the Interfraternity Council or Panhellenic Council.

Personal Expenses 300.00

In addition to above yearly costs, students should be prepared to pay the cost of transportation between the University campus and the teaching units. This amount will vary from quarter to quarter. Basic-degree students should plan approximately \$50.00 for the purchase of uniforms in the sophomore year and approximately \$15.00 for special achievement tests throughout the program. Graduate students who are candidates for an advanced degree should plan for approximately \$150.00 for costs connected with the preparation of the master's thesis.

All fees, extra service charges, and rentals are payable in United States dollars at the time of registration. The University reserves the right to change any of its fees and charges without notice.

The fee schedules for resident and nonresident students, appearing on pages 53 and 54, apply to the academic year (Autumn, Winter, and Spring Quarters). Summer fees appear in the *Summer Quarter Bulletin*.

STUDENT SERVICES AND ACTIVITIES

OFFICE OF THE DEAN OF STUDENTS

The Office of the Dean of Students is concerned with the general welfare of students and welcomes correspondence and conferences with both parents and students. This Office works closely with the advisory system of the colleges and schools of the University; it directs students to faculty advisers, the Counseling Center, and other persons and agencies offering assistance with personal and social problems.

The Foreign Students Office operates through the Office of the Dean of Students. The Foreign Student Adviser and his staff offer guidance on all nonacademic problems to students from other countries. Questions about immigration regulations, housing, social relationships, personal problems, finances, minimum course requirements, and employment should be referred to this Adviser. Students who are interested in studying abroad may obtain from him information about schools in other countries and about Fulbright and other scholarships.

COUNSELING CENTER

The Counseling Center in Lewis Hall Annex offers vocational and educational counseling to students who need help in their adjustments to college. The staff of the Center, which includes vocational counselors and psychologists, works closely with other student services and supplements the academic advisory program.

HOUSING

Information and applications for residence in University-owned housing for single persons may be obtained by writing to the Manager, Men's Residence Halls, 1201 N.E. Campus Parkway, Seattle 5, or to the Manager, Women's Residence Halls, University of Washington, Seattle 5. Until August 1, preference in assignment to vacancies is given to students under twenty-one years of age; thereafter, assignments are made in the order of application. Prospective students may apply for the residence halls prior to their acceptance by the University but not before April 15.

University regulations require that women students under twenty-one who do not live at home must live in approved group residences such as the Women's Residence Halls, sororities, and church-sponsored living groups. Other types of living arrangements must be reported to the Dean of Women and be approved by the student's parents or guardian.

Information about fraternities or sororities may be obtained by writing to the Interfraternity Council or the Panhellenic Council, Student Union Building, University of Washington, Seattle 5.

The Office of Student Residences maintains listings of off-campus rooms, rooms with board, housekeeping rooms, apartments, and houses which are available to University students. These listings must, however, be consulted in person.

Teaching and research assistants and other part-time subfaculty personnel are given first priority for assignment to University-owned housing facilities for married students. Second preference for assignment to Union Bay Village or Sand Point Homes is given to graduate, medical, dental, and law students who have children. Prospective students are eligible to apply when they have been accepted for admission. Write to the Office of Student Residences, 4039 15th Avenue N.E., for further information and application forms.

A complete statement of University housing policy appears in the *Student Handbook of University Rules and Regulations* and the *Housing Bulletin*.

HEALTH SERVICES

The University maintains a health center and an infirmary to help guard against infectious diseases and incipient ill health.

The infirmary receives bed patients at any hour and provides nursing care, medicines, and the attendance of a staff doctor, up to one week each quarter, free of charge. For a period longer than one week, a charge of \$2.00 a day is made. At their own expense, infirmary patients may consult any licensed physician in good standing.

Health and accident insurance for students is available at the time of registration.

All students in the School of Nursing are required to take a special health examination, chest X rays, and inoculation for smallpox, typhoid, tetanus, poliomyelitis, and diphtheria before beginning clinical laboratory courses and previous to the public health nursing field quarter. Defects must be corrected at the student's own expense.

ASSOCIATED STUDENTS

Membership in the Associated Students of the University of Washington, the central organization which conducts all student activities, is required of all regularly enrolled students. Through the ASUW Board of Control and its various committees and boards, students assume major responsibility in the government of student life. The ASUW helps to finance the programs of athletics, debates, concerts, lectures, and many other activities and facilities, including the University of Washington *Daily* and the Student Union Building.

Associated Nursing Students. All students registered in the Basic Program of the School of Nursing are eligible to belong to the Associated Nursing Students Organization. By belonging to ANS, students are eligible to belong to SWANS (State of Washington Association of Nursing Students), which is made up of students from all the schools of nursing in Washington. As a member of SWANS, a student is automatically a member of the National Student Nurse Association.

Among the functions of ANS are those which provide for unity and fellowship among classes, the promotion of interest in nursing, and the promotion of the interests and welfare of the nursing student.

Graduate Nurse Club. All students registered in the Graduate Nurse Program or in the Graduate level programs are eligible for membership in the Graduate Nurse Club. This is primarily a social organization.

FINANCIAL AIDS

A considerable number of scholarships are awarded annually on a competitive basis. In general, scholarships are awarded on the basis of (1) scholarship achievement above the 3.00 (B) grade-point average, (2) financial need, and (3) participation in the extracurricular activities of the campus and community.

Applications are available through the Office of the Dean of Students during Winter Quarter, and awards are made late in the spring for the following academic

year. The University bulletin, *Handbook of Scholarships*, describes the various awards.

All students are encouraged to investigate resources in their local communities for possible scholarships or other financial aids.

UNDERGRADUATE SCHOLARSHIPS, AWARDS, AND LOANS FOR NURSING STUDENTS

A limited number of scholarships, awards, and loans are administered by the School of Nursing Scholarship Committee for currently enrolled students. These are listed in the *Handbook of Scholarships*. The *Wealthy Ann Robinson Scholarship* is awarded to an outstanding graduate nurse preparing for public health nursing. Basic students may also apply through this Committee to the Washington State League for Nursing for scholarship assistance. The *Elizabeth Sterling Soule Scholarship* is awarded by this organization and the Washington State Nurses' Association.

The Seattle-King County Visiting Nurse Service provides scholarships to graduate nurse students who plan to enter the field of public health nursing and expect to remain in the state of Washington.

Loan funds of both an emergency and long-term nature are available upon application to the Office of the Dean of Students. This office also assumes responsibility for the National Defense Student Loan Program. Full-time students who are making normal and satisfactory progress are eligible to apply.

Amounts up to \$200 are loaned, upon application to the School of Nursing Scholarship Committee, from the Kellogg Nursing Loan Fund, the King County Nursing Home Fund, and the Eleanor S. Olsen and Nursing Education Loan Fund. Graduate nurses may apply directly to the Loan Fund of the Washington State Nurses' Association.

The University of Washington awards one hundred tuition scholarships each academic year to worthy students from other countries. There are no scholarships available for the Summer Quarter. These awards are made on the basis of the academic record of the student, recommendations from his professors, his need for such assistance, and the availability of such openings in his department at the University. These scholarships cover tuition only and are administered by the Foreign Exchange Scholarship Committee, Foreign Students Office, University of Washington, Seattle 5, Washington, U.S.A. Applications for these scholarships must be made by March 1 for the following year.

Federal grants and traineeships are available to qualified students in the graduate nurse program. Students who anticipate continuing with graduate study in psychiatric nursing and who meet requirements may be considered for the National Institute of Mental Health Traineeship during the senior year of their baccalaureate studies. Applications for federal grants and traineeships are made to the Dean of the School of Nursing.

Educational Programs Offered by the Military Services. The Army Student Nurse Program provides two years of educational opportunity on enlisted reserve status during the junior and senior years of the curriculum. Upon completion of the basic nursing program and licensure as registered nurses, participants are required to accept commissions as second lieutenants in the Army Nurse Corps and to serve on active duty for a period determined by the time spent in the student nurse program.

The Navy Nurse Corps Candidate Program offers a similar opportunity for qualified students during the senior year. Upon graduation and licensure as registered nurses, appointees under this program will be obligated to accept appointment as ensigns in the Nurse Corps of the Naval Reserve and to serve on active duty for a minimum of two years.

Students in the Graduate Nurse Baccalaureate Program may apply for the same appointment in the Army Student Nurse Program if they have completed their diploma program within the past 30 months and are able to complete the requirements for their degree within 24 months.

GRADUATE TRAINEESHIPS, ASSISTANTSHIPS, AND FELLOWSHIPS

The University of Washington participates in the Professional Nurse Traineeship Program as administered by the Division of Nursing Resources of the U.S. Public Health Service. This program offers a limited number of traineeships for qualified applicants who are preparing for educational, supervisory, or public health positions in nursing.

The National Institute of Mental Health has made available to the School of Nursing a limited number of traineeships for nurses eligible for advanced study in psychiatric nursing, child psychiatric nursing, and for psychiatric nurses who are seeking doctoral level study in other disciplines.

Applications for the above traineeships should be made directly to the Office of the Dean of the School of Nursing.

The Graduate School provides for the employment of teaching and research assistants. (See *Graduate School Bulletin*, page 61.) Foreign students on an educational visa are eligible to apply for such assistantships.

Requests for assistantship application forms should be sent to the Admissions Office, and the completed application should be returned to the Dean, School of Nursing.

Post-master's students in nursing, and predoctoral students with the major in another discipline and the minor in nursing, may be eligible for financial assistance through one of the following fellowship programs. Applications should be made directly to the agency administering the fellowship. *The United States Public Health Service Fellowship*: Chief, Research Fellowship Branch, Division of Research Grants, National Institutes of Health, Bethesda 14, Maryland; *The National League for Nursing Fellowship*: Chairman, National League for Nursing Fellowship Program, 10 Columbus Circle, New York 19, N.Y.

NURSING EDUCATION AWARD

The Nursing Education Award is granted annually to the outstanding graduate of each of the programs of the School of Nursing: the basic, the graduate nurse, and the graduate program. Candidates are selected on the basis of their scholarship; their contribution to the community, the University, and the School of Nursing; and their potential contribution to the profession of nursing.



THE PROGRAMS IN NURSING

THE PROGRAMS IN NURSING

BACHELOR OF SCIENCE IN NURSING

Two undergraduate curricula are offered leading to the degree of Bachelor of Science in Nursing. One, the Basic Nursing Program, is for students with no previous preparation in nursing; the other, the Graduate Nurse Program, is for graduates of hospital or junior college schools of nursing.

BASIC NURSING PROGRAM

The basic nursing curriculum is planned for four academic years and one summer session. The distribution of required courses provides a balance of professional and general education. Study in the arts and sciences is distributed over the first three years; professional nursing study is dispersed throughout the four years, but in greater concentration during the junior and senior years. There is a close interrelationship between the general and professional educational aspects of the program. An academic adviser will assist the student to select subjects in the humanities and social sciences which will contribute to the individual's intellectual and personal development.

Clinical instruction is provided in all of the major fields of nursing: medical-surgical, maternal-child health, psychiatric, and public health nursing. This instruction is carried on in a variety of hospitals and other community facilities.

Public health nursing field instruction, during the senior year, may be in one of several agencies either in, or outside of, Seattle. During the field instruction quarter, the student usually lives in the area in which she has been assigned. She must be prepared to have a car for use during the quarter, have a current driver's license, and meet state requirements for insurance protection.

A graduate of the basic program is prepared for beginning positions in all fields of professional nursing. Upon completion of the program, she is eligible to take the state licensing examination to become a registered nurse.

The requirements for the basic nursing program are:

<i>Area</i>	<i>Credits</i>
Nursing (102, 227, 228, 298, 299, 367, 368, 369, 370, 371, 372, 373, 374, 407, 409, 413, 414, 415, 416, 421, 422, 429, and 412 or 499)	90
Related Medical Sciences (Preventive Medicine 323 and 410 and Pharmacy 261)	8
Physical and Biological Sciences (Chemistry 101, 102, Physics 170, Microbiology 301, Conjoint 317-318)	32
Humanities (English 101, 102, 103 required and Humanities 101, 102, 103 recommended)	24
Social Sciences (Psychology 100, Sociology 110, Home Economics 119, and Health Education 110)	16
Electives in Humanities and Social Sciences	10
Plus three physical education activities	Total 180

Program of studies for the first year:

<i>Autumn Quarter</i>	<i>Credits</i>	<i>Winter Quarter</i>	<i>Credits</i>	<i>Spring Quarter</i>	<i>Credits</i>
Chemistry 101	5	Nursing 102	2	English 103	3
English 101	3	Chemistry 102	5	Health Educ. 110	2
Humanities 101	5	English 102	3	Humanities 103	5
Phys. Educ. 112	1	Humanities 102	5	Physics 170	5
Elective	2	Phys. Educ. 114	1	Phys. Educ. Activity	1
	<u>16</u>		<u>16</u>		<u>16</u>

Sociology 110 may be taken in place of Physics 170 in the freshman year.

Courses in the freshman year may be taken in any accredited junior college, college, or university. The remainder of the program is to be completed at the University of Washington. Students who wish to transfer to this School from another university school of nursing may be admitted to the basic professional program if they qualify for admission to the University and meet the professional requirements of the School as determined by the Admissions Committee of the School of Nursing.

GRADUATE NURSE PROGRAM

This baccalaureate curriculum is designed for graduate nurses seeking a liberal and generalized professional education as preparation for graduate study or further professional practice. It provides an opportunity to extend the previous preparation of the nurse, through study in the social and natural sciences, the humanities, and nursing. Increased ability to give comprehensive nursing care and to assist in the prevention and control of disease and in promotion of health in work with individual patients, families, and community health groups is emphasized. Public health nursing is an integral part of the curriculum. Students are given the opportunity to apply these concepts to the care of patients and of family groups in hospital and community agencies.

Students entering the program who are graduates of approved hospital schools of nursing may be allowed a maximum of 65 credits toward the Bachelor of Science in Nursing. These credits are withheld until the student has completed satisfactorily 30 credits (15 of them at this University). Graduates from Associate in Arts degree nursing programs will be allowed a maximum of 90 credits toward the Bachelor of Science in Nursing.

The requirements for the graduate nurse program are:

<i>Professional Courses</i>	90 credits
Nursing 361, 365, 366, 415, 416, 417, 418, 419, 425; plus credit from school of nursing	
<i>General Education Courses</i>	90 credits
Humanities	(15 credits)
(including English 101, 102, 103)	
Social Sciences	(15-17 credits)
(including Psychology 101 and Sociology 310)	
Biological and Physical Sciences	(15 credits)
Social Work and Public Health	(8-10 credits)
Electives	(35 credits)
<i>Total</i>	180 credits

The candidate for the Bachelor of Science in Nursing is advised to select proportionately those scientific and cultural courses which will extend her background in general education and strengthen her preparation for professional nursing. Of the 180 credits required for graduation, 60 must be in upper-division courses.

Registered nurses are urged to carry professional liability insurance during their clinical practice courses.

ADVANCED DEGREES

The School of Nursing offers graduate curricula leading to the degrees of Master of Arts or Master of Nursing and a minor on the doctoral level for students matriculated in another discipline. Post-master's programs planned on an individual basis are also available.

MASTER'S PROGRAMS

The curricula provide for advanced professional preparation and research in a specialized area of nursing and in teaching, supervision, or administration. Majors are offered in the following areas: maternal-child nursing; medical-surgical nursing; psychiatric nursing, public health nursing, school nursing, and occupational health nursing; administration of nursing services; administration of schools of nursing.

Most programs are four quarters in length, but they may vary with the particular major field and the number of credits carried each quarter. At least half of the total credits taken must be at the 500 level or above. Each student in the master's degree program carries out original research in nursing and presents a written thesis. Within the first quarter of graduate study, the student should plan her entire program with her major adviser in order to insure a satisfactory sequence of courses.

Master of Nursing. This professional degree is offered with emphasis on advanced preparation in an area of specialization in nursing. Courses from two fields outside of nursing provide supporting work for the nursing major. A foreign language is not required for this degree. Requirements for the Master of Nursing degree are:

<i>Area of Study</i>	<i>Credits</i>
Major: nursing specialty courses	18
Related Fields: courses in two other disciplines	12
Research: courses in research and thesis	15
	<hr/>
	45

Master of Arts. This academic degree is offered, with a major in nursing and a minor in another discipline. Students are encouraged to select a minor which will serve as a basis for further post-master's study. Students are expected to meet the undergraduate prerequisites of the minor department as listed in the *Graduate School Bulletin*. The required course work and exact number of credits for the minor are determined by the minor department. A candidate for this degree is required to demonstrate a reading knowledge of one foreign language. Requirements for the Master of Arts degree are:

<i>Area of Study</i>	<i>Credits</i>
Major: nursing specialty courses	18
Minor: courses in another discipline	12
Research: courses in research and thesis	15
	<hr/>
	45

POST-MASTER'S PROGRAMS

Students who hold the master's degree may enroll for an additional period of study on the post-master's level. This may be for the purposes of gaining additional depth in the area of study begun on the master's level, for broadening one's area of specialized preparation through study in another area of nursing, or for obtaining additional knowledge and skill in nursing research. Post-master's study is offered in the areas of maternal-child nursing, medical-surgical nursing, adult and child psychiatric nursing, administration in schools of nursing, and research in nursing. Individual programs of study may be planned in keeping with the student's interests and long range professional goals.

The School of Nursing offers a minor on the doctoral level for those students who are matriculated in another discipline. The minor in nursing should total 35 credits in courses offering graduate credit, of which at least half must be at the 500 level. The recommended sequence of courses for each student is determined in the light of her previous work and future goals.

SUPPLEMENTARY WORK IN PUBLIC HEALTH NURSING

For the nurse who holds a bachelor's degree which did not include public health nursing, the School of Nursing offers a supplementary program designed to prepare for beginning positions in public health nursing.

The program requires at least two quarters of full-time study at the University of Washington and a minimum of 20 quarter credits. At least half of the course work must be in nursing. Public health nursing field study is required. Other specific nursing and related courses to be taken by the student will be determined after a review of the student's transcripts and a personal conference with a School of Nursing adviser.

The student should follow the admission procedure of Admission to the Graduate School. (See *Graduate School Bulletin*.)

For additional requirements during public health nursing field instruction see page 33 (basic program).

AFFILIATE COURSES

The School of Nursing provides lower-division, undergraduate courses in psychiatric nursing and tuberculosis nursing for students enrolled in various hospital schools of nursing in the state of Washington. The lower-division courses are directed toward basic competence in the clinical area, but assume less preparation in the social, biological, and physical sciences on the part of the student than is required for the upper-division courses. Public health nursing theory and field experience courses, as developed for the basic-degree students, are offered for students enrolled in certain university schools of nursing.

Affiliating students enroll in the University and the School of Nursing for the quarter that they are taking the designated courses. (See also page 39.) They must meet the admission requirements prescribed for this program and must pay the usual tuition and fees. Appropriate University credit is granted upon successful completion of the courses.

COURSE-NUMBERING SYSTEM

Courses numbered from 100 through 299 are lower-division courses, for freshmen and sophomores; those numbered from 300 through 499 are upper-division, for juniors and seniors.

Courses numbered 500 and above are intended for, and restricted to, graduate students. Some courses numbered in the 300's and 400's are open both to graduates and to upper-division undergraduates. Such courses, when acceptable to the major department and the Graduate School, may be part of the graduate program. The Graduate School accepts credit in approved 300-level courses for the minor or supporting fields only; approved 400-level courses are accepted as part of the major. For a listing of approved 300- and 400-numbered courses, consult the *Graduate School Bulletin*.

Undergraduate students of senior standing who wish to register for a 500-level course must obtain permission from both the instructor of the class and the Dean of the Graduate School.

The number in parentheses following the course title indicates the amount of credit each course carries. In most lecture courses, a credit is given for each class hour a week during a quarter; laboratory courses generally carry less credit than

the work time required. An asterisk in place of a credit number means that the amount of credit is variable. Hyphens between course numbers mean that credit is not granted until the series of courses is completed.

Courses to which the letter J is appended are joint courses in two or more departments and, as such, grant credit in one of the departments.

Not all of these courses are offered every quarter. Final confirmation of courses to be offered, as well as a list of times and places of class meetings, is given in the *Yearly Time Schedule*.

COURSES FOR BASIC DEGREE STUDENTS

- 101 Introduction to Professional Nursing (2)** **Baker**
The history of modern nursing and its important trends, with emphasis on the role of the professional nurse and her use of communication and observation skills. Last time offered Autumn Quarter, 1962.
- 102 Introduction to Professional Nursing (2)** **Nash**
Orientation to the profession, emphasizing present day concepts of nursing and preparation required. A survey of fields of nursing and interrelationships with other health groups. Lectures, discussions, observations, and field visits.
- 227 The Nurse and Family Health (2)**
Concepts of health and family living, with emphasis on cultural factors, including variations in values and standards, as they affect health. Family visits, for experience in using observation and communication skills.
- 228 Nursing Fundamentals (4)**
Introduction to effects of illness on individuals. Selected nursing measures to meet patient's needs, including technical, communication, observation skills. Natural and social science principles applied. Two hours of lecture-discussion, six hours of clinical laboratory, weekly.
- 298 Introduction to Normal Growth and Development (2)** **Chinque**
Basic concepts and principles related to the nursing care of children from infancy through the preschool period. Classroom observation of children at different age levels, parent interviews, case studies, lecture, and discussion. To be taken concurrently with 368.
- 229 Introduction to Normal Growth and Development (2)** **Chinque**
Basic concepts and principles related to the nursing care of children from school age through adolescence. Schoolroom observations, child interviews, lecture, and discussion. To be taken concurrently with 370.
- 367 Nursing Principles in Mother and Child Care (4)** **Stewart**
An introduction to major concepts in family-centered care of mothers and infants; scientific and nursing principles in the care of women before, during, and after childbirth, and in infant care during the newborn period. To be taken concurrently with 368.
- 368 Nursing Practice in Mother and Child Care (5)**
The application of scientific and nursing principles to the care of women, before, during, and after childbirth, and to the care of the newborn infant. Fifteen hours experience per week in prenatal clinics, obstetricians' offices, and hospitals. To be taken concurrently with 367.
- 369 Nursing Principles in Mother and Child Care (4)** **Stewart**
Continuation of 367, with emphasis on meeting the health needs of children from birth through adolescence. Includes health supervision, and common illnesses and disabilities of children. To be taken concurrently with 370.
- 370 Nursing Practice in Mother and Child Care (5)**
Continuation of 368, with emphasis on the health supervision of the well child and the care of children with common illnesses and disabilities. Fifteen hours experience per week in clinics, hospitals, and pediatricians' offices. Concurrent with 369.
- 371 Principles of Medical-Surgical Nursing (5)** **Boozar, Pederson**
Analysis of deviations in basic needs commonly occurring in any adult who is ill; nursing care given to assist in correcting or controlling deviations. Discussion of common medical-surgical conditions occurring from malfunction in gastro-intestinal, respiratory, and cardiovascular systems, and nursing care specifically related to each. Identification of principles from nursing and biological, physiological, and social sciences used in giving preventive and therapeutic nursing care. To be taken concurrently with 372.
- 372 Medical-Surgical Nursing Practice (5)**
Application of scientific and nursing principles to the care of adult patients ill with selected medical and surgical conditions. Emphasis on development of skill in planning and giving general nursing care based on the individual needs of the patient. Fifteen hours experience per week in hospital wards and operating room.
- 373 Principles of Medical-Surgical Nursing (5)** **Boozar, Pedersen**
Relationships between pathological changes, symptom formation, medical therapy, and nursing care in adults ill with common medical-surgical conditions occurring from malfunction in special sense organs, endocrine, urinary, integumentary, nervous, and musculoskeletal systems. Scientific facts and principles which form the basis for nursing procedures and observation. To be taken concurrently with 374.

- 374 Medical-Surgical Nursing Practice (5)**
Supervised practice in care of medical-surgical patients in hospital wards and in the operating room; observation in selected clinics or physicians' offices. Common elements, and significant differences, in care of patients with specialized nursing problems during illness, convalescence, and rehabilitation. Fifteen hours experience per week.
- 407 Principles of Ward Management and Bedside Teaching (3)** **Claypool, Nash**
Problems of ward administration, with emphasis on the supervisory and teaching functions of the team leader, and on the provision of patient teaching. Human relations in the ward situation are stressed. To be taken concurrently with 422.
- 409 Professional Problems in Nursing (2)**
Responsibilities of the professional nurse to the community. Study of professional organizations, opportunities in various fields of nursing, legislation, accreditation, and professional literature. To be taken concurrently with 422.
- 412 Scientific Principles in Nursing Care (3)** **Brandt, Mansfield**
An undergraduate seminar devoted to a critical analysis of nursing situations, with emphasis on the identification and utilization of the inherent social and natural science principles. Student research project utilized as a learning experience.
- 413 Principles of Psychiatric Nursing (5)** **Beckwith**
Concepts and principles of psychiatric-mental health nursing used in planning care of mentally ill patients. Psychiatric therapies and rehabilitation measures. To be taken concurrently with 414.
- 414 Psychiatric Nursing Practice (5)** **Beckwith, Schultz**
Application of psychiatric-mental health principles and skills in the care of selected psychiatric patients. Fifteen hours clinical experience in community psychiatric facilities.
- 415 Community Health Nursing Principles (3)** **Cobb, Vail**
Analysis of family and community health situations and current nursing programs. Emphasis on selected problem-solving skills. To be taken concurrently with 416.
- 416 Community Health Nursing Practice (5)** **Christian, Cobb, Coombe, Fisher, Vail**
Application of public health nursing principles and skills in family and community health situations.
- 421 Selected Problems in Clinical Nursing (4)** **Little**
Analysis of complex nursing problems related to the care of adults or children with chronic or acute illness, in ordinary and emergency situations. Includes the formulation of comprehensive nursing care plans for selected patients or groups of patients. Two two-hour seminar periods per week. To be taken concurrently with 422.
- 422 Senior Nursing Practice (6)** **Little, Rose**
Experience in dealing with complex nursing care problems including those associated with stress or emergency situations. Planning, directing, guiding, evaluating nursing care activities, as an individual and as a team leader. Three consecutive weeks of total experience will be concentrated on the care of tuberculosis patients. Eighteen hours of supervised clinical experience.
- 429 Nursing Functions in Gerontology (2)** **Beckwith**
Nursing principles related to the physical, social, and emotional needs of the geriatric patient in individual, family, and group settings. Biological, social, and cultural influences upon the aging population included.
- 499 Undergraduate Research (1-5, maximum 5)** **Brandt**
Supervised individual research on a specific nursing problem. Open to qualified majors in the senior year. Prerequisite, permission of instructor. May substitute for 412. To be taken concurrently with 416.

COURSES FOR OTHER UNIVERSITY STUDENTS

- 100 Care and Prevention of Illness in the Home (3)** **Olcott**
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. (Open to any student.)
- 101 Introduction to Professional Nursing (2)** **Gray**
The history of modern nursing and its important trends, with emphasis on the role of the professional nurse and her use of communication and observation skills. Last time offered Autumn Quarter, 1962.
- 102 Introduction to Professional Nursing (2)** **Gray, Nash**
Orientation to the profession, emphasizing present day concepts of nursing and preparation required. A survey of fields of nursing and interrelationships with other health groups. Lectures, discussions, observations, and field visits. (Open to any student.)
- 315, 316 Nursing for Physical Therapists (2,2)** **Hay**
Selected nursing activities and techniques for students in the physical therapy program.

COURSES FOR UNDERGRADUATE NURSING AFFILIATE STUDENTS

- 250 Introduction to Psychiatry and Psychiatric Nursing (5)** **Stankiewicz, Stockwell**
Concepts and principles used in planning nursing care of mentally ill patients. Therapies and rehabilitation measures. To be taken concurrently with 251.
- 251 Selected Psychiatric Nursing Practice (5)** **Cashar, Doree, Stankiewicz, Stockwell**
Application of fundamental principles in planning and caring for the mentally ill patient. Fifteen hours clinical experience in community psychiatric facilities. To be taken concurrently with 250.
- 252 Introduction to Nursing Care and Treatment of Tuberculosis (2)** **Sorensen**
Basic concepts regarding the etiology, control, and treatment of tuberculosis. Relevant natural and social science principles and the rehabilitation of the chronically ill, including the alcoholic. Lectures, discussions, and demonstrations. Seven hours per week for three weeks.
- 253 Selected Tuberculosis Nursing Practice (2)** **Sorensen**
Emphasis on planning comprehensive nursing care of the chronically ill, including the alcoholic, by utilization of paramedical services. Problem-solving approach stressed. Hospital practice, ward discussions, clinic, and conferences. Twenty-two hours of laboratory experience per week for three weeks.
- 402 Principles of Tuberculosis Nursing Care (2)** **Sorensen**
Chronic and communicable disease nursing as exemplified in patients with tuberculosis, including those with alcoholism. An exploration of preventive programs, medical management, community facilities, and related family and community problems. Seven hours of lectures and discussions per week for three weeks.
- 403 Tuberculosis Nursing Practice (2)** **Sorensen**
Application of chronic and communicable disease nursing concepts and principles to the care of patients with tuberculosis, including those with alcoholism. Utilization of paramedical services in complex nursing situations. Emphasis on the problem-solving approach and interpersonal relations in nursing. Twenty-two hours of laboratory experience per week for three weeks.
- 415 Community Health Nursing Principles (3)** **Cobb, Vail**
Analysis of family and community health situations and current nursing programs. Emphasis on selected problem-solving skills. Prerequisites, 366, 417, 419, and Preventive Medicine 323.
- 416 Community Health Nursing Practice (5)** **Christian, Cobb, Coombe, Fisher, Vail**
Application of public health nursing principles and skills in family and community health situations. Concurrent with 415.

COURSES FOR GRADUATE NURSE STUDENTS

- 361 Survey of Trends in Contemporary Nursing (2)** **Schumann, Streich**
Emphasis on current problems.
- 365 Therapeutics and Nursing Care (2)** **Baker**
The nurse's responsibilities in the use of selected therapeutic agents, treatment, and diagnostic tests.
- 366 Special Problems in Nursing Care (2)** **Fatka, Nehren**
Emphasis on mental health aspects. Concurrent with 419.
- 415 Community Health Nursing Principles (3)** **Cobb, Vail**
Analysis of family and community health situations and current nursing programs. Prerequisites, 366, 417, 419 and Preventive Medicine 323.
- 416 Community Health Nursing Practice (5)** **Christian, Cobb, Coombe, Fisher, Vail**
Application of public health nursing principles and skills in family and community health situations. Concurrent with 415.
- 417 Principles of Teaching Nursing and Health (3)** **Klutas**
Introduction to learning principles and processes as related to nursing. Prerequisites, Psychology 100 and Education 209 or equivalent.
- 418 Supervision in Nursing (3)**
Principles of supervision as they apply to nursing in hospitals and health services. The importance of interpersonal relations in supervision.
- 419 Contemporary Nursing in the Hospital (3)** **Patrick**
Weekly conferences, and four hours of weekly clinical experience in nursing in hospitals. Fundamental problems in nursing care. Prerequisite, 365. Concurrent with 366.
- 425 Current Literature in Nursing (2)** **Martin**
Concurrent with 415.

COURSES FOR GRADUATE STUDENTS

- 430 Advanced Nursing Field Work (3)**
Identification and analysis of problems in advanced clinical nursing. Principles pertinent to development, application, and evaluation of plans for optimum nursing. Experience in

medical-surgical, maternal-child, public health, psychiatric-mental health, school, or occupational health nursing. Weekly seminar.

- 431 Advanced Nursing Field Work (2)**
Continuation of Nursing 430. Experiences chosen in the area of major clinical interest. Prerequisite, 430.
- 435 Practice Supervision in Nursing (3)**
Planned experience in supervisory functions. Prerequisites, 454, experience in field, or permission.
- 436 Practice Teaching in Nursing (3)**
Planned experience in formal and clinical teaching. Prerequisites, 462 and experience in clinical field, or permission.
- 454 Administration in Nursing (2)** **Byerly**
Administrative behavior, personnel administration; coordinating functions of the nursing administrator. Prerequisite, 418 or permission.
- 455 Administration of Schools of Nursing (3)** **Hoffman**
Application of principles: over-all administrative functions as they relate to organization, student and faculty personnel, curriculum facilities, finance, records, and reports in schools of nursing. Prerequisite, 454 or permission.
- 456 Nursing Service Administration (3)** **Byerly**
Application of fundamentals of administration and organization to nursing service in the hospital. Discussion of selection, assignment, supervision, and evaluation of hospital nursing personnel; techniques for control of equipment and supplies; communication; and interdepartmental and interpersonal relations. Prerequisite, 454 or permission.
- 462 Teaching in Schools of Nursing (3)** **Jenkin**
Principles and methods of teaching applied to clinical nursing; group development of objectives and course content; planning of courses and units of learning for selected clinical areas; selection of instructional aids and textbooks; the role of the instructor in classroom teaching and clinical practice. Prerequisites, 417 or equivalent, Education 209, or permission.
- 463 Personnel Guidance in Nursing (3)** **Nehren**
Development of concepts and principles of interpersonal relations as used in personnel guidance. Prerequisite, Education 447 or permission.
- 464 The Nurse in Mental Health (3)** **Batey**
Concepts of nursing and of growth and development applied to nurse-patient interaction; emphasis on prevention and resolution of emotional problems experienced in nursing situations. Nursery school experience. Prerequisite, permission.
- 466 In-Service Education in Nursing (3)** **Jenkin**
Programs involving various groups of workers in different institutions and agencies.
- 467 Evaluation of Performance in Nursing (3)** **Olcott**
Philosophy and principles of performance evaluation for nurses with administrative, teaching, and supervisory responsibility in various health agencies. The purposes of evaluation as they relate to guidance of staff, to increased satisfaction in one's work, and to improved patient care.
- 471NJ Advanced Directed Teaching: School Nursing (4)** **Boroughs, Christian**
Directed school nursing practice in public schools, including health education and health services. Offered jointly with the College of Education. Prerequisite, permission.
- 481 The Nurse in School Vision Programs (2)** **Christian**
Nurse's role and responsibilities. Relationship of vision programs to community health services. Lectures, discussions, and demonstrations.
- 485 School Health Problems (3)** **Christian**
Analysis of and planning for programs based on developmental needs of the school-age child. Field observation and participation in school health programs. Prerequisite, permission.
- 486 Occupational Health Programs, Nursing Implications (3)** **Klutas**
Philosophy, scope, types of programs; functions of health personnel; interpersonal and community relationships; environmental and preventive health aspects. Emphasis on role of the nurse. Prerequisite, permission.
- 498 Methods of Supervision in Public Health Nursing (3)**
Principles of supervision and their relationship to administration. Prerequisites, 454 or equivalent, preparation and experience in public health nursing, and permission.
- 501 Development of Nursing Procedures (2)** **Carnevali**
Nursing procedures as a basis for nursing service planning and as a teaching tool. Procedures analyzed against selected criteria and developed according to clinical needs.
- 502 Applied Group Development Principles (3)** **Nehren**
Factors that contribute to productive group effort; application of principles for professional health personnel. Prerequisites, permission and Speech 332 or equivalent.
- 504 Seminar in Occupational Health Nursing (2)** **Klutas**
Intensive analysis of selected problems.
- 505 Seminar in Administration of Schools of Nursing (3)** **Hoffman**
Discussion and analysis of situations in such administration. Prerequisite, 455 or equivalent.

- 506 Seminar in Nursing Service Administration (3)** **Byerly**
Discussion and analysis of situations in such administration. Prerequisite, 456 or equivalent.
- 507 Seminar in Nursing Problems in Mental Health (2)** **Nehren**
Psychiatric concepts in the nurse's therapeutic role in the family milieu. Prerequisites, 508 and permission.
- 508 Seminar in Advanced Psychiatric Nursing (2)** **Batey**
Exploration of interpersonal relations; the nurse's therapeutic role with the psychiatric patient and in the total milieu. To be taken concurrently with 430.
- 509 Seminar in School Nursing (3)** **Christian**
The application of public health nursing concepts, principles, and research findings in the analysis and solution of school nursing problems.
- 510 Curriculum Development in Nursing Education (5)** **Pedersen**
Current patterns and trends in nursing education; development of materials; problems in study and implementation of nursing curricula. Prerequisite, 417 or equivalent.
- 511 Psychosomatic Nursing (3)** **Nehren**
Seminar and clinical experiences centered on problems of interrelationships of physical and emotional aspects of illness. Prerequisite, basic psychiatric nursing or permission.
- 512 Advanced Fields in Psychiatric Nursing (3)** **Batey**
Practicum devoted to solution of nursing problems in psychiatric situations. Specific interpersonal and interprofessional relationships in the care of mental patients. Prerequisite, permission.
- 513 Field Experience in Mental Health Nursing (3)** **Nehren**
Selected experience in the identification and analysis of mental health problems in family relationships; utilizing psychiatric concepts in developing therapeutic nursing relationships in the family milieu. Concurrent with 507.
- 515 Special Fields in Public Health Nursing (3)**
Investigation of public health nursing responsibilities. Emphasis varies with interest and needs of the students. Prerequisite, permission.
- 521 Methods of Research in Nursing (2)** **Hoffman**
Methods of research applied to the solution of problems in all fields of nursing.
- 530 Advanced Concepts in Maternal and Child Health and Implications for Nursing (3)** **Murray**
Consideration of changing philosophy in maternal and child care; factors influencing health; ways of meeting health needs; role of the nurse in solution of related problems. Prerequisite, permission.
- 535 Problems in Nursing Mentally Retarded Children (3)** **Chinque**
Analysis of significant problems in care of mentally retarded children and their families, through consideration of the complex biophysical, psychological, and sociocultural factors involved. Prerequisite, permission.
- 540 Seminar in Medical-Surgical Nursing (3)** **Giblin**
Criteria for judging the effectiveness of nursing actions used to help alleviate or prevent pathophysiological changes evidenced in physical illness. Prerequisite, permission.
- 542 Seminar in Cardiovascular Nursing (3)** **Giblin**
Analysis of nursing problems of such patients; potential pathophysiology and the physical and emotional factors involved. Prerequisites, 430 (medical-surgical), 464, or permission.
- 550 Advanced Public Health Nursing (3)** **Burke**
Advanced developments in the sciences of nursing and public health.
- 558 Seminar in Advanced Public Health Nursing (3)** **Burke**
Application of concepts, principles, and research findings in analysis and solution of current and complex community health problems. Prerequisite, permission.
- 570 Seminar in Clinical Research in Nursing (3)** **Hoffman**
Philosophy, problems of design; use of criterion measures in terms of patient care. Prerequisite, permission.
- 600 Research (*)**
- 700 Thesis (*)**

REQUIRED COURSES IN ALLIED FIELDS

CHEMISTRY

- 101 General Chemistry (5)**
For nonscience and nonengineering majors who plan to terminate their study of chemistry with 101 or 102. Molecular theory, quantitative relationships in chemical processes, solutions, ionic equilibria, acids, bases, and salts. Prerequisite, high school chemistry or 100.
- 102 General and Organic Chemistry (5)**
A terminal course to follow 101. Chemistry of common metals and nonmetals. Organic compounds; hydrocarbons, alcohols, aldehydes, ketones, ethers, acids, aromatics, fats and oils, proteins and carbohydrates. Prerequisite, 101.

CONJOINT**317-318 Elementary Anatomy and Physiology (6-6)**

Human physiology with anatomical demonstrations. An elementary course integrating anatomy, histology, physiology, and biochemistry of the human body. Offered jointly by the Departments of Anatomy and Physiology and Biophysics. For nursing and dental hygiene students only.

ENGLISH**101, 102, 103 Composition (3,3,3)**

Fundamentals of effective exposition; collecting, organizing, and evaluating materials for writing; reading contemporary writings for meaning and form.

GENERAL EDUCATION**101 Literature (5)**

An introduction to literary forms and techniques through the analysis of representative examples of narrative and poetic art; the relationship of content and expression.

102 The Arts (5)

Painting, sculpture, music, architecture, the dance, and drama studied through example, discussion, and criticism.

103 Philosophy (5)

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.

HOME ECONOMICS**119 Family Nutrition (4)**

Normal nutritional requirements of the family and simple dietary modifications. Food selection. Cultural effects on diet pattern. Orientation to community nutrition facilities. For student nurses.

MICROBIOLOGY**301 General Microbiology (5)**

Microorganisms and their activities. For students of pharmacy, dental hygiene, nursing, home economics, education, and others interested in a one-quarter survey course, with minimal training in chemistry. Prerequisite, two quarters of general chemistry.

PHYSICAL EDUCATION**HEALTH EDUCATION****110 Health Education (Women) (2)**

Current health information; women's responsibilities in application of health knowledge to attitudes and practices in modern life. Required of all freshman women; exemption, without credit, by examination. Physical Education 112 and 114 are strongly recommended as two of the three P.E. activities required of all basic students (except those otherwise exempted).

PHYSICS**170 Introduction to Health Sciences Physics (5)**

Selected physical theories and principles and their application to home and hospital situations.

PSYCHOLOGY**100 General Psychology (5)**

Introduction to the principles of human behavior.

310, 311 Survey of Psychological Problems (3,3)**PREVENTIVE MEDICINE****323 Introduction to Public Health Principles and Practices (3)**

A survey of principles, practices, and the agencies concerned.

410 Preventive Medicine: Implications for Nursing (2)

Statistics, epidemiology, public health administration, and certain public programs are considered in further detail than in 323. Prerequisite, 323.

SOCIAL WORK**400 Field of Social Welfare (5)****401 Principles of Interviewing (2)****SOCIOLOGY****110 Survey of Sociology (5)**

Basic principles of social relationships. Primarily for freshmen and sophomores. Not open to students who have taken 310.

FACULTY OF THE SCHOOL OF NURSING

(As of September, 1962)

A single date following the name indicates the beginning of service in the University. When two dates are given, the second, in parentheses, is the date of promotion to present academic rank.

- Anderson, Eugenia Elaine, 1961, *Assistant Professor of Medical-Surgical Nursing*
B.S.N., 1949, Colorado; M.N., 1958, Washington
- Baker, Joan Mercedes, 1956 (1961), *Acting Instructor in Medical-Surgical Nursing*
B.S.N., 1955, Washington; M.S., 1959, Rutgers
- Batey, Marjorie, 1956 (1958), *Assistant Professor of Psychiatric Nursing*
Diploma, 1947, Sacred Heart Hospital School of Nursing, Washington; B.S., 1953, Washington; M.S., 1956, Colorado
- Beckwith, Evelyn M., 1960, *Assistant Professor of Psychiatric Nursing*
Diploma, 1931, Mt. Sinai Hospital School of Nursing, Ohio; B.S., 1951, M.N., 1953, Washington
- Boozar, Mary, 1956, *Assistant Professor of Medical-Surgical Nursing*
B.S., 1947, Colorado; M.N., 1955, Washington
- Brandt, Edna Mae, 1954 (1955), *Assistant Professor of Medical-Surgical Nursing*
Diploma, 1939, St. Joseph's Hospital School of Nursing, Illinois; B.A., 1952, Redlands; M.N., 1953, Washington
- Breckenridge, Flora, 1953, *Instructor in Medical-Surgical Nursing*
Diploma, 1941, Evanston Hospital School of Nursing; B.S., 1952, Western Reserve
- Bruno, Pauline, 1958 (1959), *Assistant Professor of Medical-Surgical Nursing*
Diploma, 1945, St. Vincent Hospital School of Nursing, Massachusetts; B.S., 1952, M.S.N., 1954, Catholic University
- Burke, A. Evelyn, 1943 (1953), *Associate Professor of Public Health Nursing*
B.S., 1930, Akron Municipal; Diploma, 1930, M.A., 1941, Western Reserve; C.P.H.N., 1943, Washington
- Byerly, Elizabeth Lee, 1962, *Acting Instructor in Maternal-Child Nursing*
Diploma, 1947, Michael Reese Hospital School of Nursing, Illinois; B.S.N., 1955, Iowa State; M.N., 1958, Washington
- Carnevali, Doris Lorraine, 1962, *Instructor in Medical-Surgical Nursing*
B.S.N., 1947; M.N., 1961, Washington
- Cashar, Leah G., 1952 (1959), *Instructor in Psychiatric Nursing*
Diploma, 1945, St. Joseph's Hospital School of Nursing, Kansas; B.S., 1951, Washington
- Chinque, Katherine, 1947 (1959), *Assistant Professor of Maternal-Child Nursing*
Diploma, 1931, Providence Hospital School of Nursing, Michigan; B.S., 1946, Wayne; M.P.H., 1951, Michigan
- Christian, Doris Cowles, 1957 (1958), *Instructor in Public Health Nursing*
Diploma, 1944, Springfield Hospital School for Nurses, Massachusetts; B.S.S., 1950, Chicago; M.A., 1957, Washington
- Claypool, Janet McClane, 1961, *Acting Instructor in Maternal-Child Nursing*
B.S.N., 1959; M.N., 1960, Washington
- Cobb, Marguerite, 1953 (1958), *Assistant Professor of Public Health Nursing*
B.S.N., 1959, M.N., 1957, Washington

- Colin, Louise, 1961, *Instructor in Medical-Surgical Nursing*
Diploma, 1947, Brooklyn Hospital School of Nursing; B.S., 1958, Columbia;
M.N., 1959, Washington
- Coombe, Evelyn, 1961, *Instructor in Public Health Nursing*
Diploma, 1945, Providence Hospital, Kansas; B.S., 1955, Colorado; M.N., 1956, Washington
- Critchley, Deane, 1962, *Instructor in Psychiatric Nursing*
B.S., 1957; M.S., 1959, California
- Cross, Harriet, 1932 (1941), *Assistant Professor of Public Health Nursing*
Diploma, 1921, Columbia Hospital School of Nursing, Wisconsin; B.S., 1925, Minnesota;
C.P.H.N., 1938, M.N., 1940, Washington
- Doree, Emily I., 1962, *Instructor in Psychiatric Nursing*
Diploma, 1944, Ottawa Civic Hospital School of Nursing; C.P.H.N., 1954, University of
British Columbia; B.S., 1960, Washington
- Fatka, Nada, 1961, *Instructor in Psychiatric Nursing*
Diploma, 1952, Iowa Methodist Hospital School of Nursing; B.S., 1955, Iowa;
M.S., 1958, Colorado
- Fisher, Alice Lorene, 1961, *Lecturer in Public Health Nursing*
B.S.N., 1930, Minnesota; M.S.P.H., 1936, Michigan
- Giblin, Elizabeth, 1951 (1959), *Associate Professor of Medical-Surgical Nursing*
B.S.N., 1943, M.N., 1954, Washington; Ed.D., 1959, Colorado
- Gray, Florence, 1945 (1959), *Associate Professor of Nursing*
B.S.N., 1945, M.S., 1950, Washington
- Hastie, Elizabeth May, 1960, *Instructor in Medical-Surgical Nursing*
B.S.N., 1958, University of British Columbia; M.N., 1961, Washington
- Hay, Stella Leader, 1955 (1958), *Assistant Professor of Medical-Surgical Nursing*
Diploma, 1942, Eitel Hospital School of Nursing, Minnesota; B.S., 1944, M.A., 1951,
Minnesota
- Heinemann, Margot Edith, 1954 (1956), *Assistant Professor of Medical-Surgical
Nursing*
B.S.N., 1945, Seattle University; M.N., 1954, Washington
- Hewitt, Helon, 1961, *Research Instructor in Psychiatric Nursing*
Diploma, 1955, Emanuel Hospital School of Nursing, Oregon; B.S.N., 1959, M.N., 1961,
Washington
- Hoffman, Katherine, 1942 (1956), *Professor of Nursing; Assistant Dean of the
School of Nursing*
A.B., 1929, College of Puget Sound; Diploma, 1934, Tacoma General Hospital School of
Nursing; M.N., 1941, Ph.D., 1956, Washington
- Jenkin, Shirley Ann, 1961, *Acting Instructor in Medical-Surgical Nursing*
B.S.N., 1956, Washington State; M.N., 1961, Washington
- Julian, Joseph, 1961, *Research Instructor in Nursing*
A.B., 1958, San Francisco State; M.A., 1961, Washington
- Klemer, Margaret Grim, 1962, *Instructor in Maternal-Child Nursing*
Diploma, 1937, St. Margaret Memorial Hospital School of Nursing, Pennsylvania;
B.S.N.E., 1942, University of Pittsburgh; M.S., 1962, Alabama
- Klutas, Edna May, 1960, *Assistant Professor of Occupational Health Nursing and
Public Health Nursing*
Diploma, 1940, Columbia-Presbyterian Hospital School of Nursing, New York; B.S., 1951,
Washington; M.P.H., 1957, Yale
- Kogan, Kate, 1962, *Research Assistant Professor in Nursing; Clinical Assistant
Professor in Psychiatry*
B.A., 1934, Wellesley; M.A., 1935, Ph.D., 1943, Columbia University
- Leahy, Kathleen M., 1935 (1961), *Professor Emeritus of Public Health Nursing*
Diploma, 1921, Stanford School of Nursing; A.B., 1926, C.P.H.N., 1927, Oregon;
M.S., 1931, Washington
- Little, Dolores, 1951 (1958), *Assistant Professor of Medical-Surgical Nursing*
B.S.N., 1946, M.N., 1957, Washington
- Mansfield, Louise, 1951 (1952), *Assistant Professor of Medical-Surgical Nursing*
Diploma, 1937, Samaritan Hospital School of Nursing, Idaho; B.S., 1947, Ohio State;
M.A., 1951, Teachers College, Columbia University

- McConnell, Nola, 1957 (1960), *Instructor in Maternal-Child Nursing*
B.S.N., 1956, M.N., 1960, Washington
- Martin, Florence E., 1961, *Acting Instructor in Public Health Nursing*
B.S.N., 1956, M.N., 1962, Washington
- Midthun, Aline, 1957, *Instructor in Medical-Surgical Nursing*
Diploma, 1932, Tennessee; B.S., 1956, Oregon
- Murray, B. Louise, 1951 (1962), *Associate Professor of Maternal-Child Nursing*
B.S., 1938, Portland University; M.N., 1950, Washington; Ed.D., 1962, Columbia
- Nash, Shirley Ista, 1952 (1957), *Assistant Professor of Nursing*
Diploma, 1941, Virginia Mason Hospital School of Nursing; B.S., C.N.S., 1949, M.N., 1956, Washington
- Nehren, Jeanette Goodwin, 1959, *Assistant Professor of Psychiatric Nursing*
Diploma, 1945, St. Vincent's Hospital School of Nursing, Indiana; B.S., 1956, Indiana; M.S., 1958, Colorado
- Olcott, Virginia, 1931 (1945), *Associate Professor of Medical-Surgical Nursing*
Diploma, 1926, Peter Bent Brigham Hospital School of Nursing, Massachusetts; B.S., 1927, M.S., 1931, C.P.H.N., 1949, Washington
- Patrick, Maxine I., 1955 (1961), *Assistant Professor of Medical-Surgical Nursing*
B.S.N., 1948, Colorado; M.N., 1953, Washington
- Pedersen, Roma Kittelsby, 1953 (1961), *Associate Professor of Medical-Surgical Nursing*
B.S.N.E., 1943, Minnesota; M.N., 1955, Washington
- Pesznecker, Betty Hart, 1958 (1960), *Research Assistant Professor of Psychiatric Nursing*
Diploma, 1948, St. Luke's Hospital School of Nursing, Spokane; B.S., 1951, M.N., 1957, Washington
- Rose, Patricia, 1952 (1962), *Assistant Professor of Maternal-Child Nursing*
Diploma, 1946, St. Joseph's Hospital School of Nursing, Tacoma; B.S.N., 1949, M.N., 1958, Washington
- Schultz, Frances Koster, 1960, *Instructor in Psychiatric Nursing*
B.S., 1944, M.S., 1960, California
- Schumann, Delores M., 1961, *Instructor in Medical-Surgical Nursing*
Diploma, 1951, Miami Valley Hospital School of Nursing, Ohio; B.S., 1954, Ohio State; M.S., 1961, Boston
- Sharp, Lawrence J., 1962, *Research Instructor in Nursing*
B.S., 1957, Gonzaga; M.A., 1959, Washington State
- Smith, Harriet Holbrook, 1949 (1962), *Associate Professor Emeritus and Consultant*
A.B., 1918, Mount Holyoke College; Diploma, 1920, Seattle General Hospital School of Nursing; M.N., 1957, Washington
- Sorensen, Karen Mae, 1959, *Instructor in Medical-Surgical Nursing*
B.S.N., 1958, M.N., 1959, Washington
- Soule, Elizabeth Sterling, 1920 (1950), *Professor of Nursing; Dean Emeritus of the School of Nursing*
Diploma, 1907, Malden Hospital School of Nursing, Massachusetts; B.A., 1926, M.A., 1931, Washington; D.Sc. (Hon.), 1944, Montana State
- Stankiewicz, Barbara D., 1961, *Instructor in Psychiatric Nursing*
Diploma, 1957, St. Vincent's Hospital School of Nursing, Florida; B.S.N.E., Florida State; M.S., 1961, Colorado
- Stewart, Lucille B., 1954, *Instructor in Maternal-Child Nursing*
Diploma, 1949, Evanston Hospital School of Nursing, Illinois; B.S., 1952, Washington
- Stockwell, Martha L., 1962, *Instructor in Psychiatric Nursing*
Diploma, 1944, Pennsylvania Hospital School of Nursing; B.S.N.E., 1958, University of Akron
- Streich, Ursel E., 1962, *Instructor in Medical-Surgical Nursing*
A.A.S., 1959, Brooklyn College; B.S., 1961, M.A., 1962, New York University
- Tschudin, Mary Stickels, 1942 (1955), *Professor of Nursing; Dean of the School of Nursing*
B.S.N., 1935, C.P.H.N., 1936, M.S., 1939, Ph.D., 1959, Washington

Vail, Barbara, 1961, *Instructor in Public Health Nursing*

Diploma, 1948, Good Samaritan Hospital School of Nursing, Oregon; B.S.N., 1955, Oregon; M.P.H., 1958, Johns Hopkins

Wallace, Esther L., 1951 (1962), *Acting Instructor in Nursing*

Diploma, 1948, Swedish Hospital School of Nursing; B.S., 1950, Minnesota; M.N., 1960, Washington

CLINICAL NURSING FACULTY

Airth, Annabelle, 1959, *Clinical Instructor in Nursing, Assistant Director of Nursing Service, King County Hospital*

B.S.N., 1946, M.N., 1959, Washington

Andrews, Elizabeth Adams, 1960, *Clinical Instructor in Nursing, Associate Director of Nursing Service, University Hospital*

B.S.N., Simmons, 1950

Bakken, Elise L., 1961, *Clinical Instructor in Nursing; Chief Dietitian, King County Hospital*

B.A., 1947, California; M.Sc., 1951, Ohio

Bamford, Barbara Ihrig, 1961, *Clinical Instructor in Nursing; Night Supervisor, University Hospital*

Diploma, 1950, Highland School of Nursing, California; A.A., 1954, San Angelo College, Texas

Bergy, Joan Lee, 1961, *Clinical Instructor in Nursing; Food Clinic Dietitian, King County Hospital*

B.S., 1952, Michigan State

Birkbeck, Lyndall H., 1954 (1958), *Clinical Assistant Professor of Nursing; Chief, Nursing Division, State Department of Health*

Diploma, 1942, Pennsylvania Hospital School of Nursing; B.S., 1946, Minnesota; M.A., 1954, Teachers College, Columbia University

Blackman, Helen M., 1945 (1959), *Clinical Assistant Professor of Nursing; Director of Nursing, Firland Sanatorium*

Diploma, 1929, St. Luke's Hospital School of Nursing, Iowa; B.S., 1942, C.N.S., 1942, Washington

Brown, Eleanor, 1955, *Clinical Instructor in Nursing; Supervising Nurse of the Bremerton-Kitsap County Department of Public Health*

Diploma, 1939, Indianapolis General Hospital School of Nursing;

B.S., C.P.H.N., 1949, Washington

Dean, Ruth Whewell, 1959, *Clinical Assistant Professor of Nursing, Assistant Chief, Division of Nursing, Washington State Department of Health*

B.N., 1936, Yale; M.A., 1941, Teachers College, Columbia University

Dike, Barbara, 1959, *Clinical Instructor in Nursing, Assistant Director of Nursing Service, Northern State Hospital*

Diploma, 1937, Port Angeles General Hospital School of Nursing, Washington; C.P.H.N., 1943, B.S., 1948, M.N., 1953, Washington

Falck, Harriet E., 1961, *Clinical Instructor in Nursing; Supervisor of Out-Patient Department, University Hospital*

B.S., 1946; P.H.N., 1953, Washington

Findlay, Dorothy Ellen, 1961, *Clinical Instructor in Nursing; Director of Public Health Nursing, Snohomish County*

B.S., 1930, C.P.H.N., 1936, M.N., 1957, Washington

Fine, Ruth Barney, 1960, *Clinical Instructor in Nursing, Director of Nursing Service, University Hospital*

Diploma, 1939, Garfield Memorial Hospital School of Nursing, Washington, D.C.; B.S.N., 1956, M.N., 1957, Washington

Fouts, John David, 1961, *Clinical Assistant Professor of Nursing; Assistant Professor in University of Washington School of Medicine*

B.S., 1932, Eastern Kentucky Teachers College; M.D., 1936, University of Louisville; M.Ph., 1948, Columbia School of Administration, Medicine and Public Health

Gannon, Margaret E., 1949, *Clinical Instructor in Nursing, Chief Dietitian, Swedish Hospital*

B.A., 1932, Montana

- Glynn, Dorothy Elizabeth, 1948, *Clinical Assistant Professor of Nursing, Director of Nursing Service, King County Hospital System*
B.A., 1926, Colorado School of Education; Diploma, 1932, Kahler Hospital School of Nursing
- Gould, Grace Theresa, 1960, *Clinical Assistant Professor of Nursing; Supervisor, Psychiatric Nursing, Division of Mental Health, State of Washington Department of Institutions*
Diploma, 1948, Mount Vernon Hospital School of Nursing, New York; B.S., 1953, Texas Women's University; M.S., 1954, Catholic University, Washington, D.C.
- Hallman, Glen Finlay, 1961, *Clinical Instructor in Nursing; Administrative Assistant and Sanitation Supervisor, Whatcom-Bellingham Health District*
B.S., 1950, Seattle Pacific College; M.P.H., 1954, University of Minnesota
- Johnson, Jean Gordon, 1960, *Clinical Instructor in Nursing, Assistant Director of Nursing Service, King County Hospital*
B.S., 1949, St. Lawrence University; M.N., 1952, Yale
- Kimball, Shirley Jean, 1961, *Clinical Instructor in Nursing; Assistant Director of Nursing Service, King County Hospital*
B.S., 1954, Emory University, Georgia; M.N., 1959, Washington
- Kintner, Nancy Jane, 1942, *Clinical Assistant Professor of Nursing, Director of Nurses, Northern State Hospital*
B.S., 1940, Washington; M.S., 1960, California
- Larson, Margaret Linn, 1960, *Clinical Instructor in Nursing, Supervisor of Psychiatric Nursing Division, University Hospital*
Diploma, 1944, St. Luke's Hospital School of Nursing, Colorado; B.S., 1949, Colorado
- Lewis, Marian Ann, 1961, *Clinical Instructor in Nursing; Supervisor of Pediatrics Division, University Hospital*
Diploma, 1952, Hackley School of Nursing, Michigan; B.S., 1958, Wittenberg University, Ohio; M.N., 1960, Washington
- Mahin, Margaret E., 1962, *Clinical Instructor in Nursing; Assistant Director of Nursing Education, Seattle-King County Health Department*
B.A., 1929, Cornell College, Iowa; M.N., 1940; C.P.H.N., 1942, Western Reserve University
- Mansperger, Marguerite, 1958, *Clinical Instructor in Nursing, Director of Nursing Service, Virginia Mason Hospital*
Diploma, 1932, Seattle General Hospital School of Nursing; B.S., 1939, Washington
- Mitchell, Edith Laubscher, 1947, *Clinical Instructor in Nursing, Supervising Nurse, Tacoma-Pierce County Public Health Nursing Association*
Diploma, 1929, General Hospital of Everett School of Nursing; C.P.H.N., 1929, B.S., 1929, Washington
- Moody, Adeline Lucille, 1952, *Clinical Assistant Professor of Nursing, Director of Nurses, Doctors Hospital*
Diploma, 1929, Saskatoon City Hospital School of Nursing, Canada
- Parsons, Corinne K., 1961, *Clinical Instructor in Nursing; Nursing Supervisor, Benton-Franklin District Health Department*
Diploma, 1938, St. Luke's Hospital School of Nursing, San Francisco
- Pittman, Rosemary Jeanne, 1954, *Clinical Instructor in Nursing, Supervising Nurse, Clark-Skamania District Health Department*
B.S.N., 1940, Iowa; M.S., 1947, Chicago
- Robertson, Wilma J., 1962, *Clinical Instructor in Nursing; Assistant Director of Nursing Service, King County Hospital*
B.S., 1952, Colorado; M.N., 1962, Washington
- Rohrbaugh, Alice R., 1958, *Clinical Assistant Professor of Nursing, Director of Nursing Division, Seattle-King County Health Department and Visiting Nurse Service*
B.A., 1934, Wooster College; M.N., 1940, Western Reserve
- Satterthwaite, Judith N., 1961, *Clinical Instructor in Nursing; Assistant Director of Nursing Service, University Hospital*
B.S.N., 1956, Washington

- Smith, Elizabeth Mary, 1954, *Clinical Assistant Professor of Nursing, Director of Nursing Service, Children's Orthopedic Hospital*
Diploma, 1928, Presbyterian Hospital School of Nursing, Illinois
- Sparrow, Alma G., 1962, *Clinical Assistant Professor of Nursing; Assistant Professor of Nursing in Pediatrics, University of Washington*
B.S., 1937, Hamline University, Minnesota; M.S., 1942, C.P.H.N., 1944, M.P.H., 1954, Minnesota
- Talbot, Myrtle O., 1960, *Clinical Instructor in Nursing, Director of Nursing Service, Spokane City Health Department and Visiting Nurse Service*
Diploma, 1937, St. Luke's Hospital School of Nursing, Spokane; B.S., 1953, Gonzaga University
- Wax, Betty Korte, 1960, *Clinical Instructor in Nursing, Supervisor of Operating Room, University Hospital*
B.S.N., 1951, Washington
- Workman, Eugenia Warner, 1960, *Clinical Instructor in Nursing, Education Supervisor, Spokane City Health Department and Visiting Nurse Service*
A.B., 1932, Evansville College; Diploma, 1937, Methodist Hospital School of Nursing, Indiana; C.P.H.N., 1942, Washington
- Yaley, Janet H., 1962, *Clinical Instructor in Nursing; Director of Nurses, Western State Hospital*
Diploma, 1931, Theda Clark Training Schools for Nurses, Wisconsin; B.A., 1949, San Francisco State College; M.S., 1961, California

APPENDIX

UNDERGRADUATE ADMISSION, EXCEPTIONAL CASES

An applicant whose preparation and previous scholarship do not clearly qualify him for admission may submit additional evidence in support of his application. This may include scores on nationally recognized tests of scholastic aptitude or achievement; letters from school administrators, teachers, or counselors; and other information which may assist the Board of Admissions in evaluating his probability of success in the University.

Students admitted by special action of the Board of Admissions will be expected to achieve and maintain a satisfactory scholastic average in their University work and to fulfill any conditions specified by the Board at the time of their admission.

A student thus admitted on probation will be subject to scholarship rules given on page 24.

Furthermore, he or she may not (1) be pledged 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 regulations of the University Intercollegiate Athletics Committee.

VETERANS INFORMATION

WORLD WAR I OR II VETERANS

Under certain conditions a veteran of World War I or II who is not eligible for Veterans Administration benefits is fully or partly exempt from tuition charges. See page 52.

KOREAN VETERANS

A Korean veteran under Public Law 550 should obtain admittance to the University prior to making application for a Certificate for Education and Training, thus eliminating the chance of obtaining a certificate valid for an incorrect degree. If the veteran has any questions regarding application for a certificate, he should consult the Veterans Division, Safety Division Building.

Application for this certificate should be made at least four weeks prior to the beginning of University instruction. If the veteran is eligible, the Veterans Administration will issue him a Certificate for Education and Training which must be presented, along with his Program of Studies, to the Veterans Division, Safety Division Building, as soon as registration is completed. A Korean veteran should be prepared to meet all his own expenses as well as the cost of tuition, fees, and supplies for at least two months, because allowances are not made until after a full month's attendance has been established. Educational allowance payments are made directly to the veteran by the Veterans Administration after the veteran and institution submit a monthly attendance certification.

Quarter Credit Requirements (Public Law 550)

14 credits.....	Full subsistence
10 to 13 credits.....	Three-fourths subsistence
7 to 9 credits.....	One-half subsistence
6 credits or less.....	Established tuition and fees
or credits \div 14 \times \$110.00, whichever is the lesser.	

Graduate Credit Requirements (Public Law 550) 500-level Courses or Above

9 credits.....	Full subsistence
7 to 8 credits.....	Three-fourths subsistence
5 to 6 credits.....	One-half subsistence
4 credits or less.....	Established tuition and fees
or credits \div 14 \times \$110.00, whichever is the lesser.	

If a graduate is combining 400-level courses with 500-level courses, he should consult with the Veterans Division, Safety Division Building, to determine the scale of pay.

Termination of Training

A veteran *eligible* under Public Law 550 must complete his training by *eight* years after his release from active service, or by January 31, 1965, whichever is earlier.

DISABLED VETERANS

A veteran with a disability may have benefits under Public Law 16, 894, or 815 and should make application to the nearest Veterans Administration Regional Office at least four weeks prior to registration.

CHILDREN OF DECEASED VETERANS

Public Law 634 grants federal benefits to children of deceased veterans of World War I, World War II, or the Korean Conflict who died as a result of injury or disease incurred or aggravated while in the service. Information regarding eligibility under this law should be requested from a Veterans Administration Regional Office.

The Certificate for Education and Training issued to those eligible persons by the Veterans Administration is to be presented, along with the Program of Studies, to the Veterans Division, Safety Division Building, as soon as registration is completed.

Credit requirements for monthly subsistence for Public Law 634 students are the same as those listed for Public Law 550 students; however, Public Law 634 students may not be authorized for less than half-time subsistence.

WITHDRAWALS**WITHDRAWAL FROM A COURSE**

Official withdrawal from a course is made only under the following conditions: (1) during the first fifteen calendar days of a quarter, with the consent of the withdrawing student's adviser; (2) after the first fifteen calendar days of a quarter and before the end of the first six calendar weeks of a quarter, with the approval of the student's adviser, the instructor of the course from which withdrawal is sought, and of the dean of the college in which the withdrawing student is enrolled; and (3) after the first six calendar weeks of a quarter and before final examination week, only upon certification in writing to the Registrar by the dean of the college in which the withdrawing student is enrolled that, in the judgment of the dean, withdrawal is necessitated by the student's hardship. Withdrawals from courses accomplished by any other method are unofficial withdrawals which are entered on a student's record as EW, and are assigned the value of E in the

computation of the student's grade-point average. No official withdrawal may be made during final examination week.

Official withdrawals are entered on a student's record as follows: (1) a withdrawal within the first fifteen calendar days of a quarter, as W; (2) a withdrawal after the first fifteen calendar days of a quarter and before final examination week, as PW, if the student's work has been satisfactory, and as E, if the student's work has been unsatisfactory. Grades of PW and W are assigned no value in the computation of grade-point averages.

WITHDRAWAL FROM THE UNIVERSITY

The student should obtain at the office of the Dean, C303 Health Science Building, the Request for Withdrawal From the University form.

PHYSICAL EDUCATION ACTIVITIES

Men students may use credits earned in freshman or varsity sports to satisfy the activity course requirement.

Women students, in fulfilling the three-quarter requirement, may take a maximum of two credits in any of the following: (1) swim area; (2) dance area; (3) tennis and badminton; (4) any other specific individual, dual, or team activity.

The following students are exempt from the requirement of activity courses:

1. Students who have attained the age of twenty-five. 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.

2. Students who enter as sophomores, juniors, or seniors.

3. Special students.

4. Students registered for 6 credits or less.

5. Students who, because of physical condition, are exempted by the Graduation Committee upon the recommendation of the Dean of the College. Such action is taken only when the Dean has received a joint recommendation for exemption from the University Health Officer and the Executive Officer of the Department of Physical Education for Men or for Women, whichever is appropriate. All other students who are reported by the University Health Officer as physically unfit to join regular classes will be assigned by the Executive Officer of the Department of Physical Education for Men or for Women to special programs adapted to their needs.

6. Students who are veterans of military service. Complete exemption without credit is granted for one year or more of active duty. Veterans with less than one year of service receive no exemption.

7. Transfer students who present acceptable credit for physical education activity courses taken in other colleges. The amount of exemption depends on the number of quarters for which credit is transferred.

FEES, EXTRA SERVICE CHARGES, AND RENTALS

All fees, extra service charges, and rentals are payable in United States dollars at the time of registration, except that new students must submit a \$50.00 advance payment of fees at the time they are admitted to the University. This advance payment is applied against the total tuition and fees collected from the student. In the event of failure to register, the \$50.00 advance payment is not refundable to the student. The University reserves the right to change any of its fees and charges without notice.

The fees schedules for resident and nonresident students, on pages 53 and 54, apply to the academic year (Autumn, Winter, and Spring Quarters). Summer fees are listed in the *Summer Quarter Bulletin*.

EXEMPTIONS

Veterans of World Wars I or II

Exemption from tuition charges is granted resident students who either (1) served in the United States Armed Forces during World War I and received honorable discharges; or (2) served in the United States Armed Forces during World War II at any time after December 6, 1941, and before January 1, 1947, and received honorable discharges, but are no longer entitled to federal educational benefits; or (3) are United States citizens who served in the armed forces of governments associated with the United States during World Wars I or II and received honorable discharges, provided they were citizens of the United States at the time of their enlistment and who are again citizens at the time of their registration in the University. Nonresident students who meet one of these requirements pay one-half of the nonresident tuition. This exemption is not granted to Summer Quarter students.

Proof of eligibility should be met as follows:

- (1) World War I veterans should present copy of discharge papers to Comptroller's Office, 203 Administration Building.
- (2) World War II veterans with Korean service or who have suffered disability should present a letter from the Veterans Administration Regional Office to the Veterans Division, Safety Division Building, stating they are no longer eligible for any federal educational benefits. (Excepted are those veterans who have had both World War II benefits and Korean benefits and have expired those benefits at the University of Washington.)
- (3) World War II veterans who have not suffered any disability or served in the Korean Conflict should present an 8½-inch x 11-inch photostat of discharge papers to the Veterans Division, Safety Division Building.

Exemption must be cleared prior to student's appointment day for registration in order to prevent personal payment.

EXTRA SERVICE CHARGES

A registration service charge of \$15.00 is assessed those students: (1) eligible for Advance (mail) Registration who fail to participate; or (2) who, after the established application deadline, are granted Appointments or Permits to register by In-Person Registration by action of the Registration Appeal Board. A late registration charge of \$15.00 is assessed any student granted permission to register after the last registration day before the opening of Autumn, Winter, or Spring Quarters by action of the Registration Appeal Board. A charge of \$5.00 is made Autumn, Winter, and Spring Quarters 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.

<i>Special Examination</i>	\$1.00
<i>Removal of an Incomplete</i>	2.00
<i>Washington Pre-College Testing Program</i>	5.00
<i>Athletic Admission Ticket</i> (optional for ASUW members)	3.50-6.50
Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter, \$3.50.	
<i>Military Uniform Rental</i>	25.00
Paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.	
<i>Breakage Ticket</i>	3.00
Required in some laboratory courses; ticket is returnable for full or partial refund.	
<i>Locker Rental, per quarter</i>	2.00
Required of men students taking physical education activities.	
<i>Quarterly Grade Report</i>	.50
One grade report is issued at the close of each quarter without charge; the charge, payable in advance, is made for each additional copy.	

Transcripts

1.00

One transcript is furnished without charge; the charge, payable in advance, is made for each additional copy.

Graduation Exercises Diploma

10.00

MUSIC PRACTICE ROOM, per quarter: piano practice, \$3.00, one hour a day; \$5.00, two hours a day; \$6.00, three hours a day. Organ practice, \$6.00, one hour a day; \$10.00, two hours a day; \$12.00, three hours a day. Practice rooms are available only to students taking music courses.

PHYSICAL EDUCATION ACTIVITIES, per quarter: bowling, \$5.00; canoeing, \$3.00; golf instruction, \$1.50.

REFUND OF FEES, CHARGES, AND RENTALS

All fees will be refunded in full if complete withdrawal is made during the first three calendar days of the quarter; one-half the amount will be refunded if withdrawal is made during the first thirty calendar days. Refunds are not made to students withdrawing under discipline.

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

At least two weeks must elapse between payment and refund, if payment was made by check.

FEES FOR RESIDENT STUDENTS

A resident is one who has been domiciled in the state of Washington for at least a year immediately prior to registration. (See page 17.)

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

Type of Registration	Tuition Fee	Incidental Fee	Other Fees* Autumn, Winter, and Spring Quarters	Total Fees Autumn, Winter, and Spring Quarters
Full-time students (undergraduate and graduate except in Medical and Dental Schools)	\$35.00	\$56.50	\$8.50	\$100.00
Auditors		39.00	†	39.00
Part-time (max. 6 credits exclusive of ROTC)§	35.00	39.00	†	74.00
Ex-service personnel of World Wars I and II† (Chapter 46, Laws of 1945)				
Full-time		56.50	8.50	65.00
Part-time (max. 6 credits)§		39.00	†	39.00
Students registered for thesis only (for credit or final)||		56.50	†	56.50
Students registered for degree final only (nonthesis)||		56.50	†	56.50

* Other fees consist of Student Activities, \$2.50; ASUW Bond Redemption, \$3.50; HUB Bond Redemption, \$1.00; Building Fund, \$1.50.

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

‡ See Exemptions, page 52, to determine eligibility.

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

|| Must be approved by the Graduate School.

FEES FOR NONRESIDENT STUDENTS

Prospective students are classified as nonresidents when their credentials come from schools outside the state of Washington. If they believe they are residents, they may petition the Residence Classification Office, 205A Administration Building, for a change of classification.

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

Type of Registration	Tuition Fee	Incidental Fee	Other Fees* Autumn, Winter, and Spring Quarters	Total Fees Autumn, Winter, and Spring Quarters
Full-time students (undergraduate and graduate) except in Medical and Dental Schools)	\$105.00	\$86.50	\$8.50	\$200.00
Auditors		39.00	†	39.00
Part-time (max. 6 credits exclusive of ROTC) §	105.00	69.00	†	174.00
Ex-service personnel of World Wars I and II ‡ (Chapter 46, Laws of 1945)				
Full-time	52.50	86.50	8.50	147.50
Part-time (max. 6 credits) §	52.50	69.00	†	121.50
Students registered for thesis only (for credit or final) ||		56.50	†	56.50
Students registered for degree final only (nonthesis) ||		56.50	†	56.50

* Other fees consist of Student Activities, \$2.50; ASUW Bond Redemption, \$3.50; HUB Bond Redemption, \$1.00; Building Fund, \$1.50.

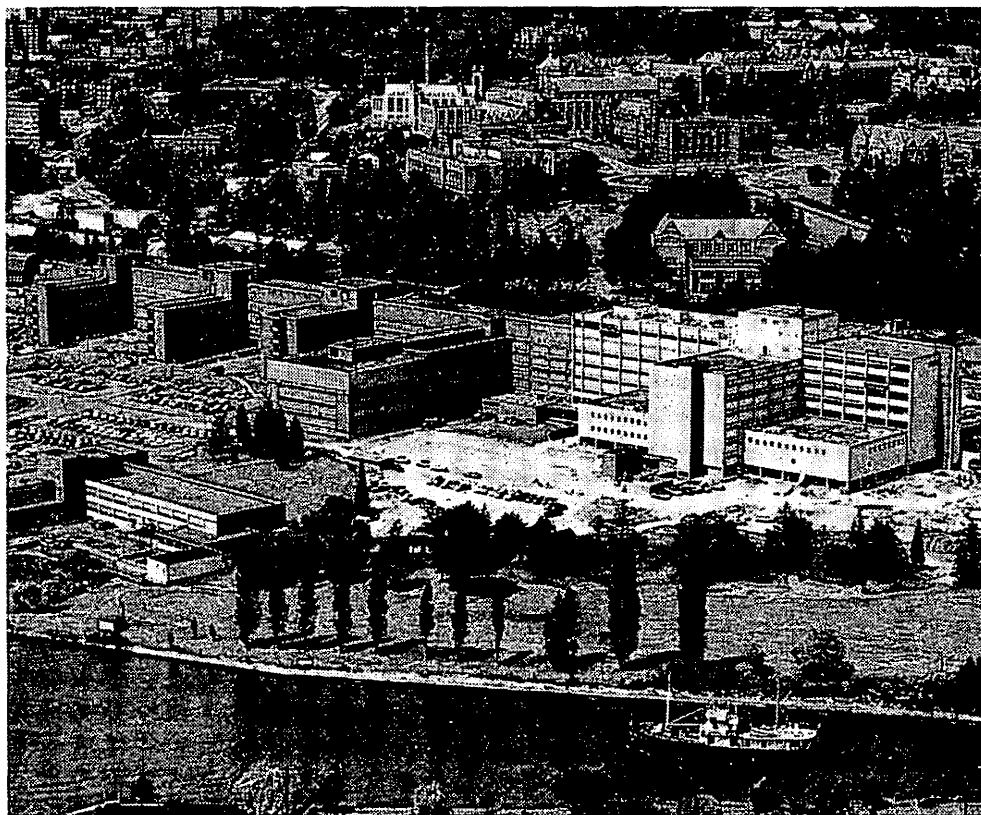
† Optional; if membership in ASUW is desired, Other Fees should be added to the total fee as shown for this type of registration.

‡ See Exemptions, page 52, to determine eligibility.

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

|| Must be approved by the Graduate School.

BULLETIN • UNIVERSITY OF WASHINGTON



COLLEGE OF PHARMACY

1961-1963

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes three general bulletins; bulletins of the colleges and schools; Summer Quarter Bulletin; the bulletin of the Center for Graduate Study at Hanford; and bulletins of the Division of Correspondence Study and the Division of Evening Classes.

INTRODUCTION TO THE UNIVERSITY, one of the general bulletins, is especially prepared for new and prospective students. It lists all the University curricula, with their admission requirements, and presents information on other phases of student life, including services for students, student activities, and expenses. UNIVERSITY RULES AND REGULATIONS, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as registered students. HANDBOOK OF SCHOLARSHIPS, the third general bulletin, lists the various scholarships available.

Curricula, courses, and scholarship requirements in each field of study are described in the college and school bulletins. Each of these bulletins also discusses services, organizations, and expenses as they relate to students in the particular college or school.

Requests for copies of any of the bulletins should be addressed to the Addressograph Service.

General Bulletins

HANDBOOK OF SCHOLARSHIPS (RESTRICTED DISTRIBUTION)
INTRODUCTION TO THE UNIVERSITY
UNIVERSITY RULES AND REGULATIONS (FOR REGISTERED STUDENTS ONLY)

Bulletins of the Colleges and Schools

COLLEGE OF ARCHITECTURE AND URBAN PLANNING
COLLEGE OF ARTS AND SCIENCES
COLLEGE OF BUSINESS ADMINISTRATION
SCHOOL OF DENTISTRY
COLLEGE OF EDUCATION
COLLEGE OF ENGINEERING
COLLEGE OF FISHERIES
COLLEGE OF FORESTRY
GRADUATE SCHOOL
SCHOOL OF LAW
SCHOOL OF MEDICINE
SCHOOL OF NURSING
COLLEGE OF PHARMACY
SCHOOL OF SOCIAL WORK

Other Bulletins

SUMMER QUARTER
CENTER FOR GRADUATE STUDY AT HANFORD
CORRESPONDENCE STUDY
EVENING CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 965
April, 1961

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CALENDAR

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in the following Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

WINTER QUARTER, 1961

REGISTRATION PERIOD

- | | |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OCT. 24-Nov. 18 | Advance Registration only for students in residence Autumn Quarter, 1960. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter. |
| DEC. 27-29 | In-Person Registration for students in residence Autumn Quarter, 1960, who did not complete Winter Quarter, 1961, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office. |
| DEC. 27-29 | In-Person Registration for former students not in residence Autumn Quarter, 1960. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 9.</i> |
| DEC. 2 | Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission. |
| DEC. 20 | Deadline for return to Student Health Center of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years. |
| DEC. 27-29 | In-Person Registration for ALL new students. |
| DEC. 29 | Last day to register for Winter Quarter, 1961. Note application deadlines above. |
| JAN. 3-9 | Change of registration by appointment only. |

ACADEMIC PERIOD

- | | |
|-------------------|------------------------------------------------------------------|
| JAN. 3—TUESDAY | Instruction begins for all students |
| JAN. 9—MONDAY | Last day to add a course |
| FEB. 17—FRIDAY | Last day to submit applications for advanced credit examinations |
| FEB. 22—WEDNESDAY | Washington's Birthday and Founder's Day holiday |
| MAR. 4—SATURDAY | Advanced credit examinations |
| MAR. 10-16 | Final examinations |
| MAR. 16—THURSDAY | Quarter ends |

SPRING QUARTER, 1961

REGISTRATION PERIOD

- | | |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| JAN. 23-FEB. 17 | Advance Registration only for students in residence Winter Quarter, 1961. A service fee of \$15.00 will be assessed any student eligible for Advance Registration |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|

	who fails to participate and then applies for In-Person Registration for that quarter.
MAR. 21-23	In-Person Registration for students in residence Winter Quarter, 1961, who did not complete Spring Quarter, 1961, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
MAR. 21-23	In-Person Registration for former students not in residence Winter Quarter, 1961. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is March 10.</i>
MAR. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
MAR. 15	Deadline for return to Student Health Center of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
MAR. 21-23	In-Person Registration for ALL New students.
MAR. 23	Last day to register for Spring Quarter, 1961. Note application deadlines above.
MAR. 27-31	Change of registration by appointment only.

ACADEMIC PERIOD

MAR. 27—MONDAY	Instruction begins for all students
MAR. 31—FRIDAY	Last day to add a course
MAY 12—FRIDAY	Last day to submit applications for advanced credit examinations
MAY 27—SATURDAY	Advanced credit examinations
MAY 30—TUESDAY	Memorial Day holiday
JUNE 4—SUNDAY	Baccalaureate Sunday
JUNE 2-8	Final examinations
JUNE 8—THURSDAY	Quarter ends
JUNE 10—SATURDAY	Commencement

SUMMER QUARTER, 1961**REGISTRATION PERIOD**

General In-Person for ALL students (*by appointment only*):

June 1, 2, 5
June 12-16

Registration may be delayed if new student Applications for Admission or former student Applications for Appointment or Permit to register are received after May 15.

Students in the Schools of Law, Dentistry, Medicine, Social Work, and the Hos-

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

pital Division of the School of Nursing must file an Application for Registration Permit, although no appointment date is necessary.

Registration Appointments or Permits will be issued as follows:

Students in residence Spring Quarter, 1961:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates.....	Monday, April 17, 8 a.m. to 5 p.m.
Juniors	Tuesday, April 18, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 19, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 20, 8 a.m. to 5 p.m.

Former Students not in residence Spring Quarter 1961, may obtain an Application for Appointment or Permit by writing to, or calling in person, at the Registrar's Office, Room 109, Administration Building, or telephoning LAkeview 4-6000, Extension 2551, beginning April 17 and preferably *no later than May 15*. Application for Registration Appointment must be received before registration materials can be processed. *New (entering) Students* will receive Registration Appointments with their Official Notice of Admission.

ACADEMIC PERIOD

JUNE 19—MONDAY	Instruction begins
JUNE 20—TUESDAY	Last day to add a course for the first term
JUNE 23—FRIDAY	Last day to add a course for the full quarter
JUNE 30—FRIDAY	Last day to submit applications for advanced credit examinations for first term
JULY 4—TUESDAY	Independence Day holiday
JULY 15—SATURDAY	Advanced credit examinations
JULY 19—WEDNESDAY	Final examinations and first term end
JULY 20—THURSDAY	Second term begins
JULY 21—FRIDAY	Last day to add a course for the second term
JULY 28—FRIDAY	Last day to submit applications for advanced credit examinations for second term
AUG. 12—SATURDAY	Advanced credit examinations
AUG. 18—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1961

REGISTRATION PERIOD

MAY 1-26	Advance Registration only for students in residence Spring Quarter, 1961. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 5-22	In-Person Registration for students in residence Spring Quarter, 1961, who did not complete Autumn Quarter, 1961, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
SEPT. 5-22	In-Person Registration for former students not in residence Spring Quarter, 1961. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is September 15.</i>

AUG. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Center of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 7-22	In-Person Registration for ALL new students.
SEPT. 22	Last day to register for Autumn Quarter, 1961. Note application deadlines.
SEPT. 25-29	Change of registration by appointment only.

ACADEMIC PERIOD

SEPT. 25—MONDAY	Instruction begins for all students
SEPT. 29—FRIDAY	Last day to add a course
NOV. 1—WEDNESDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1962, due at Registrar's Office
NOV. 11—SATURDAY	State Admission Day holiday
NOV. 17—FRIDAY	Last day to submit applications for advanced credit examinations
NOV. 22-27	Thanksgiving recess (6 p.m. to 8 a.m.)
DEC. 2—SATURDAY	Advanced credit examinations
DEC. 6-12	Final examinations
DEC. 12—TUESDAY	Quarter ends

WINTER QUARTER, 1962**REGISTRATION PERIOD**

OCT. 23-Nov. 17	Advance Registration only for students in residence Autumn Quarter, 1961. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
DEC. 26-28	In-Person Registration for students in residence Autumn Quarter, 1961, who did not complete Winter Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
DEC. 26-28	In-Person Registration for former students not in residence Autumn Quarter, 1961. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 8.</i>
DEC. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

DEC. 20	Deadline for return to Student Health Center of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
DEC. 26-28	In-Person Registration for ALL new students.
DEC. 28	Last day to register for Winter Quarter, 1962. Note application deadlines above.
JAN. 2-8	Change of registration by appointment only.

ACADEMIC PERIOD

JAN. 2—TUESDAY	Instruction begins for all students
JAN. 8—MONDAY	Last day to add a course
FEB. 16—FRIDAY	Last day to submit applications for advanced credit examinations
FEB. 22—THURSDAY	Washington's Birthday and Founder's Day holiday
MAR. 3—SATURDAY	Advanced credit examinations
MAR. 9-15	Final examinations
MAR. 15—THURSDAY	Quarter ends

SPRING QUARTER, 1962**REGISTRATION PERIOD**

JAN. 22-FEB. 16	Advance Registration only for students in residence Winter Quarter, 1962. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
MAR. 20-22	In-Person Registration for students in residence Winter Quarter, 1962, who did not complete Spring Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
MAR. 20-22	In-Person Registration for former students not in residence Winter Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is March 9.</i>
MAR. 1	Deadline for ALL new students to submit Applications for admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
MAR. 15	Deadline for return to Student Health Center of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
MAR. 20-22	In-Person Registration for ALL new students.
MAR. 22	Last day to register for Spring Quarter, 1962. Note application deadlines above.
MAR. 26-30	Change of registration by appointment only.

ACADEMIC PERIOD

MAR. 26—MONDAY	Instruction begins for all students
MAR. 30—FRIDAY	Last day to add a course
MAY 11—FRIDAY	Last day to submit applications for advanced credit examinations

MAY 26—SATURDAY	Advanced credit examinations
MAY 30—WEDNESDAY	Memorial Day holiday
JUNE 3—SUNDAY	Baccalaureate Sunday
JUNE 1-7	Final examinations
JUNE 7—THURSDAY	Quarter ends
JUNE 9—SATURDAY	Commencement

SUMMER QUARTER, 1962

REGISTRATION PERIOD

General In-Person Registration for ALL students (*by appointment only*):

May 31-June 2, 4
June 11-15

Registration may be delayed if new student Applications for Admission or former student Applications for Appointment or Permit to register are received after May 15.

Students in the Schools of Law, Dentistry, Medicine, Social Work, and the Hospital Division of the School of Nursing must file an Application for Registration Permit, although no appointment date is necessary.

Registration Appointments or Permits will be issued as follows:

Students in residence Spring Quarter, 1961:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates.....	Monday, April 16, 8 a.m. to 5 p.m.
Juniors	Tuesday, April 17, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 18, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 19, 8 a.m. to 5 p.m.

Former Students not in residence Spring Quarter, 1962, may obtain an Application for Appointment or Permit by writing to, or calling in person at the Registrar's Office, Room 109, Administration Building, or telephoning LAkeview 4-6000, Extension 2551, beginning April 17 and preferably *no later than May 15*. Application for Registration Appointment must be received before registration materials can be processed. *New (entering) Students* will be mailed Registration Appointments with their Official Notice of Admission.

ACADEMIC PERIOD

JUNE 18—MONDAY	Instruction begins for all students
JUNE 19—TUESDAY	Last day to add a course for the first term
JUNE 22—FRIDAY	Last day to add a course for the full quarter
JUNE 29—FRIDAY	Last day to submit applications for advanced credit examinations for first term
JULY 4—WEDNESDAY	Independence Day holiday
JULY 14—SATURDAY	Advanced credit examinations
JULY 18—WEDNESDAY	Final examinations and first term end
JULY 19—THURSDAY	Second term begins
JULY 20—FRIDAY	Last day to add a course for the second term
JULY 27—FRIDAY	Last day to submit applications for advanced credit examinations for second term

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

AUG. 11—SATURDAY	Advanced credit examinations
AUG. 17—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1962

REGISTRATION PERIOD

APR. 30-MAY 25	Advance Registration only for students in residence Spring Quarter, 1962. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 10-28	In-Person Registration for students in residence Spring Quarter, 1962, who did not complete Autumn Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
SEPT. 10-28	In-Person Registration for former students not in residence Spring Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is September 1.</i>
JULY 15	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointments will be mailed with Official Notice of Admission.
SEPT. 1	Deadline for return to Student Health Center of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 12-28	In-Person Registration for ALL new students.
SEPT. 28	Last day to register for Autumn Quarter, 1962. Note application deadlines.
OCT. 1-5	Change of registration by appointment only.

ACADEMIC PERIOD

OCT. 1—MONDAY	Instruction begins for all students
OCT. 5—FRIDAY	Last day to add a course
NOV. 1—THURSDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1963, due at Registrar's Office
NOV. 12—MONDAY	State Admission Day holiday
NOV. 21—WEDNESDAY	Last day to submit applications for advanced credit examinations
NOV. 21-26	Thanksgiving recess (6 p.m. to 8 a.m.)
DEC. 8—SATURDAY	Advanced credit examinations
DEC. 12-18	Final examinations
DEC. 18—TUESDAY	Quarter ends

WINTER QUARTER, 1963

REGISTRATION PERIOD

OCT. 29-Nov. 27	Advance Registration only for students in residence Autumn Quarter, 1962. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
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JAN. 2-4	In-Person Registration for students in residence Autumn Quarter, 1962, who did not complete Winter Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
JAN. 2-4	In-Person Registration for former students not in residence Autumn Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 1.</i>
DEC. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
DEC. 20	Deadline for return to Student Health Center of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
JAN. 2-4	In-Person Registration for ALL new students.
JAN. 4	Last day to register for Winter Quarter, 1963. Note application deadlines.
JAN. 7-11	Change of registration by appointment only.

ACADEMIC PERIOD

JAN. 7—MONDAY	Instruction begins for all students
JAN. 11—FRIDAY	Last day to add a course
FEB. 21—THURSDAY	Last day to submit applications for advanced credit examinations
FEB. 22—FRIDAY	Washington's Birthday and Founder's Day holiday
MAR. 9—SATURDAY	Advanced credit examinations
MAR. 15-21	Final examinations
MAR. 21—THURSDAY	Quarter ends

For further information concerning subsequent quarters inquire at the Registrar's Office.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered in the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.

ADMINISTRATION

BOARD OF REGENTS

JOSEPH DRUMHELLER, <i>President</i>	Spokane
MRS. A. SCOTT BULLITT, <i>Vice-President</i>	Seattle
JOHN L. KING	Seattle
HERBERT S. LITTLE	Seattle
ALBERT B. MURPHY	Everett
HAROLD S. SHEFELMAN	Seattle
ROBERT J. WILLIS	Yakima

HELEN E. HOAGLAND, *Secretary*

OFFICERS OF ADMINISTRATION

CHARLES E. ODEGAARD, Ph.D.	<i>President of the University</i>
FREDERICK P. THIEME, Ph.D.	<i>Provost of the University</i>
GLENN H. LEGGETT, Ph.D.	<i>Vice-Provost of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
HAROLD A. ADAMS, M.S.	<i>Director of Admissions</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>
JACK E. ORR, Ph.D.	<i>Dean of the College of Pharmacy</i>
LOUIS FISCHER, Ph.D.	<i>Associate Dean of the College of Pharmacy</i>
FOREST J. GOODRICH, Ph.D.	<i>Dean Emeritus of the College of Pharmacy</i>

BOARD OF HEALTH SCIENCES

CHARLES E. ODEGAARD, Ph.D.	<i>President of the University</i>
GEORGE N. AAGAARD, M.D.	<i>Dean of the School of Medicine; Chairman of the Board</i>
PAUL C. CROSS, Ph.D.	<i>Professor of Chemistry; Executive Officer of the Department of Chemistry</i>
J. THOMAS GRAYSTON	<i>Professor and Executive Officer of Public Health and Preventive Medicine</i>
MAURICE J. HICKEY, M.D., D.M.D.	<i>Dean of the School of Dentistry</i>
SOLOMON KATZ, Ph.D.	<i>Dean of the College of Arts and Sciences</i>
JOSEPH L. MCCARTHY, Ph.D.	<i>Dean of the Graduate School</i>
JACK E. ORR, Ph.D.	<i>Dean of the College of Pharmacy</i>
MARY S. TSCHUDIN, R.N., M.S.	<i>Dean of the School of Nursing</i>

MARY ADAMS, *Secretary*

FACULTY AND STAFF, COLLEGE OF PHARMACY

The first date following a name indicates the beginning of service in the University. When two dates are given, the second, in parentheses, is the date of promotion to present academic rank.

- BRADY, LYNN R., 1959, *Assistant Professor of Pharmacognosy*
B.S., 1955, M.S., 1957, Nebraska; Ph.D., 1959, Washington
- FISCHER, LOUIS, 1926 (1945), *Professor of Pharmaceutical Chemistry; Associate Dean; Chairman of the Department of Pharmaceutical Chemistry*
B.S., 1926, Ph.C., 1926, M.S., 1928, Ph.D., 1933, Washington

- GOODRICH, FOREST J., 1914 (1959), *Professor Emeritus of Pharmacognosy; Dean Emeritus, College of Pharmacy*
Ph.C., 1913, B.S., 1914, M.S., 1917, Ph.D., 1927, Washington
- HALL, NATHAN A., 1952 (1956), *Associate Professor of Pharmacy*
B.S., 1939, Ph.D., 1948, Washington
- HAMMARLUND, E. ROY, 1960, *Associate Professor of Pharmacy*
B.S., 1944, M.S., 1949, Ph.D., 1951, Washington
- HUITRIC, ALAIN C., 1955 (1960), *Associate Professor of Pharmaceutical Chemistry*
B.S., 1950, Loyola; M.S., 1952, Ph.D., 1954, California
- KRUPSKI, EDWARD, 1944 (1955), *Associate Professor of Pharmaceutical Chemistry*
B.S., 1939, M.S., 1941, Ph.D., 1949, Washington
- MCCARTHY, WALTER C., 1949 (1957), *Associate Professor of Pharmaceutical Chemistry*
B.S., 1943, Massachusetts Institute of Technology; Ph.D., 1949, Indiana
- ORR, JACK E., 1956, *Professor of Pharmacy; Dean of the College of Pharmacy; State Chemist*
B.S., 1940, Purdue; Ph.D., 1943, Wisconsin
- PLEIN, ELMER M., 1938 (1951), *Professor of Pharmacy; Coordinator of Pharmaceutical Services*
Ph.C., 1929, B.S., 1929, M.S., 1931, Ph.D., 1936, Colorado
- RISING, L. WAIT, 1934 (1936), *Professor of Pharmacy; Chairman of the Department of Pharmacy and Pharmacy Administration; Coordinator of Pharmacy Extension Services*
Ph.G., 1924, B.S., 1924, Oregon State; M.S., 1926, Ph.C., 1928, Ph.D., 1929, Washington
- TYLER, VARRO E., JR., 1957, *Associate Professor of Pharmacognosy; Chairman of the Department of Pharmacognosy; Director of the Drug Plant Gardens*
B.S., 1949, Nebraska; M.S., 1951, Ph.D., 1953, Connecticut

Research Appointments

- BENEDICT, ROBERT G., 1960, *Research Assistant Professor of Pharmacognosy*
B.S., 1936, Michigan State; M.S., 1938, Virginia Polytechnic; Ph.D., 1942, Wisconsin
- GROEGER, DETLEF O., 1961, *Research Instructor in Pharmacognosy*
Dr. Rer. Nat., 1957, Martin Luther University, Halle

Clinical Appointments

- BREEN, PAUL E., 1961, *Clinical Instructor in Pharmacy; Chief Pharmacist, Veterans Administration Hospital*
B.S., 1941, Washington
- BUTTON, JAMES F., 1961, *Clinical Instructor in Pharmacy; Chief Pharmacist, Virginia Mason Hospital*
Ph.G., 1926, Washington State
- CARRATO, CARMEN A., 1961, *Clinical Instructor in Pharmacy; Chief, Pharmaceutical Service, U.S. Public Health Service Hospital*
B.S., 1940, M.S., 1947, Philadelphia College of Pharmacy
- ELLIOT, ELIZABETH, 1961, *Clinical Instructor in Pharmacy; Chief Pharmacist, Maynard Hospital*
B.S., 1940, Washington
- GALLENBERGER, DONALD M., 1960, *Clinical Instructor in Pharmacy; Chief Pharmacist, Student Health Service (Hall Health Center)*
B.S., 1948, B.S., 1952, Wisconsin
- HORIUCHI, ARTHUR W., 1961, *Clinical Instructor in Pharmacy; Chief Pharmacist, King County Hospital*
B.S., 1954, Washington
- KNIGHT, WILFRED T., 1961, *Clinical Instructor in Pharmacy; Chief Pharmacist, The Doctors Hospital*
B.S., 1944, Washington

MARSHALL, RICHARD L., 1961, *Clinical Instructor in Pharmacy; Director of Pharmacy, Children's Orthopedic Hospital*
B.S., 1951, Washington

SISTER ODILE, 1961, *Clinical Instructor in Pharmacy; Chief Pharmacist, Providence Hospital*
B.S., 1943, Seattle

TANIGUCHI, THEODORE, 1958, *Clinical Instructor in Pharmacy; Director of Hospital Pharmacy Service, University Hospital*
B.S., 1949, Washington; M.S., 1951, Michigan

TRUBSHAW, MARY, 1961, *Clinical Instructor in Pharmacy; Chief Pharmacist, Firland Sanatorium*
B.S., 1938, Oregon State

HAMMOND, MABEL, *Administrative Secretary*

JUE, WILLARD G., *Supervisor, Drug Plant Gardens*

MCCLURE, MARGARET A., B.A., *Pharmacy Library Clerk*

ROTH, WILLIAM, Ph.D., *Assistant State Chemist*

WESLEY, RICHARD G., *Stockroom Manager*



GENERAL INFORMATION

GENERAL INFORMATION

The College of Pharmacy of the University of Washington was founded by the Board of Regents in July, 1894, and instruction was begun that autumn. The first year of instruction was given on the old campus in what was known as the "metropolitan section" of Seattle, before the University was moved, during the summer of 1895, to its present campus between Lake Washington and Lake Union. A four-year curriculum leading to a bachelor's degree was established in 1904 and the present five-year curriculum was adopted in 1957. Graduate work was begun in 1912, with advanced study in preparation for the master's degree. Since 1925 the College has accepted candidates for the degree of Doctor of Philosophy with specialization in pharmaceutical chemistry, pharmacognosy, and pharmacy.

The College of Pharmacy is accredited by the American Council on Pharmaceutical Education. It is a member of the American Association of Colleges of Pharmacy.

THE OBJECTIVES OF THE COLLEGE OF PHARMACY

The objectives of the College of Pharmacy are twofold: (1) The preparation for professional service of men and women who are academically and technically proficient in the basic sciences and their pharmaceutical applications, and who are educated in the liberal arts so that they may enjoy their cultural heritage and contribute to the betterment of society. (2) The advancement of knowledge, professional practice, and service through research.

DIVISION OF HEALTH SCIENCES

The College of Pharmacy is a member of the Division of Health Sciences which was established in 1945. Included are the Schools of Dentistry, Medicine, and Nursing, the Student Health Service, and the University Hospital.

Each part of the Division of Health Sciences functions as an autonomous unit. The Division coordinates development, research, and teaching activities to strengthen and reinforce the work of each unit. For example, the Basic Sciences

departments meet the needs of the whole Division and of other departments of the University which are concerned with work in anatomy, biochemistry, microbiology, pathology, pharmacology, physiology and biophysics, and public health and preventive medicine.

The Health Sciences Building overlooks the Portage Bay Yacht Basin between Lake Washington and Lake Union. It houses the Schools of Dentistry, Medicine, and Nursing, the 320-bed University Hospital, and the Samuels Research Wing. Future plans include a west wing to house the College of Pharmacy. When this unit is completed, the University will have one of the finest Health Sciences units in the United States.

COLLEGE FACILITIES

Instruction in pharmacy is centered in Bagley Hall, which houses pharmacy, chemistry, and chemical engineering. This building was completed in 1937 and was named for one of the founders of the University, Rev. Daniel Bagley.

Among the College of Pharmacy facilities in Bagley Hall are laboratories for pharmacy, prescription practice, manufacturing pharmacy, pharmaceutical chemistry, pharmacognosy, drug assaying, and research; a branch library; a drug service department; and a stockroom.

CLINICAL TRAINING PHARMACIES

The University Hospital Pharmacy and the Student Health Center Pharmacy serve as clinical training facilities for the College. Senior students are assigned on a regular schedule to these pharmacies where they gain practical experience in compounding and dispensing prescriptions under the direction of staff pharmacists. The University Hospital Pharmacy and about ten other hospital pharmacies in Seattle serve as laboratories for the undergraduate and graduate programs in hospital pharmacy. The programs are directed by the Coordinator of Pharmaceutical Services, and laboratory instruction is given by the hospitals' chief pharmacists who hold the University rank of Clinical Instructors in Hospital Pharmacy.

DRUG PLANT GARDENS AND LABORATORY

The Drug Plant Gardens of the College comprise approximately three acres of garden area, including a laboratory building that contains five greenhouses; three research laboratories; drug drying, milling, and extraction equipment; a darkroom, and a preparation room. Several hundred species of pharmaceutically important plants are maintained in the gardens and greenhouses. One greenhouse is devoted to plants of tropical habitat; others are used for student instruction in methods of drug plant culture and for research in plant-growth regulators and the biosynthesis of plant constituents. An extensive seed exchange program is conducted with medicinal plant gardens throughout the entire world.

DRUG SERVICE DEPARTMENT

The drug service department manufactures specialized pharmaceutical preparations for the Schools of Medicine and Dentistry, the Student Health Service (Hall Health Center), the University Hospital, and other sections of the University. Much of the work done by this department is in formulation and product development of drugs and dosage forms to be used in clinical and experimental research.

STATE LABORATORY

The College maintains a laboratory for the analysis of food products submitted by the Office of the Director of the State Department of Agriculture, drugs submitted by the State Pharmacy Board, and alcoholic products for the State Liquor Control Board. The Dean of the College is the State Chemist.

ADMISSION TO THE UNIVERSITY

PRELIMINARY STATEMENTS

The Board of Admissions, which is appointed by the President, is responsible for the interpretation and administration of the regulations governing admission to the University.

The University recognizes high school diplomas, college credits presented for advanced standing, and college degrees earned in the following institutions: (1) high schools accredited by the Washington State Department of Public Instruction; (2) out-of-state high schools accredited by their state university and state department of public instruction, or by the regional accrediting association of the area; (3) colleges and universities accredited by their regional accrediting association.

Resident. Defined for purposes of admission and/or assessment of fees as an individual who has been domiciled in the state of Washington for one year immediately prior to his registration. The domicile of a minor is that of his parents or his legal guardian.

Nonresident. An applicant whose credentials are received from a school or college located outside the state of Washington. An applicant who believes himself eligible for resident status may apply for reclassification through the Office of Residence Classification which has final authority in determining such status.

Qualified Student. One whose scholastic standing and preparation meet the standards for admission to the University.

Regular Student. One who fulfills the following requirements: (1) has been granted unqualified admission to a college or school of the University; (2) whose current program of studies is satisfactory to the dean of his college or school; (3) has received medical clearance from the Student Health Service and has completed all of the required steps for registration, including the payment of tuition and fees, the filing of class cards, and the depositing of registration materials at Sections.

Grade-point averages. These are based on a four-point system in which A=4, B=3, C=2, D=1, E=0. An adjustment to this system is made as necessary in the computation of grade-point averages earned at other institutions.

ELIGIBILITY FOR ADMISSION WITH FRESHMAN STANDING

(Applicable to Residents of the State of Washington)

Undergraduate programs offered by the University lead to the baccalaureate degree; students, therefore, are admitted when, in the judgment of the University, they appear qualified to pursue a degree program with a reasonable probability of success. In making this judgment, the University's Board of Admissions considers the applicant's total record, including such factors as scholastic achievement in a college preparatory program, recommendations of the high school principal or counselor, rank in class, and scores on any nationally administered tests associated with college entrance.

Scholastic achievement is measured largely in terms of the criteria listed below. All students entering the University are expected to meet these criteria. Non-residents and students who enter with advanced standing will find additional admission criteria in subsequent sections.

SCHOLASTIC CRITERIA

1. Graduation with diploma from an accredited high school.
2. Achievement of an over-all high school grade-point average of at least 2.50 in courses completed after September, 1960, and a grade-point average of at least 2.00 in courses completed prior to September, 1960.
3. Completion of a college preparatory program of at least 16 units to include the following:

- | | |
|--------------------------------------|------------------|
| a. English | at least 3 units |
| b. One foreign language | at least 2 units |
| c. College preparatory mathematics | at least 2 units |
| d. One laboratory science | at least 1 unit |
| e. Social science | at least 2 units |
| f. Electives from the above subjects | at least 2 units |

Additional electives may be chosen from any subjects acceptable for high school graduation.

To insure normal progress in the pharmacy program, students must complete, while in high school, three semesters of algebra and two semesters of plane geometry. Although not required, one semester of trigonometry, a fourth semester of algebra, an additional unit of laboratory science, and typing are strongly recommended.

Because an appropriate choice of high school electives serves to strengthen a student's preparation, the University will give this part of a student's record the same careful attention it gives to other aspects of his qualifications.

ELIGIBILITY FOR ADMISSION WITH ADVANCED STANDING

(Applicable to Residents of the State of Washington)

A qualified student in good standing at an accredited institution may apply for admission with advanced standing. Such an applicant is expected to have the same high school preparation as the student who enters as a freshman, and to have a college grade-point average which meets the standards herein specified.

With fewer than 45 acceptable credits, an applicant must present a grade-point average of 2.50 in high school work completed after September, 1960; a 2.00 grade-point average in such work completed prior to this date; and a 2.00 cumulative average in all college work.

With 45 or more acceptable credits an applicant is expected to present a cumulative and last-term grade-point average of at least 2.00. See also section on transfer of advanced credit, page 21.

ADMISSION OF NONRESIDENTS TO UNDERGRADUATE STANDING

Applications from nonresidents will be considered, but first preference is given legal residents of the state of Washington, and sons and daughters of University of Washington alumni residing outside the state.

Nonresident applicants are selected on the basis of their preparation and scholastic standing. In general, a freshman applicant must be eligible to enter the university of his own state, and satisfy the foregoing scholastic criteria with a 3.00 (B) grade-point average or place in the upper 25 per cent of his graduating class.

An applicant for admission with advanced standing with fewer than 45 college credits must have a cumulative grade-point average of at least 3.00 in standard college courses as well as a high school grade-point average of at least 3.00 or have been in the upper fourth of his class. An applicant presenting more than 45 credits for advanced standing must present a 2.70 grade-point average in standard college courses.

Sons and daughters of University of Washington alumni are admitted according to resident standards but are required to pay the regular nonresident tuition fees. Applicants for admission to curricula in which the University serves on a regional basis will be accorded special consideration by the Board of Admissions.

ADMISSION OF SPECIAL STUDENTS AND AUDITORS

Non-high school graduates who are 21 or older and legal residents of Washington may apply to the Board of Admissions for admission with special standing. With their application they must submit all available records of secondary school and college study. Special students may register in and take for credit whatever courses the dean of the college permits, but may not participate in student

activities or receive degrees. By fulfilling conditions specified by the Board of Admissions, special students may change their status to that of regular students and may receive degrees.

Persons 21 or older may register as auditors in nonlaboratory courses or the lecture sessions of laboratory courses by obtaining the consent of the dean of the college and the instructors of the courses. Auditors do not participate in class discussion or laboratory work. They may receive credit for audited courses only by enrolling in them as regular students in a subsequent quarter.

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Applicants for admission with graduate or advanced undergraduate standing are expected to meet the same general requirements as nonresidents of Washington educated in American schools. However, they must file their credentials before March 1 to be considered for admission Autumn Quarter or six months before the opening of another quarter in which they may wish to enroll. In addition, they must demonstrate a satisfactory command of the English language.

The official record of the Canadian student is the matriculation certificate or university admission certificate of his province. Canadian and foreign students who have been in University attendance must have official transcripts forwarded as required of all students. High School graduates and university transfer students must meet the scholarship requirements for nonresident students. See page 19.

ADMISSION OF VETERANS

Veterans and children of deceased veterans should meet the general admission criteria and follow the general procedures outlined for all applicants. Applications for and questions about government aid should be addressed to the Veterans Division Regional Office. See pages 23 and 24.

ADMISSION OF UNDERGRADUATE STUDENTS WHO DO NOT MEET THE ADMISSIONS STANDARDS

An applicant whose preparation and previous scholarship does not clearly qualify him for admission may submit additional evidence in support of his application. This may include scores on nationally recognized tests of scholastic aptitude or achievement; letters from school administrators, teachers or counselors; and other information which may assist the Board of Admissions in evaluating his probability of success in the University.

Students admitted by special action of the Board of Admissions will be expected to achieve and maintain a satisfactory scholastic average in their University work and to fulfill any conditions specified by the Board at the time of their admission.

A student thus admitted on probation will be subject to scholarship rules given on pages 19 and 20. Furthermore, he may not (1) be pledged 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 regulations of the University Intercollegiate Athletics Committee.

ADMISSION TO THE GRADUATE SCHOOL

Basic requirements for admission to the Graduate School are a bachelor's degree from an institution of recognized standing, a grade-point average of 3.00 in the senior year of college work, approval of the Graduate School, and approval of the department in which the work is to be taken. For complete information, see the *Graduate School Bulletin*.

TRANSFER OF ADVANCED CREDIT FROM OTHER INSTITUTIONS

The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted.

1. The advanced standing for which an applicant's training appears to fit him is granted tentatively on admission. Definite advanced standing is not determined

before the end of the student's first quarter in the University. The maximum that may be accepted from other colleges and universities is 135 quarter credits or senior standing. Transfer credit will not be allowed in the senior year.

2. Transfer credits will be accepted for upper-division credit *only* when earned at an accredited four-year degree-granting institution.

3. Transfer credits from institutions accredited for less than four years will not be accepted in excess of the accreditation of the school concerned.

4. Transfer of junior college credit shall apply on the 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 to completion of the first two years in the University. In no case shall the transfer of junior college credit to the University exceed 90 quarter credits exclusive of physical education activity credits.

5. The maximum number of credits obtainable by acceptance of Armed Forces training schools credits will be 30. All such credits will be counted as extension credits and will be included in the 90-credit maximum allowed toward the bachelor's degree, but none will apply toward the work of the senior year.

6. A maximum of 45 credits earned in extension and correspondence courses at other institutions may be transferred, but none of the credits can apply in the senior year. Extension and correspondence credits from schools that are not members of the National University Extension Association are accepted only after examination.

7. Credits earned in evening and extension classes or correspondence courses at this University are accepted after the student has satisfactorily completed 35 credits of work in residence (that is, registered in regular University classes). A maximum of 90 extension and/or correspondence credits is acceptable; the 90 credits may include the 45 extension and/or correspondence credits allowable from other institutions or may consist entirely of courses taken in this University's Division of Evening Classes or Division of Correspondence Study. All credits earned in advanced-credit examinations and all acceptable Armed Forces training schools credits must be counted in the 90 extension credit maximum. Up to ten evening class or correspondence course credits from this University can apply toward the work of the senior year.

8. For work done in unaccredited institutions, extended secondary programs in institutions whose standing is unknown, and for work with private teachers, University credit is granted only after examination. Applications for advanced-credit examinations must be filed during the first quarter in residence.

9. No credit will be granted 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. The prescribed written permission is effective only if obtained before registration. Nothing in this rule makes mandatory the granting of any credit by the University.

ADMISSIONS PROCEDURE

Requests for Application for Admission forms and correspondence regarding admission to any college or school of the University should be addressed to the Office of Admissions, University of Washington, Seattle 5, Washington. Graduates of high schools in the state of Washington may obtain this form from their principals.

Applications and required transcripts must be filed with the Office of Admissions prior to the following dates in order to be assured of consideration for admission to the quarter for which application is being made: August 1 for Autumn Quarter, 1961, July 15 for subsequent Autumn Quarters; December 1 for Winter Quarter; March 1 for Spring Quarter; May 15 for Summer Quarter.

All records become a part of the official file and can neither be returned nor duplicated for any purpose. Failure to submit complete credentials will be considered a serious breach of honor, and may result in permanent dismissal from the University.

A leaflet giving general information and instructions for registration is mailed with the Notice of Admission. In the event of a discrepancy, instructions in the leaflet supersede those found in earlier publications. *The University assumes no responsibility for applicants who come to the campus before they have been officially notified of their admission.*

The admissions credentials of applicants who do not register for the quarter to which they have been admitted are normally retained in the Office of Admissions for a period of one year from the date of application. At the end of this period, credentials on file are discarded unless the applicant has notified the Office of his continued interest in attending the University or of his enrollment in the Evening Classes program. Should a student wish to renew his application after the one-year lapse, he must submit new credentials in advance of the date given above for the quarter desired.

FOR FRESHMAN STANDING

An application form, obtained from the University's Office of Admissions or from a Washington high school, should be completed according to instructions appearing on the form and returned to the Office of Admissions. Pages two and three of the same form should be given to the applicant's high school principal with the request that the scholastic record be entered and forwarded to the University's Office of Admissions as soon as possible.

Students may apply through their high schools on completion of the first semester of the senior year. Those who are qualified will be issued notices of early or conditional admission which become valid on graduation with a grade-point average of no less than 2.50 for the final semester. Others also will be notified of their admission status.

Scores on a nationally administered college aptitude test are not required. However, they may be helpful in evaluating a borderline student's probability of success.

FOR ADVANCED UNDERGRADUATE STANDING

An application form, obtained from the University's Office of Admissions or from a Washington junior college should be completed according to instructions appearing on the form and sent to the Office of Admissions. In addition, the applicant should request the principal of his high school and the registrar of each college he has attended to forward an official transcript of his record to the University's Office of Admissions. When these credentials have been evaluated, the applicant will be notified of his admission status.

FOR GRADUATE STANDING

An application form, obtained from the University's Office of Admissions, should be completed according to instructions appearing on the form and returned to the Office of Admissions. In addition an applicant should request the registrar of each college or university in which he has been enrolled as an undergraduate or graduate student to forward *two* official transcripts to the University's Office of Admissions. When these credentials have been evaluated, the applicant will be notified of his admission status. The student will find it convenient to have an additional copy of the record for reference.

WORLD WAR I OR II VETERANS

Under certain conditions a veteran of World War I or II who is not eligible for Veterans Administration benefits is fully or partly exempt from tuition charges. See page 31.

KOREAN VETERANS

A Korean veteran under Public Law 550 should obtain admittance to the University prior to making application for a Certificate for Education and Training, thus eliminating the chance of obtaining a certificate valid for an incorrect degree. If the veteran has any questions regarding application for a certificate, he should consult the Veterans Division, Safety Division Building. Educational allowance payments are made directly to the veteran by the Veterans Administration after the veteran and institution submit a monthly attendance certification.

Korean Certificate

Application for this certificate should be made at least four weeks prior to the beginning of University instruction. If the veteran is eligible, the Veterans Administration will issue him a Certificate for Education and Training which must be presented, along with his Program of Studies, to the Veterans Division, Safety Division Building as soon as registration is completed. A Korean veteran should be prepared to meet all his own expenses as well as the cost of tuition, fees, and supplies for at least two months, because allowances are not made until after a full month's attendance has been established.

Quarter Credit Requirements (Public Law 550)

14 credits	Full subsistence
10 to 13 credits.....	Three-fourths subsistence
7 to 9 credits.....	One-half subsistence
6 credits or less.....	Established tuition and fees
	or credits $\div 14 \times \$110.00$, whichever is the lesser.

Graduate Credit Requirements (Public Law 550) 500-level courses or Above

9 credits	Full subsistence
7 to 8 credits	Three-fourths subsistence
5 to 6 credits	One-half subsistence
4 credits or less	Established tuition and fees
	or credits $\div 14 \times \$110.00$, whichever is the lesser.

If a graduate is combining 400-level courses with 500-level courses, he should consult with the Veterans Division, Safety Division Building, to determine the scale of pay.

Termination of Training

A veteran *eligible* under Public Law 550 must complete his training by *eight* years after his release from active service, or by January 31, 1965, whichever is earlier.

DISABLED VETERANS

A veteran with a disability under Public Law 894 should contact a training officer in the nearest Veterans Administration Office approximately four weeks prior to registration.

CHILDREN OF DECEASED VETERANS

Public Law 634 grants federal benefits to children of deceased veterans of World War I, World War II, or the Korean Conflict who died as a result of injury or disease incurred or aggravated while in the service. Information regarding eligibility under this law should be requested from a Veterans Administration Regional Office.

The Certificate for a Program of Education issued to those eligible persons by the Veterans Administration is to be presented to the Veterans Division, Safety Division Building, on the date of registration.

REQUIRED TESTS AND EXAMINATIONS**Washington Pre-College Differential Guidance Test**

This grade prediction test is required of all entering freshmen, including those transferring to the University with fewer than 45 credits. It is also required of transfer students who have not completed courses which are equivalent to English 101 (English composition) or Humanistics-Social Studies 265 (Techniques of Communication). High school seniors are advised to arrange through their high schools to take this test in the spring when it is offered throughout the state of Washington. Nonresidents of Washington may take the test at the time of their registration according to instructions mailed with the notice of admission. Sample copies are not available. Special, foreign, blind students, and auditors are exempted.

The several parts of this test have been selected because of their proven value for the prediction of grades most likely to be earned by a student. The results of the test are used by departmental advisers as an aid in assigning students to appropriate sections in English composition and other subjects. Therefore, it is advisable that the student bring a copy of the results with him when he comes for his first conference with his counselor or adviser.

Mathematics Placement Tests

One section of the Pre-College Differential Guidance Test evaluates a student's mastery of intermediate algebra and plane geometry. A satisfactory score on this section qualifies a student to enroll in Mathematics 104 (trigonometry) or Mathematics 105 (college algebra). Those who fail to qualify and wish to proceed to the study of more advanced mathematics courses may choose one of the following alternative plans:

1. Pass Mathematics 101 and then take 104, or 105 or both. Mathematics 101 is given only through the Division of Evening classes or the Division of Correspondence Study. No credit is given for Mathematics 101 to students who have completed the third semester of high school algebra.
2. Pass Mathematics 103, in which the first four weeks are devoted to a review of intermediate algebra and the last six weeks to the study of plane trigonometry equivalent to Mathematics 104. The satisfactory completion of this course qualifies the student to enroll in Mathematics 105 (college algebra).

Students who have studied trigonometry, fourth semester algebra, mathematical analysis, or similar subjects in high school, will be placed in the next appropriate course at the University according to their scores in additional placement tests given by the Department of Mathematics. It is advisable to review before taking these examinations. This generally applies to students entering such fields as engineering, architecture and urban planning, fisheries, forestry, pharmacy, mathematics, and the physical and marine sciences.

Medical Examination

A student entering the University for the first time, or returning to the University after an absence of more than one calendar year, or who has previously attended Summer Quarter classes but is entering regular University classes for the first time, is required to submit to the Student Health Service (Hall Health Center) a form containing his health history and a report of a physical examination by a physician. The form will be sent to new students by the Office of Admissions, and to returning former students by the Registrar. This examination, which is required before a student may register, is taken at the student's expense. A chest X ray, also required of the above students, is given at the Student Health Service without charge.

With the exception of Canadian students, who will follow the above instructions, foreign students must take the required physical examination at the Student Health Service when they arrive on the campus.

MISCELLANEOUS INFORMATION

Junior High School Courses. The University recognizes college preparatory courses given in the junior high school and assigns them the same value as equivalent courses offered by the high school. Students who elect these subjects in the junior high may subsequently achieve a superior degree of competence in related subject areas in high school.

Accelerated, Honors, and Advanced Placement Courses. The University encourages qualified students to extend themselves academically by taking advantage of advanced, accelerated, and honors courses offered by their schools. The degree of achievement attained by students in selected areas may be measured by their performance in College Entrance Examination Board Advanced Placement Examinations and by other means which are described briefly in the following paragraphs.

The University of Washington endorses the Advanced Placement Program of the College Entrance Examination Board and grants placement and/or credit at the discretion of the University department concerned on the basis of scores earned in College Entrance Examination Board Advanced Placement Examinations. Successful participation in such challenging opportunities assures superior academic preparation and serves to identify those students more likely to profit from University-level honors courses.

REGISTRATION

REGULAR STUDENT

See page 19.

PROCEDURE

ALL students, currently in school, who plan to register for a succeeding quarter (Summer Quarter excepted) must register by Advance Registration and pay fees by the stated deadline. Students are held responsible for knowing and observing registration procedures, dates, and deadlines which appear in the bulletins, in "Official Notices" in the *Daily*, and on campus bulletin boards.

New students are given appointments when they are notified of admission, and they receive complete directions for registering at the time of registration.

Students expecting to return to the University after an absence of a quarter or more (excluding Summer Quarter) must register by In-Person Registration. The required registration appointment may be obtained by writing to or telephoning the Registrar's Office at the same time specified in the Calendar.

ADVISING

After notification of admission, and before registration, new students should visit or write to the College for assistance in planning their course program. Academic and other counseling of pharmacy students is under the direction of the Associate Dean of the College.

REGISTERED CREDITS ALLOWED EACH QUARTER

Except with the consent of his dean, no student may be registered for less than 12 credits (or the equivalent) or more than 16 credits (or the equivalent) or the number called for in the prescribed curricula, exclusive of physical education activity courses and lower-division military, naval, or air science courses. In no case may a student be registered for, or receive credit for more than 20 credits (or the equivalent) of work, exclusive of physical education activity courses and lower-division military, naval, or air science courses. Work taken in noncredit courses or to remove entrance deficiencies, or concurrently in extension classes, by correspondence study, or in another collegiate institution, must be included in the computation of the total registered credits allowed.

CHANGES OF REGISTRATION

After students have registered, they cannot change their schedules except with permission of the Dean or Associate Dean of the College. No student is permitted to make a registration change that involves entering a new course after the first calendar week of the quarter. After that time no student may register without the consent of the Dean or Associate Dean and the instructor whose class the student wishes to enter.

WITHDRAWAL FROM A COURSE

Official withdrawal from a course is made only under the following conditions: (1) during the first fifteen calendar days of a quarter, with the consent of the withdrawing student's adviser; (2) after the first fifteen calendar days of a quarter and before the end of the first six calendar weeks of a quarter, with the approval of the student's adviser, of the instructor of the course from which withdrawal is sought, and of the dean of the college in which the withdrawing student is enrolled; and (3) after the first six calendar weeks of a quarter and before final examination week, only upon certification in writing to the Registrar by the dean of the college in which the withdrawing student is enrolled that, in the judgment of the dean, withdrawal is necessitated by the student's hardship. Withdrawals from courses accomplished by any other method are unofficial withdrawals which are entered on a student's record as EW, and are assigned the value of E in the computation of a student's grade-point average. No official withdrawal may be made during final examination week.

Official withdrawals are entered on a student's record as follows: (1) a withdrawal within the first fifteen calendar days of a quarter, as W; (2) a withdrawal after the first fifteen calendar days of a quarter and before final examination week, as PW, if the student's work has been satisfactory, and as E, if the student's work has been unsatisfactory. Grades of PW and W are assigned no value in the computation of grade-point averages.

WITHDRAWAL FROM THE UNIVERSITY

The student should obtain at the office of the dean of his school or college the Request for Withdrawal From the University form. The same system of grading applies as that prescribed under Withdrawal From a Course.

QUALIFICATIONS FOR GRADUATION**MINIMUM SUBJECT REQUIREMENTS**

For graduation, students must have a cumulative average of 2.00 (C) in the professional pharmacy courses and an over-all average of 2.00 (C) in all courses. To register in any professional course numbered 499, students must have a cumulative average of not less than 2.50 (C+).

The College of Pharmacy requirement for graduation is completion of the prescribed pharmacy curriculum. No more than 18 quarter credits in advanced ROTC courses and no more than 6 credits in professional courses numbered 499 may be applied toward graduation.

Only students enrolled in the College may register for professional pharmacy courses unless written permission is obtained from the Dean and the instructor.

SCHOLARSHIP

Grade points per credit are awarded on the following basis: a grade of A earns 4 points; B, 3 points; C, 2 points; D, 1 point. The grade of E or EW signifies failure and the grade point is 0. The quarterly and cumulative grade-point averages are computed by multiplying the grade point received in a course by the total number of credits the course carries, totaling these values, and dividing by the total number of credits the student attempted. Courses for which any of the following symbols are recorded are not considered in determining the grade-point

average: I, N, S, W, PW, X. Grade-point averages are calculated on the basis of all grades received in courses which carry academic credit, including courses repeated. Grades received in repeated courses do not cancel or replace any other grades. Only University of Washington residence credits will be used in these computations.

Any undergraduate student who has completed three or more quarters in the University and whose cumulative grade-point average is below 2.00 shall be placed on academic probation. Any undergraduate student who has completed not more than two quarters at the University shall be placed on probation when his cumulative grade-point average is below 1.80. The dean of the school or college in which the student is enrolled shall notify the student as soon as possible that he is on probation. Such action will be noted permanently on the student's official academic record.

Academic probation is essentially a warning to the student that he must show improvement if he is to remain in the University. University regulations regarding scholastic eligibility for participation in intercollegiate athletics and other student activities shall be recommended to the Senate by the Faculty Committee on Intercollegiate Athletics and the Faculty Committee on Student Welfare respectively.

An undergraduate student on academic probation will be removed from probation at the end of any quarter in which his cumulative grade-point average reaches 2.00 or better.

Any undergraduate student on academic probation will be dropped: (1) if he fails to attain at least a 2.00 for the following quarter's work; or (2) if he fails to attain a 2.00 cumulative average at the end of the two subsequent quarters. Any student dropped under this rule will be notified in writing of this action by the dean of the school or college in which he is enrolled.

Only under exceptional circumstances will a student dropped under low scholarship rules be readmitted to the University. Such a student will be readmitted only at the discretion of the dean of the school or college to which he seeks admission. A student readmitted after being dropped under these rules will enter on academic probation. Such a student will be dropped: (1) if he fails to attain a 2.00 for the following quarter's work; or (2) if he fails to attain a 2.00 cumulative average at the end of two quarters. He will be removed from probation at the end of the quarter in which his cumulative grade-point average reaches 2.00 or better.

A senior who has completed the required number of credits for graduation but whose work in what would normally be his final quarter places him on probation will not receive a degree until he has been removed from probation. A senior who has completed the required number of credits for graduation but whose work in his last quarter results in his being dropped for low scholarship shall not receive a degree until he has been readmitted and removed from probation.

SENIOR-YEAR RESIDENCE

Senior standing is attained when 135 credits, plus the required quarters of ROTC and physical education, has been earned. Of the work of the senior year (45 credits), at least 35 credits must be earned in three quarters of residence. The remaining 10 credits may be earned either in residence or in this University's evening classes or correspondence courses.

MILITARY TRAINING

The Departments of Air Science, Military Science, and Naval Science conduct the ROTC programs under agreements between the University and the United States Air Force, Army, and Navy. At the University, these programs are coordinated by the Dean of the College of Engineering.

The University requires male students who enter the University as freshmen or sophomores to complete six quarters of military training. (For exemptions, see below). The two-year basic programs offered by the Departments of Air Science and Military Science and the four-year program offered by the Department of

Naval Science, satisfy this requirement. For a complete list of courses offered by these Departments, see the *Yearly Time Schedule*. In addition to the basic programs, the Department of Air Science and the Department of Military Science each offers for selected students an advanced program which leads to commissioning in the Air Force or the Army. The four-year program of the Department of Naval Science, also for selected students, leads to commissioning in the Navy or Marine Corps.

Students enrolling in Naval ROTC, and those who take the advanced program of Air Force or Army ROTC must agree in writing to complete the course of training and accept a commission in the service for which they are trained. *The honoring of this commitment is a condition of graduation from the University.*

The basic program of the Department of Air Science consists of three quarters of military classroom instruction on the Foundations of Air Power. These are offered in the spring quarter of the first year and the autumn and winter quarters of the second year. During each of the other three quarters, the student must substitute an approved University course in lieu of Air Science. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*. Leadership Laboratory is required each of the six quarters of the basic program and is conducted one hour each week.

The basic program (freshmen and sophomores) of the Department of Military Science requires drill one hour each week. Classroom military studies for freshmen are not required in the Autumn Quarter. One hour per week is required in the Winter Quarter, and two hours of classroom work are required in Spring Quarter. As a substitute for these classroom hours in Autumn Quarter of the freshman year, registration is required in a selected three-credit or five-credit course in another department. The list of courses which are authorized as substitute courses is printed in the *Yearly Time Schedule*. Sophomores are required to attend two hours per week of classroom military studies throughout the academic year.

Information concerning the Naval Science ROTC program can be found in the bulletins of the College of Arts and Sciences, the College of Business Administration, and the College of Engineering.

Exemptions from the military requirement are granted to:

1. Students who are twenty-three or over at the time of original entry into the University.
2. Students who enter as juniors or seniors.
3. Special students.
4. Students registered for 6 credits or less.
5. Students who are not citizens of the United States.
6. Students who, because of physical condition, are exempted by the University Health Officer.
7. Students who have equivalent military service. Complete or partial exemptions, depending on length of service, are granted for previous active service in the Armed Forces or Coast Guard.
8. Students who are active members or reserve officers of the Armed Forces or Coast Guard, or commissioned officers of the National Guard.
9. Students who are active enlisted members of the National Guard or of the Organized Reserve of the Armed Forces or Coast Guard.
10. Transfer students who present acceptable credit for military training taken in other colleges. The amount of exemption depends on the amount of previous training. Transfer students are required to take military training only for the number of quarters they need to achieve junior standing by a normal schedule.
11. Students who seek exemption on grounds other than 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 after consultation with the appropriate ROTC commander.

Those who are exempted under paragraph 5 or 11 must arrange at the time of initial entrance to substitute equivalent extra credits in other University courses to equal the number of credits they would have been required to earn in military training courses.

PHYSICAL AND HEALTH EDUCATION

Activity Courses. Students who enter the University as freshmen are required to complete one physical education activity course each quarter for the first three quarters of residence. In fulfilling the foregoing requirement, *all* students must pass a swimming test or satisfactorily complete one quarter of swimming. In fulfilling the three-quarter requirement, no activity course may be repeated for credit.

Men students may use credits earned in freshman or varsity sports to satisfy the activity course requirement.

Women students, in fulfilling the three-quarter requirement, may take a maximum of two credits in any of the following: (1) swim area; (2) dance area; (3) tennis and badminton; (4) any other specific individual, dual, or team activity.

The following students are exempt from the requirement of activity courses:

1. Students who have attained the age of twenty-five. A student who attains the age of twenty-five during a quarter in which he is registered for a required physical education activity course shall be held for the completion of that course. This rule shall not be retroactive in its application to students who entered prior to Spring Quarter, 1951, and were exempted from required physical education courses under previous rules.

2. Students who enter as sophomores, juniors, or seniors.

3. Special students.

4. Students registered for 6 credits or less.

5. Students who, because of physical condition, are exempted by the Graduation Committee upon the recommendation of the Dean of the College. Such action will be taken only when the Dean has received a joint recommendation for exemption from the University Health Officer and the Executive Officer of the Department of Physical Education for Men or for Women, whichever is appropriate. All other students who are reported by the University Health Officer as physically unfit to join regular classes will be assigned by the Executive Officer of the Department of Physical Education for Men or for Women to special programs adapted to their needs.

6. Students who are veterans of military service. Complete exemption is granted for one year or more of active duty. This exemption does not grant credit. Veterans with less than one year of service receive no exemption.

7. Transfer students who present acceptable credit for physical education activity courses taken in other colleges. The amount of exemption depends on the number of quarters for which credit is transferred.

Health Courses. All men students who enter the University as freshmen are required to take Health Education 175, a course in personal health, within the first three quarters of residence. The health education course requirement may be satisfied by passing a health-knowledge examination. Successfully passing this test exempts the student from the requirement but does not grant credit for Health Education 175. Veterans with one year or more of active service are exempt from this requirement. This exemption does not grant credit.

Women students who enter the University as freshmen are required to take Health Education 110 within the first three quarters of residence. *Women* entering the University for the first time may satisfy this requirement by passing a health-knowledge examination given during the Autumn Quarter registration period. Successfully passing this test exempts the student from the requirement, but does not grant credit for Health Education 110.

TUITION AND FEES

All tuition and fees are payable at the time of registration. The University reserves the right to change any of its fees without notice.

Principal fees for each quarter (Autumn, Winter, and Spring) are listed below. Summer fees are listed in the *Summer Quarter Bulletin*.

Tuition

Resident students, per quarter \$35.00

A resident student is one who has been domiciled in Washington for at least a year immediately prior to registration. The domicile of a minor is that of his parents.

Nonresident students, per quarter 105.00

Prospective students are classified as nonresidents when their credentials come from schools outside Washington. If they believe they are residents, they may petition the Residence Classification Office, 205A Administration Building, for a change of classification.

Auditors per quarter 39.00

Veterans of World Wars I or II

Exemption from tuition charges is granted resident students who either (1) served in the United States Armed Forces during World War I and received honorable discharges; or (2) served in the United States Armed Forces during World War II at any time after December 6, 1941, and before January 1, 1947, and received honorable discharges, but are no longer entitled to federal educational benefits; or (3) are United States citizens who served in the armed forces of governments associated with the United States during World Wars I or II and received honorable discharges. Nonresident students who meet one of these requirements pay one-half of the nonresident tuition. This exemption is not granted to Summer Quarter students.

Proof of eligibility should be met as follows:

- (1) World War I veterans should present copy of discharge papers to Comptroller's Office, 203 Administration Building.
- (2) World War II veterans with Korean service or who have suffered disability should present a letter from the Veterans Administration Regional Office to the Veterans Division, Safety Division Building, stating they are no longer eligible for any federal educational benefits. (Excepted are those veterans who have had both World War II benefits and Korean benefits and have expired those benefits at the University of Washington.)
- (3) World War II veterans who have not suffered any disability or served in the Korean Conflict should present an 8½-inch x 11-inch photostat of discharge papers to the Veterans Division, Safety Division Building.

Exemption must be cleared prior to student's appointment day for registration in order to prevent personal payment.

Incidental Fee, per quarter

Full-time resident students 56.50

Part-time resident students (registered for 6 credits or less, exclusive of ROTC) 39.00

Full-time nonresident students 86.50

Part-time nonresident students (registered for 6 credits or less, exclusive of ROTC) 69.00

ASUW Fees

Membership, per quarter 8.50

Optional for auditors and part-time students.

Athletic admission ticket (optional for ASUW members) 3.50-6.50

Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50; Spring Quarter only, \$3.50.

Military Uniform Deposit 25.00

Paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. Limitation on refund will be explained during registration.

Breakage Ticket Deposit 3.00

Required in some laboratory courses; ticket returnable for full or partial refund.

Locker Fee, per quarter 1.50

Required for men students taking physical education activities.

Grade Report Fee .50

One grade report will be issued each quarter without charge; the fee, payable in advance, is charged for each additional copy.

<i>Transcript Fee</i>	1.00
One transcript is furnished without charge; the fee, payable in advance, is charged for each additional copy.	

<i>Graduation Fee</i>	10.00
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SPECIAL FEES

A registration service fee of \$15.00 is charged those students: (1) eligible for Advance (mail) Registration who fail to participate; or (2) who, after the established application deadline, are granted Appointments or Permits to register by In-Person Registration by action of the Registration Appeal Board. A late registration fee of \$15.00 is charged any student granted permission to register after the last registration day before the opening of Autumn, Winter, and Spring Quarters by action of the Registration Appeal Board. A fee of \$5.00 is charged for a late medical examination; and \$1.00 for a late X ray. A fee of \$5.00 is charged Autumn, Winter, and Spring Quarters 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. The fee for a special examination is \$1.00 and for removal of an incomplete, \$2.00. A fee of \$5.00 is charged each student entering with less than 45 credits who has not previously taken the required Washington Pre-College Differential Guidance (Grade Prediction) Test.

PHYSICAL EDUCATION ACTIVITY FEES, per quarter are: bowling, \$5.00; canoeing, \$3.00; golf instruction, \$1.50 per quarter.

REFUND OF FEES

All major fees will be refunded in full if complete withdrawal is made during the first three calendar days of the quarter; one half the amount will be refunded if withdrawal is made during the first thirty calendar days. Fee refunds are not made to students withdrawing under discipline.

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

At least two weeks must elapse between payment and refund of fees, if payment was made by check.

ESTIMATE OF YEARLY EXPENSES

The figures given below are minimum estimates for an academic year, which includes Autumn, Winter, and Spring Quarters. Living costs and personal expenses vary widely with the needs of the individual student.

Tuition, Incidental, and ASUW Membership Fees

Full-time resident student	300.00
Full-time nonresident student	600.00

<i>Athletic Admission Ticket</i> (optional)	6.50
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<i>Health and Accident Insurance</i> (optional)	16.50
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<i>Special Fees and Deposits</i>	38.50
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Military uniform deposit, breakage ticket, and locker fees.

<i>Books and Supplies</i>	90.00
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Board and Room

Room and meals in Men's Residence Halls	675.00
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Room and meals in Women's Residence Halls	615.00-720.00
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Room and meals in fraternity or sorority house	670.00-760.00
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(Including dues and social fees.)

Initial cost of joining is not included; this information may be obtained from the Interfraternity Council or Panhellenic Council.

<i>Personal Expenses</i>	300.00
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STUDENT ACTIVITIES AND SERVICES

ASSOCIATED STUDENTS

Membership in the Associated Students of the University of Washington, the central organization which conducts all student activities, is required of all regularly enrolled students. Through the ASUW Board of Control and its various committees and boards, students assume major responsibility in the government of student life. The ASUW helps to finance the programs of athletics, debates, concerts, lectures, and many other activities and facilities, including the University of Washington *Daily* and the Student Union Building.

AMERICAN PHARMACEUTICAL ASSOCIATION

The American Pharmaceutical Association, which was established in 1852, maintains student branches so that students in the various colleges of pharmacy may join the national organization. The campus branch meets monthly during the academic year and sponsors lectures, social functions, and field trips. All students in the College are eligible for membership.

Upon graduation, affiliation with the organization may be continued on a full-membership basis. There are many active chapters, located in various parts of the country, in which the member may continue his association. One of these, the Puget Sound Branch of the American Pharmaceutical Association, has its headquarters in Seattle.

HONORARY AND FRATERNAL SOCIETIES

Election to membership in Rho Chi, the pharmaceutical honor society, is on the basis of high scholarship and professional promise. Rho Chi was founded in 1908 at the University of Michigan as the Aristolochite Society, and in 1922 the name was changed and a charter granted giving permission to expand to other colleges. There are now sixty-three collegiate chapters. Rho Chapter, at the University of Washington, was established in 1932. Students who have completed 60 per cent of the credit hours required for graduation in pharmacy with a grade-point average of at least 3.00 are eligible for membership. The purpose of Rho Chi is to promote the scientific advancement of pharmacy and to encourage high academic attainments.

Kappa Psi is a national professional pharmaceutical fraternity dedicated to the promotion of industry, mutual fellowship, high ideals, and high scholarship among its members, and to fostering pharmaceutical research. The University of Washington chapter, Beta Omicron, is one of fifty collegiate chapters and sends delegates to the Grand Council, which meets biennially. The campus chapter meets twice a month in alternate business and social meetings.

Lambda Kappa Sigma, the oldest and largest pharmaceutical sorority in the world, promotes the profession of pharmacy among women. There are now thirty-seven collegiate and seventeen alumnae chapters. Chi Chapter, at the University of Washington, participates in many activities. New members are selected during the first professional year on the basis of character, scholarship, and personality.

VISITS TO PHARMACEUTICAL PLANTS

Various pharmaceutical manufacturing companies encourage pharmacy students to visit their plants and to become acquainted with their facilities. To induce students to take advantage of these tours, the companies provide hotel facilities and meals during the visits. Every other year a group of students from the College of Pharmacy, with a faculty adviser, makes a trip of about ten days, spending a day or two with each company. These tours enable students to observe pharmaceutical manufacturing in some of the world's largest and most modern plants.

SCHOLARSHIPS, GRANTS-IN-AID, AND LOANS

The University offers a number of awards for outstanding academic achievement. Some are given by the University and others are supported through the

generosity of friends and alumni. Information concerning the list of current awards and loans may be obtained from the Office of the Dean of Students.

The University of Washington awards 100 tuition scholarships each academic year to worthy students from other countries. There are no scholarships available for the Summer Quarter. These awards are made on the basis of the academic record of the student, recommendations from his professors, his need for such assistance, and the availability of such openings in his department at the University. These scholarships cover tuition only and are administered by the Foreign Exchange Scholarship Committee, Foreign Students Office, University of Washington, Seattle 5, Washington, U.S.A. Application for these scholarships must be made by March 1 for the following year.

Awards established especially for pharmacy students include scholastic recognition awards sponsored by the Rho Chi Honorary Society, Kappa Psi Fraternity (Grand Council Scholarship Key, H. A. Langenhan Memorial), Lambda Kappa Sigma Sorority (Heath Memorial), Linton Memorial, Merck-Sharp and Dohme, Johnson and Johnson, Rexall Drug Company, and Bristol Laboratories. Other scholarships, fellowships, and grants are:

AMERICAN FOUNDATION FOR PHARMACEUTICAL EDUCATION SCHOLARSHIPS, \$200. Two available, awarded to upper-division students who have a 3.00 grade-point average, are in the upper 25 per cent of their class, and need financial assistance.

L. D. BRACKEN SCHOLARSHIP AWARD, \$300. Awarded to an undergraduate student on the basis of professional scholarship, professional attitude, and need. Funds are derived from a \$10,000 gift to the College of Pharmacy which was made in 1956 by Mrs. L. D. Bracken and Mr. Jim L. Bracken in memory of L. D. Bracken, prominent Seattle pharmacist.

NED HENDERSON STUDENT AID TRUST FUND SCHOLARSHIP, \$150. Awarded to an undergraduate student on the basis of superior scholarship and need. Funds are derived from gifts to the Washington State Pharmaceutical Association in memory of its long time executive secretary, the late H. E. "Ned" Henderson, '13.

LAMBDA KAPPA SIGMA INSPIRATIONAL AWARD (Charles Willis Johnson Memorial), \$25. Awarded to a student who shows unusual leadership and helpful student influence.

McKESSON AND ROBBINS SCHOLARSHIP, \$100. Awarded to the fourth-year student with the highest grade-point average.

JOHN B. QUICK ENDOWMENT SCHOLARSHIP, amount varies. A bequest of \$25,000 was made to the College of Pharmacy in the will of the late Mrs. Edna J. Quick in memory of her husband, one of the early pharmacists of Seattle. Income from this endowment is to be awarded to worthy and deserving students in pharmacy. Three, full-tuition scholarships are awarded each spring to high school seniors for prepharmacy study at the University.

STATE OF WASHINGTON REXALL CLUB SCHOLARSHIP, \$250. Awarded to an outstanding high school senior for prepharmacy study at the University.

LOUIS AND GERTRUDE RUBENSTEIN MEMORIAL FUND. A \$400,000 estate bequest to the College of Pharmacy was announced upon the death, in October, 1952, of Mrs. Louis Rubenstein, the widow of a pioneer Seattle pharmacist. Under the terms of this fund, undergraduate scholarships and graduate fellowships will be established for worthy and deserving students.

WASHINGTON STATE PHARMACEUTICAL ASSOCIATION SCHOLARSHIPS AND GRANTS, \$100. Three awarded to deserving upper-division students showing unusual interest in retail pharmacy as a career.

WOMEN'S AUXILIARY OF THE WASHINGTON STATE PHARMACEUTICAL ASSOCIATION SCHOLARSHIPS AND GRANTS, amount varies. Several awarded by the state auxiliary and its Seattle, Spokane, Pierce County, and Whatcom County units to students showing excellent scholarship and/or needing assistance.

AMERICAN FOUNDATION FOR PHARMACEUTICAL EDUCATION FELLOWSHIPS. Up to \$2,400 a year is available upon approval of the Foundation to graduate students who are preparing for careers in pharmaceutical education or industry.

TEACHING ASSISTANTSHIPS. Six assistantships are awarded each year by the College of Pharmacy to qualified graduate students. These assistantships carry a stipend of \$225 a month for nine months. Recipients may carry a maximum of 12 credits each quarter in addition to their work as teaching assistants.

RESEARCH ASSISTANTSHIPS. Several of these assistantships are awarded each year to graduate students depending upon the availability of research grants. Stipends and work loads correspond to those for teaching assistants.

In addition to the scholarships, assistantships, fellowships, and awards listed above, various loan funds are available to students in need of financial assistance. These include:

WOMEN'S AUXILIARY OF THE AMERICAN PHARMACEUTICAL ASSOCIATION. The Women's Auxiliary of the American Pharmaceutical Association maintains a student loan fund for junior and senior women pharmacy students. The amount of the loan varies according to need of the student and is repayable after graduation.

JOHN B. DARGAVEL FOUNDATION. Loans are available to pharmacy students from Foundation funds which are administered by the National Association of Retail Druggists. Repayment is made after graduation.

NED HENDERSON STUDENT AID TRUST FUND. In addition to the scholarship described above, loans are available subject to limitations of the Fund.

PHARMACISTS AND RETAIL CLERKS UNION, LOCAL 330, LOAN FUND. Funds are available from a grant made to the University by the union for use by fifth-year students in pharmacy. Loans are repayable after graduation.

HUGH R. TENNANT MEMORIAL LOAN FUND. Gifts in memory of the late Hugh R. Tennant, '25, provide funds for loans to pharmacy students. Repayment may be made after graduation.

Further information about undergraduate and graduate awards in pharmacy may be obtained by writing to the Dean of the College. Application forms are available from the Director of Student Financial Aids, Room 333 Student Union Building.

OFFICE OF THE DEAN OF STUDENTS

The Office of the Dean of Students is concerned with the general welfare of students and welcomes correspondence and conferences with both parents and students. This Office works closely with the advisory system of the colleges and schools of the University; it directs students to faculty advisers, the Counseling Center, and other persons or agencies offering information and assistance with personal and social problems. The Dean of Students Office also has current information on Selective Service regulations.

The Foreign Students Office operates through the Office of the Dean of Students. The Foreign Student Adviser and his staff offer guidance on all nonacademic problems to students from other countries. Questions about immigration regulations, housing, social relationships, personal problems, finances, minimum course requirements, and employment should be referred to this Adviser. Students who are interested in study abroad may obtain from him information about schools in other countries and about Fulbright and other scholarships.

COUNSELING CENTER

The Counseling Center in Lewis Hall Annex offers vocational and educational counseling to students who need help in their adjustments to college. The staff of the Center, which includes vocational counselors and psychologists, works closely with other student services and supplements the academic advisory program.

HOUSING

Information and applications for residence in University-owned housing for single persons may be obtained by writing to the Manager, Men's Residence Halls, 1201 Campus Parkway, Seattle 5, or to the Manager, Women's Residence Halls, University of Washington, Seattle 5. Preference in assignment to vacancies is given to students under twenty-one years of age until August 1; thereafter assignments are made in the order of application. Prospective students may apply for the residence halls prior to their acceptance by the University but not before April 15.

University regulations require that women students under twenty-one who do not live at home must live in approved group residences such as the Women's Residence Halls, sororities, and church-sponsored living groups. Other types of living arrangements must be reported to the Dean of Women and be approved by the student's parents or guardian.

Information about fraternities or sororities may be obtained by writing to the Interfraternity Council or the Panhellenic Council, Student Union Building, University of Washington, Seattle 5.

The Office of Student Residences maintains listings of off-campus rooms, rooms with board, housekeeping rooms, apartments, and houses which are available to University students. These listings must, however, be consulted in person.

Teaching and research assistants and other part-time subfaculty personnel are given first priority for assignment to University-owned housing facilities for married students. Second preference for assignment to Union Bay Village or Sand Point Homes is given to graduate, medical, dental, and law students who have children. Prospective students are eligible to apply when they have been accepted for admission. Write to the Office of Student Residences, 23 Administration Building, for further information and application forms.

A complete statement of University housing policy appears in the *Student Handbook of University Rules and Regulations* and the *Housing Bulletin*.

HEALTH SERVICES

The University maintains a health service and infirmary to help guard against infectious diseases and incipient ill health.

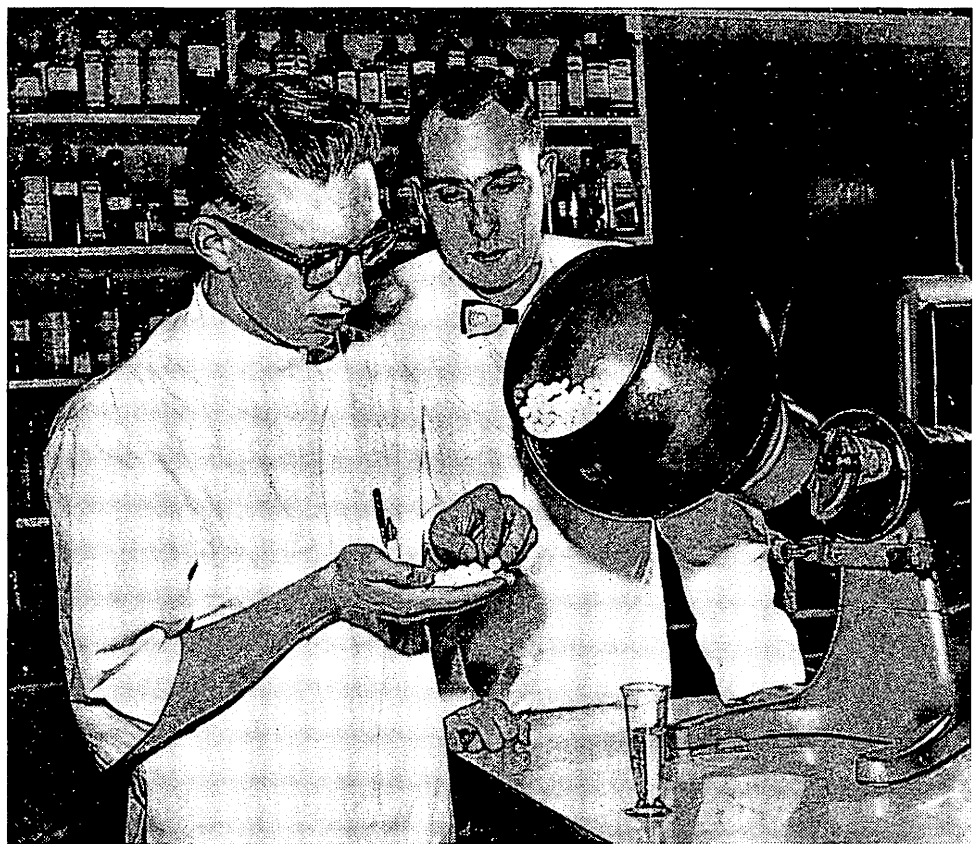
The infirmary receives bed patients at any hour and provides nursing care, medicines, and the attendance of a staff doctor up to one week each quarter free of charge. For a period longer than one week a charge of \$2.00 a day is made. At their own expense, infirmary patients may consult any licensed physician in good standing.

Health and Accident Insurance for Students is available at the time of registration.

EMPLOYMENT

Part- and full-time work off campus may be obtained at the University Placement Office. Applications are accepted from students or graduates of the University and from the wives or husbands of University students. Applications must be made in person after residence in Seattle has been established. Placement in jobs on the campus is handled by the Personnel Department and the ASUW Personnel Office.

A list of positions open in retail and hospital pharmacies is maintained by the College of Pharmacy.



THE PROGRAMS IN PHARMACY

THE PROGRAMS IN PHARMACY

THE COLLEGE OF PHARMACY offers courses leading to the degrees of Bachelor of Science in Pharmacy, Master of Science, and Doctor of Philosophy. The programs in pharmacy are designed to give both the scientific training and the professional ability necessary to qualify graduates to meet the various needs of their chosen profession. Of the numerous specializations possible in this field, retail pharmacy attracts the greatest number of graduates. Other opportunities are available for pharmacists in hospital and clinic dispensaries; as personnel in wholesale drug distribution; as medical representatives for pharmaceutical concerns; as production, control, and research pharmacists in the manufacture of medicinal and pharmaceutical products; as food- and drug-control chemists or laboratory personnel in local, state, and federal health laboratories; and as pharmacists in the United States Public Health Service, the Veterans Administration, the Armed Forces, and other government departments. Teaching and research careers in colleges of pharmacy and in industry are available after the completion of graduate study.

LICENSURE

In order to be admitted to the practice of pharmacy as a registered pharmacist in the state of Washington, the candidate must graduate from a recognized college of pharmacy, complete one year of internship, and pass the licensing examinations.

The year of internship (2,080 hours) leading to registration in the state of Washington must be gained in a Class A pharmacy which fills a minimum of twenty-five prescriptions a day. Part-time work during the school term may not be counted as experience. Experience obtained in another state must be accompanied by a letter from the Board of Pharmacy of that state showing that the experience gained was in a pharmacy accepted by that state as one entitled to train interneers. The applicant must have been registered in an accredited school or college of pharmacy or in a college whose credits are transferable to an accredited school or college of pharmacy before being eligible to begin counting internship hours.

Further information about licensure requirements may be obtained from the State Board of Pharmacy, 417 General Administration Building, Olympia.

BACHELOR OF SCIENCE IN PHARMACY

Students working toward the bachelor's degree in pharmacy must meet certain general requirements of the University and the College as well as the particular course requirements of the pharmacy curriculum. These general requirements include military training, physical education, scholarship and minimum credits, and senior-year residence.

Students should apply for bachelor's degrees during the first quarter of the senior year. If not more than ten years have elapsed since the date of a student's entry into the school or college in which he is to graduate, he may choose to graduate under the requirements set out in either the bulletin published by the appropriate school or college most recently prior to the date of his entry, or that published most recently prior to his anticipated date of graduation; provided, that when, in the opinion of the faculty of the school or college or a departmental executive officer or a dean acting for such faculty, substantial changes have been made in the curriculum since the student's entry, the student's choice shall be subject to the approval of the appropriate faculty, executive officer, or dean. Disapproval of the student's choice shall be by faculty action and subject to the procedures of the Faculty Code. As outlined in this bulletin, a student must complete 233 credits plus the ROTC and physical education activity requirements for graduation. All responsibility for fulfilling graduation requirements shall rest with the student concerned. No student whose standing is in any way provisional can have an application for degree accepted.

ADVANCED DEGREES

Students who intend to work toward a Master of Science or Doctor of Philosophy degree must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate School Bulletin*. *Graduate students must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.* For graduate study, the approval of both the College of Pharmacy and the Graduate School is necessary.

The basic requirements for admission to graduate study in the pharmaceutical sciences are met by an undergraduate degree in pharmacy. Students with undergraduate majors in the biological or physical sciences may also be admitted, but they will be required to complete courses basic to their chosen field of study during their graduate careers. Applicants must demonstrate above average scholastic ability and promise.

Undergraduates who have decided to pursue graduate work may expedite their programs by selection of pertinent electives. Although the choice of electives will vary with the identity of the student's selected field in the pharmaceutical sciences, it should be emphasized that graduate studies in the College of Pharmacy require adequate preparation in the physical and biological sciences, mathematics, and foreign language. Students who have not completed certain desired courses during their undergraduate work may be permitted to do so during their graduate programs.

Specialization is offered in pharmaceutical chemistry, pharmacognosy, pharmacy, and hospital pharmacy. Graduate study toward an advanced degree in pharmacology is directed by the Department of Pharmacology of the School of Medicine. The hospital pharmacy program may include a hospital pharmacy internship or residency if desired by the student.

Graduate programs of study vary with the specialization selected, and although they are flexible and are adapted to the needs of the individual student, certain general recommendations may be made. For majors in pharmacy and pharmaceutical chemistry, courses in physical chemistry (calculus is a prerequisite), biochemistry, qualitative organic chemistry, and statistical methods are basic to all programs in addition to courses in the major fields. These may be supplemented by advanced courses in the physical or biological sciences.

For hospital pharmacy majors, courses in the basic medical sciences including biochemistry, microbiology, and pharmacology are necessary in addition to the specialized courses in hospital pharmacy and manufacturing pharmacy.

For pharmacognosy majors, courses in organic chemistry, biochemistry, and plant physiology are basic to most programs. These are generally best supplemented in the biological areas by courses in plant anatomy, taxonomy, microbiology, and mycology. In the physical area, specialized courses in organic chemistry, analytical chemistry, and physical chemistry are utilized.

All graduate students are encouraged to pursue additional courses in the pharmaceutical sciences other than their fields of specialization. Specific recommendations based upon individual interests, and information concerning courses may be obtained from the chairman of the department concerned or from the Dean, College of Pharmacy.

MASTER OF SCIENCE. The candidate must present at least 27 credits of course work, exclusive of thesis and nonthesis research. He must complete a research project, prepare an acceptable thesis, and pass a final examination. He must present a certificate of proficiency in one foreign language.

DOCTOR OF PHILOSOPHY. The candidate must present a minimum total of 56 credits of course work, exclusive of thesis and nonthesis research. The credits earned for the master's may be applied toward the doctor's degree. The candidate must pass a general examination for admission to candidacy for the doctor's degree, complete a research project, prepare an acceptable thesis, and pass a final examination. The research for the doctor's degree must be done at the University of Washington (applicable to candidates beginning their graduate studies after September, 1958). The candidate must present a certificate of proficiency in two foreign languages (one in addition to the Master of Science requirement).

For more detailed information concerning graduate studies, see the *Graduate School Bulletin*.

CURRICULUM

First Year (Prepharmacy)

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Chem. 100 and/or 140		Chem. 150 General	3	Chem. 160 General	3
General	5 or 3	Chem. 151 Gen. Lab.	2	Chem. 170 Qual. Analysis	3
Engl. 101 Composition	3	Engl. 102 Composition	3	Engl. 103 Composition	3
Math. 104 Plane Trig.	3	Math. 105 College		Health Educ. 110 or 175	
Approved electives	5	Algebra	5	Health	2
Phys. Educ. activity	†	Approved electives	3	Approved electives	5
ROTC	†	Phys. Educ. activity	†	Phys. Educ. activity	†
	14 or 16	ROTC	†	ROTC	†
			16		16

Second Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Pharm. Chem. 237 Organic	3	Pharm. Chem. 238 Organic	3	Pharm. Chem. 239 Organic	3
Pharm. 204 Orientation	2	Pharm. Chem. 248 Org.		Pharm. Chem. 249 Org.	
Bot. 111 Elementary	5	Ph. Chem. Lab.	3	Ph. Chem. Lab.	3
Physics 101 and 107		Zool. 111 General	5	Zool. 112 General	5
General	5	Physics 102 and 108		Micro. 301 General	5
ROTC	†	General	5	ROTC	†
	15	ROTC	†		16
			16		

Third Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Pharm. Chem. 325 Quant.		Pharm. Chem. 326 Quant.		Pharm. Chem. 327 Quant.	
Pharm. Anal.	5	Pharm. Anal.	5	Pharm. Anal.	3
Pharm. 331- Preparations	5-	Pharm. Chem. 430 Inorg.		Pharmacol. 302 General	5
Physiol. and Biophys. 360		Med. Prod.	3	Biochem. 361 Biochem.	3
Gen. Hum. Physiol.	5	Pharmacol. 301 General	3	Approved electives	5
	15	Pharm. -332 Preparations	5-		16
			16		

Fourth Year

AUTUMN QUARTER	CREDITS
Pharm. Chem. 440 Org.	3
Med. Prod.	3
Pharmacog. 312- General.	4-
Econ. 200 Introduction	5
Market. 381 Retailing	5
	<hr/> 17

WINTER QUARTER	CREDITS
Pharm. Chem. 441 Org.	3
Med. Prod.	3
Pharmacog. -313- General	4-
Pharm. 318 Pharm.	5
Acctg.	5
Approved elective	3
	<hr/> 15

SPRING QUARTER	CREDITS
Pharm. Chem. 442 Org.	3
Med. Prod.	3
Pharmacog. -314 General.	4-
Pharm. 407- Dispensing	5-
Approved electives	3
	<hr/> 15

Fifth Year

AUTUMN QUARTER	CREDITS
Pharmacog. 315 General.	3
Pharm. -408- Dispensing.	5-
Pharm. 410 Clin. Disp.	1
Pharm.	1
Pharm. 450 Pharm. Laws.	3
Approved electives	3
	<hr/> 15

WINTER QUARTER	CREDITS
Pharm. -409 Dispensing.	5
Pharm. 451 Spec. Pharm.	3
Pract.	3
Market. 441 Retail Sales	3
Promotion	3
Approved electives	5
	<hr/> 16

SPRING QUARTER	CREDITS
Pharm. Chem. 497	3
Toxicology	3
Pharm. 452 Prof. Management	3
Approved electives	9
	<hr/> 15

† See page 30 for Physical Education Activity requirement.

‡ See page 28 for ROTC requirement.

COURSE-NUMBERING SYSTEM

Courses numbered from 100 through 299 are lower-division courses, for freshmen and sophomores; those numbered from 300 through 499 are upper-division, for third-, fourth-, and fifth-year students.

Courses numbered 500 and above are intended for and restricted to graduate students. Some courses numbered in the 300's and 400's are open both to graduates and to upper-division undergraduates. Such courses, when acceptable to the College of Pharmacy and the Graduate School, may be part of the graduate program. The Graduate School accepts credit in approved 300-level courses for the minor or supporting fields only; approved 400-level courses are accepted as part of the major. For a listing of approved 300- and 400-numbered courses, consult the *Graduate School Bulletin*.

The number in parentheses following the course title indicates the amount of credit each course carries. In most lecture courses a credit is given for each class hour a week during a quarter; laboratory courses generally carry less credit than the work time required. An asterisk in place of a credit number means that the amount of credit is variable. Hyphens between course numbers mean that credit is *not* granted until the series of courses is completed.

Courses to which the letter J is appended are joint courses in two or more departments and as such grant credit in one of the departments.

Not all of these courses are offered every quarter. Final confirmation of courses to be offered, as well as a list of times and places of class meetings, is given in the *Yearly Time Schedule*.

PHARMACEUTICAL SCIENCES

PHARMACEUTICAL CHEMISTRY

Chairman: LOUIS FISCHER, 300 Bagley Hall

The Department of Pharmaceutical Chemistry offers, for undergraduate students, courses which deal with the application of chemistry to the study of substances used in pharmacy and medicine. Advanced courses covering specialized techniques in pharmaceutical chemistry, medicinal products, and plant chemistry are presented at the graduate level.

Students who have been admitted for work toward a Master of Science or Doctor of Philosophy degree should contact the Chairman of the Department before registration.

COURSES

- 237, 238, 239 Organic Pharmaceutical Chemistry (3,3,3)** Huitric
The chemistry of the carbon compounds. Prerequisite, Chemistry 170.
- 248, 249 Organic Pharmaceutical Chemistry Laboratory (3,3)** Huitric
Laboratory study of the reactions and the identification of organic compounds. Prerequisites, 238 for 248, which may be taken concurrently and 239 for 249, which may be taken concurrently.
- 301 Bibliography Technique (2)** McCarthy
Use of scientific literature, preparation of abstracts, and assignments in selected pharmaceutical topics.
- 325 Quantitative Pharmaceutical Analysis (5)** McCarthy
Principles of volumetric analysis with special emphasis on medicinal compounds. Prerequisite, Chemistry 170.
- 326 Quantitative Pharmaceutical Analysis (5)** McCarthy
Principles of gravimetric and colorimetric analysis applied to medicinal compounds. Prerequisite, 325.
- 327 Quantitative Pharmaceutical Analysis (3)** McCarthy
Physicochemical methods used in pharmaceutical analysis. Prerequisite, 326.
- 395, 396 Pharmaceutical Chemistry (3,3)** Fischer
The chemistry of pharmaceuticals and their constituents with respect to the physical and chemical methods used in standardization. Prerequisite, 326.
- 430 Inorganic Medicinal Products (3)** McCarthy, Orr
Classification, nomenclature, physical and chemical properties of inorganic medicinal compounds; and a discussion of radioactive medicinal products. Prerequisite, Chemistry 170.
- 440, 441, 442 Organic Medicinal Products (3,3,3)** Fischer, Krupski
Nomenclature, classification, synthesis, properties, structure, and activity of medicinal products. Prerequisite, 239.
- 480 Advanced Organic Medicinal Products Laboratory (3)** Huitric
Synthesis of important medicinal products and isolation of active principles from natural sources. (Offered every other year; offered 1962-63.)
- 497 Toxicology (3)** Fischer
A study of poisons, their action, and the treatment of conditions produced by them. Prerequisite, 239.
- 499 Undergraduate Research (1-5)** Fischer, Huitric, Krupski, McCarthy
Research problems in pharmaceutical chemistry. Open to qualified juniors and seniors.

COURSES FOR GRADUATES ONLY

- 511, 512, 513 Advanced Pharmaceutical Chemistry (3,3,3)** Krupski
pH determination and buffer systems, fluorometry, and gasometric methods of analysis, chromatography, ion exchange, and the use of various instruments for scientific investigations and vitamin determinations. (Offered every third year; offered 1961-62.)
- 520 Seminar (1, maximum 5)** Staff
Graduate students attend seminars and make one formal presentation per year while in residence; 1 credit per year is allowed.
- 521, 522 Advanced Organic Medicinal Products (3,3)** Huitric
Application of integrated data from the physical and biological sciences to problems of chemotherapy, including transport of drugs to site of action, biotransformation of drugs, interaction of drugs with enzyme systems and recent advances in drug design. Prerequisites, Chemistry 357, 531, and Biochemistry 482, or permission. (Offered every other year; offered 1962-63.)
- 531, 532, 533 Plant Chemistry (3,3,3)** McCarthy
Alkaloids, volatile oils, steroids, and glycosides, including methods of isolation, proof of structure and configuration, and synthesis, with emphasis on materials of pharmaceutical interest. (Offered every third year; offered 1962-63.)
- 600 Research (*)** Fischer, Huitric, Krupski, McCarthy
- 700 Thesis (*)** Staff

PHARMACOGNOSY

Chairman: VARRO E. TYLER, JR., 303 Bagley Hall

Pharmacognosy deals with the systematic study of natural drug products employed as pharmaceuticals and medicinals. The Department of Pharmacognosy offers courses in the general aspects of plant and animal drug principles, including their sources, separation, biosynthesis, identification, and uses. Other courses of

advanced nature include the subjects of hormones, sera, vaccines, allergens, and problems in drug plant cultivation. These courses are also available to qualified students from related science areas.

The Department directs the activities of the Drug Plant Gardens and Laboratory. An extensive collection of living drug plants is maintained for experimental use.

Students who have been admitted for work toward a Master of Science or Doctor of Philosophy degree should communicate with the Chairman of the Department before registration.

COURSES

- 312-313-314, 315 General Pharmacognosy (4-4-4,3)** **Tyler, Brady**
The study of natural products of plant and animal origin as important pharmaceuticals. Sources, processes of isolation and general fundamental properties are described. Prerequisite, Pharmaceutical Chemistry 239, Botany 111 and Zoology 112 or an equivalent course in biology, Microbiology 301, Biochemistry 361.
- 405 Advanced Pharmacognosy (3)** **Tyler**
A laboratory course covering advanced techniques in pharmacognosy.
- 406 Medicinal Plants (2)** **Tyler**
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, -314 or permission.
- 411 Hormones and Glandular Products (2)** **Brady**
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, 315, and Physiology and Biophysics 360 or equivalent.
- 412 Immunological Agents (2)** **Brady**
Production, quality, and use of serum, vaccine, virus, and allergenic products currently employed in the prevention and treatment of disease. Prerequisite, 315.
- 499 Undergraduate Research (1-5)** **Brady, Tyler**
Research problems in pharmacognosy. Open to qualified juniors and seniors.

COURSES FOR GRADUATES ONLY

- 520 Seminar (1, maximum 5)** **Staff**
Graduate students must attend seminars and make one formal presentation per year while in residence; 1 credit per year is allowed.
- 581 Topics in Pharmacognosy (1, maximum 2)** **Tyler**
Discussions and readings of topics of current interest in the field of pharmacognosy. Subject matter changes from year to year. Prerequisite, reading knowledge of German.
- 600 Research (*)** **Brady, Tyler**
- 700 Thesis (*)** **Staff**

PHARMACY AND PHARMACY ADMINISTRATION

Chairman: L. WAIT RISING, 306 Bagley Hall

The Department of Pharmacy and Pharmacy Administration teaches the courses directly concerned with professional orientation, fundamental pharmaceutical procedures, prescription compounding, hospital pharmacy, manufacturing, and management. Graduate work is available leading to the Master of Science and Doctor of Philosophy degrees in the various fields of pharmacy. The Department also offers several service courses to nonmajors in other divisions of the University.

Students who have been admitted for work toward a Master of Science or Doctor of Philosophy degree should communicate with the Chairman of the Department before registration.

COURSES

- 115 Home Remedies (2)** **Rising**
A helpful review of the preparations commonly used at home for maintaining health and good appearance. Medicines for the treatment of everyday conditions, such as colds, headaches, sore throats, and minor infections, are studied from the standpoint of composition, intelligent use, safety, and effectiveness. Cosmetics and related preparations are included. For nonmajors.

- 204 Orientation and History (2)** **Orr**
A study of the profession of pharmacy, its development and its literature.
- 261 Pharmacology and Therapeutics (3)** **Staff**
General study of the action and uses of drugs. For students in the School of Nursing.
- 318 Pharmaceutical Accounting (5)** **Lorig**
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.
- 331-332 Pharmaceutical Preparations (5-5)** **Hammarlund**
A study of pharmaceutical dosage forms including processes, physical principles and metrology involved in their preparation. Prerequisites, Physics 102 and 108, Microbiology 301, and Pharmaceutical Chemistry 239.
- 352 Pharmacy and Therapeutics for Dental Hygienists (3)** **Staff**
Principles of pharmacy; mathematics of pharmacy; pharmacological and therapeutic action of drugs pertaining to dentistry.
- 407-408-409 Dispensing Pharmacy (5-5-5)** **Hall**
Principles of prescription compounding and dispensing, including study of some commercially-prepared modern pharmaceuticals. Prerequisite, 332.
- 410 Clinical Dispensing Pharmacy (1)** **Plein**
Compounding and dispensing of prescriptions originating in the Student Health Service (Hall Health Center) and University Hospital. Laboratory work is under direct supervision of Student Health Service pharmacist and University Hospital pharmacists.
- 420 Manufacturing Pharmacy (3)** **Plein**
A study of the techniques and equipment in preparing pharmaceutical products on a small plant scale basis. Prerequisites, 332 and fifth-year standing.
- 450 Pharmacy Laws (3)** **Rising**
A study of the laws regulating the practice of pharmacy. These include federal, state, and municipal laws, and professional ethics. Prerequisite, fifth year standing.
- 451 Specialized Pharmaceutical Practice (3)** **Rising**
A study of several areas of specialized practice in pharmacy. Important examples are veterinary pharmacy, dental pharmacy, pediatric pharmacy, ophthalmologic pharmacy and podiatric pharmacy. Prerequisite, fifth-year standing.
- 452 Professional Management (3)** **Rising**
A study of the special problems involved in the management of the professional phases of pharmacy at the retail or manufacturing level. Their integration with over-all managerial procedures is stressed. Prerequisite, fifth-year standing.
- 473 Cosmetic Manufacturing (3)** **Rising**
Preparation of many types of cosmetics and study of their physical, chemical, and physiological properties. Prerequisite, Pharmaceutical Chemistry 239.
- 483 Hospital Pharmacy (3-5)** **Plein**
Principles and techniques of hospital dispensing and dispensary management. Prerequisite, permission.
- 499 Undergraduate Research (1-5)** **Hall, Plein, Rising**
Research problems in manufacturing and dispensing pharmacy. Open to qualified juniors and seniors.

COURSES FOR GRADUATES ONLY

- 520 Seminar (1, maximum 5)** **Staff**
Graduate students must attend seminars and make one formal presentation per year while in residence; 1 credit per year is allowed.
- 540 Pharmaceutical Emulsions (2)** **Rising**
Problems in preparation of emulsions in pharmaceutical manufacturing. Prerequisites, Pharmaceutical Chemistry 239 and Chemistry 357 or equivalent.
- 550 Solvents and Solvent Extraction (2)** **Plein**
Theories of solvent extraction and the use of solvents applied to pharmaceutical manufacturing. Prerequisite, permission.
- 600 Research (*)** **Hall, Plein, Rising**
- 700 Thesis (*)** **Staff**

OTHER COURSES FOR PHARMACY STUDENTS

BIOCHEMISTRY

- 361 Biochemistry (3)** **Staff**
An introductory one-quarter course in general biochemistry covering basic principles, including the structure and metabolism of biologically important compounds. For students in dentistry, home economics, medical technology, pharmacy, and others. Prerequisite, Chemistry 102 or 232.

BOTANY

- 111 Elementary Botany (5)** **Staff**
Structure, physiology, and reproduction of seed plants. Open for only 3 credits to those who have had Botany 105.

BUSINESS COMMUNICATIONS

- 301 Written Business Communications (3)** **Staff**
Analysis of principles, including psychological factors, and actual business letters in terms of fundamentals. Prerequisite, English 103. No credit if Business Writing 310 has been taken.

CHEMISTRY

- 100 Chemical Science (5)** **Staff**
Atoms, molecules, and chemical reactions. A survey of principles fundamental to the science of chemistry. Designed both as a terminal course for nonscience majors and as an introductory course for those who wish to continue with Chemistry 101 or 140. No credit given to those who have had one unit or more of high school chemistry.
- 140 General Chemistry (3)** **Staff**
For science, engineering, and other majors who will take chemistry 200 courses or higher. The structure of matter, atomic and molecular theory, the elements, valence, and quantitative relationships. Prerequisite, high school chemistry or 100, and qualification for Mathematics 103, 104, or 105.
- 150 General Chemistry (3)** **Staff**
Chemical calculations, solutions, and equilibrium theory. Prerequisite, 140 and concurrent registration in 151.
- 151 General Chemistry Laboratory (2)** **Staff**
Concurrent registration in 150 required.
- 160 General Chemistry (3)** **Staff**
Periodic System, phase equilibria, metals and non-metals, metallurgy, and nuclear reactions. Prerequisite 150.
- 170 Qualitative Analysis (3)** **Staff**
Semi-micro qualitative analysis for common cations and anions; separation and identification procedures. Prerequisite, 160, which may be taken concurrently.

ECONOMICS

- 200 Introduction to Economics (5)** **Staff**
Organization, operation, and control of the American economy; consideration of problems of inflation, unemployment, taxation, the public debt, monopoly, trade unions, and international trade. American capitalism compared with communism and socialism. Open to freshmen.

ENGLISH

- 101, 102, 103 Composition (3,3,3)** **Staff**
Fundamentals of effective exposition; collecting, organizing, and evaluating materials for writing; reading contemporary writings for meaning and form.

MARKETING

- 381 Retailing (5)** **Staff**
Store location, layout, organization, policies, and systems; principles of buying, stock control, pricing, inventory methods, personnel management; profit planning and business control; coordination of store activities. Prerequisite, 301.
- 441 Retail Sales Promotion (3)** **Staff**
Store design and layout, display, advertising, publicity, personal salesmanship, promotional budget, and coordination of promotional activities.

MATHEMATICS

- 101 Intermediate Algebra (5)** **Staff**
Similar to third term of high school algebra. Not open for credit to students who have taken one and one-half years of algebra in high school. Offered by Division of Evening Classes and Division of Correspondence Study only. Prerequisite, one year of high school algebra.
- 103 Intermediate Algebra and Trigonometry (3)** **Staff**
Meets five hours per week. First four weeks, review of intermediate algebra. After this review, students must pass qualifying test to continue in 103. Those failing the test will be registered in 101, for which they will receive no University credit. Last six weeks, plane trigonometry, equivalent to 104. Not open for credit to students who have taken trigonometry in high school. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101, and one year of plane geometry.
- 104 Plane Trigonometry (3)** **Staff**
Trigonometric functions, identities, graphs, logarithms, and solution of triangles. Not open for credit to students who have taken trigonometry in high school. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101, and one year of plane geometry.

105 College Algebra (5)**Staff**

Functions and graphs; linear and quadratic equations; complex numbers; theory of equations; determinants and matrices. Prerequisites, one and one-half years of high school algebra and qualifying test, or 101, or 103.

MICROBIOLOGY**301 General Microbiology (5)****Staff**

Microorganisms and their activities. A survey course for students of pharmacy, nursing, home economics, education, and others with minimal training in chemistry. Prerequisite, two quarters of general chemistry.

PHARMACOLOGY**301, 302 General Pharmacology (3,5)****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. Laboratory experiments and demonstrations.

PHYSICAL AND HEALTH EDUCATION**Health Education****110 Health Education (Women) (2)****Staff**

Health problems of freshman women. Required of all freshman women; exemption without credit by examination. See page 30.

175 Personal Health (Men) (2)**Staff**

Health information that affords a basis for intelligent guidance in the formation of health habits and attitudes. Required of all freshmen; exemption without credit by examination. See page 30.

PHYSICS**101, 102, 103 General Physics (4,4,4)****Staff**

Concurrent registration in 107, 108, 109 recommended with 101, 102, 103 and may be required by individual departments. 101: mechanics. Prerequisites, trigonometry and one year of high school physics or its equivalent by permission. 102: sound and electricity. No credit in 102 if 112 has been taken. Prerequisite, 101. 103: heat, light, and modern physics. No credit in 103 if 113 has been taken. Prerequisite, 102 or concurrent registration in 102.

107, 108, 109 General Physics Laboratory (1,1,1)**Staff**

107: mechanics laboratory to be taken concurrently with 101. 108: sound, electricity, and magnetism laboratory to be taken concurrently with 102. 109: heat and light laboratory to be taken concurrently with 103.

PHYSIOLOGY AND BIOPHYSICS**360 General Human Physiology (5)****Staff**

Lecture, laboratory, and laboratory conference instruction in the basic principles and basic laboratory techniques of physiology. For students of pharmacy. Prerequisites, Zoology 112, Pharmaceutical Chemistry 239, Physics 102 and 108, Microbiology 301.

ZOOLOGY**111, 112 General Zoology (5,5)****Staff**

Physical basis of life, structure, function, development, inheritance, evolution, and ecology of animals. 111: invertebrate phyla through molluscs. 112: annelids through chordates. 111 prerequisite for 112.

BULLETIN • UNIVERSITY OF WASHINGTON



SCHOOL OF SOCIAL WORK

1962-1964

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes three general bulletins; bulletins of the colleges and schools; Summer Quarter bulletin; the bulletin of the Center for Graduate Study at Hanford; and bulletins of the Division of Correspondence Study and the Division of Evening Classes.

INTRODUCTION TO THE UNIVERSITY, one of the general bulletins, is especially prepared for new and prospective students. It lists all the University curricula, with their admission requirements, and presents information on other phases of student life, including services for students, student activities, and expenses. UNIVERSITY RULES AND REGULATIONS, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as registered students. HANDBOOK OF SCHOLARSHIPS, the third general bulletin, lists the various scholarships available.

Curricula, courses, and scholarship requirements in each field of study are described in the college and school bulletins. Each of these bulletins also discusses services, organizations, and expenses as they relate to students in the particular college or school.

Requests for copies of any of the bulletins should be addressed to the Addressograph Service.

General Bulletins

HANDBOOK OF SCHOLARSHIPS (RESTRICTED DISTRIBUTION)

INTRODUCTION TO THE UNIVERSITY

UNIVERSITY RULES AND REGULATIONS (FOR REGISTERED STUDENTS ONLY)

Bulletins of the Colleges and Schools

COLLEGE OF ARCHITECTURE AND URBAN PLANNING

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF BUSINESS ADMINISTRATION

SCHOOL OF DENTISTRY

COLLEGE OF EDUCATION

COLLEGE OF ENGINEERING

COLLEGE OF FISHERIES

COLLEGE OF FORESTRY

GRADUATE SCHOOL

SCHOOL OF LAW

SCHOOL OF MEDICINE

SCHOOL OF NURSING

COLLEGE OF PHARMACY

SCHOOL OF SOCIAL WORK

Other Bulletins

SUMMER QUARTER

CENTER FOR GRADUATE STUDY AT HANFORD

CORRESPONDENCE STUDY

EVENING CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON

General Series No. 991

October, 1962

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CALENDAR

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

AUTUMN QUARTER, 1962

REGISTRATION PERIOD

- APR. 30—MAY 25** Advance Registration only for students in residence Spring Quarter, 1962. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
- SEPT. 10-27** In-Person Registration for students in residence Spring Quarter, 1962, who did not complete Autumn Quarter, 1962, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
- SEPT. 10-27** In-Person Registration for former students not in residence Spring Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Appointments or Permits is September 1.*
- JULY 15** Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointments will be mailed with Official Notice of Admission.
- SEPT. 1** Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
- SEPT. 11-27** In-Person Registration for ALL new students.
- SEPT. 27** Last day to register for Autumn Quarter, 1962. Note application deadlines above.
- OCT. 1-5** Change of registration by appointment only.

ACADEMIC PERIOD

- OCT. 1—MONDAY** Instruction begins
- OCT. 5—FRIDAY** Last day to add a course
- NOV. 1—THURSDAY** Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1963, due at Registrar's Office
- NOV. 12—MONDAY** State Admission Day holiday
- NOV. 21—WEDNESDAY** Last day to submit applications for advanced credit examinations
- NOV. 21-26** Thanksgiving recess (6:30 p.m. to 7:30 a.m.)
- DEC. 8—SATURDAY** Advanced credit examinations
- DEC. 12-18** Final examinations
- DEC. 18—TUESDAY** Quarter ends

WINTER QUARTER, 1963**REGISTRATION PERIOD**

OCT. 29-Nov. 27	Advance Registration only for students in residence Autumn Quarter, 1962. A service fee of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
JAN. 2-4	In-Person Registration for students in residence Autumn Quarter, 1962, who did not complete Winter Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
JAN. 2-4	In-Person Registration for former students not in residence Autumn Quarter, 1962. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is December 1.</i>
DEC. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
DEC. 20	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
JAN. 2-4	In-Person Registration for ALL new students.
JAN. 4	Last day to register for Winter Quarter, 1963. Note application deadlines above.
JAN. 7-11	Change of registration by appointment only.

ACADEMIC PERIOD

JAN. 7—MONDAY	Instruction begins for all students
JAN. 11—FRIDAY	Last day to add a course
FEB. 21—THURSDAY	Last day to submit applications for advanced credit examinations
FEB. 22—FRIDAY	Washington's Birthday and Founder's Day holiday
MAR. 9—SATURDAY	Advanced credit examinations
MAR. 15-21	Final examinations
MAR. 21—THURSDAY	Quarter ends

SPRING QUARTER, 1963**REGISTRATION PERIOD**

JAN. 28-FEB. 21	Advance Registration only for students in residence Winter Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
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- MAR. 26-28 In-Person Registration for students in residence Winter Quarter, 1963, who did not complete Spring Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
- MAR. 26-28 In-Person Registration for former students not in residence Winter Quarter, 1963. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Appointments or Permits is March 1.*
- MAR. 1 Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
- MAR. 15 Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
- MAR. 26-28 In-Person Registration for ALL new students.
- MAR. 28 Last day to register for Spring Quarter, 1963. Note application deadlines above.
- APRIL 1-5 Change of registration by appointment only.

ACADEMIC PERIOD

- APRIL 1—MONDAY Instruction begins
- APRIL 5—FRIDAY Last day to add a course
- MAY 10—FRIDAY Last day to submit applications for advanced credit examinations
- MAY 25—SATURDAY Advanced credit examinations
- MAY 30—THURSDAY Memorial Day holiday
- JUNE 7-13 Final examinations
- JUNE 9—SUNDAY Baccalaureate Sunday
- JUNE 13—THURSDAY Quarter ends
- JUNE 15—SATURDAY Commencement

SUMMER QUARTER, 1963

REGISTRATION PERIOD

General In-Person Registration for ALL students (*by appointment only*):

June 6-10

June 17-21

New students. Admission to the University is a prerequisite for registration in Summer Quarter classes. Complete credentials must be filed with the Office of Admissions by May 15 to be considered for admission with *Regular* standing. See *Summer Quarter Bulletin* regarding admission as a *nondegree* candidate with status *Summer Quarter Only*. New (entering) students will be mailed Registration Appointments with their Official Notice of Admission.

Students in residence Spring Quarter, 1963:

Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

Seniors and Graduates.....	Monday, April 22, 8 a.m. to 5 p.m.
Juniors	Tuesday, April 23, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 24, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 25, 8 a.m. to 5 p.m.

Former students not in residence Spring Quarter, 1963, may obtain an Application for Appointment or Permit by writing to, or calling in person at, the Registrar's Office, Room 109, Administration Building, or telephoning 543-5910, beginning April 22 and preferably *no later than May 15*. Registration may be delayed by later application. Registration materials cannot be prepared until an application is received. The application deadline for term "a" and full Summer Quarter is June 17.

All students in the Schools of Law, Dentistry, and Medicine must file an Application for Registration Permit, although no appointment date is necessary.

ACADEMIC PERIOD

JUNE 24—MONDAY	Instruction begins
JUNE 25—TUESDAY	Last day to add a course for the first term
JUNE 28—FRIDAY	Last day to add a course for the full quarter
JULY 3—WEDNESDAY	Last day to submit applications for advanced credit examinations for first term
JULY 4—THURSDAY	Independence Day holiday
JULY 20—SATURDAY	Advanced credit examinations
JULY 24—WEDNESDAY	Final examinations and first term end
JULY 25—THURSDAY	Second term begins
JULY 26—FRIDAY	Last day to add a course for the second term
AUG. 2—FRIDAY	Last day to submit applications for advanced credit examinations for second term
AUG. 17—SATURDAY	Advanced credit examinations
AUG. 23—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1963**REGISTRATION PERIOD**

MAY 6-29	Advance Registration only for students in residence Spring Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 3-26	In-Person Registration for students in residence Spring Quarter, 1963, who did not complete Autumn Quarter, 1963, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

- SEPT. 3-26** In-Person Registration for former students not in residence Spring Quarter, 1963. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Appointments or Permits is August 15.*
- JULY 15** Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
- SEPT. 1** Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
- SEPT. 4-26** In-Person Registration for ALL new students.
- SEPT. 26** Last day to register for Autumn Quarter, 1963. Note application deadlines above.
- SEPT. 30-OCT. 4** Change of Registration by appointment only.

ACADEMIC PERIOD

- SEPT. 30—MONDAY** Intruction begins
- OCT. 4—FRIDAY** Last day to add a course
- NOV. 1—FRIDAY** Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1964, due at Registrar's Office
- NOV. 11—MONDAY** State Admission Day holiday
- NOV. 22—FRIDAY** Last day to submit applications for advanced credit examinations
- NOV. 27-DEC. 2** Thanksgiving recess (6:30 p.m. to 7:30 a.m.)
- DEC. 7—SATURDAY** Advanced credit examinations
- DEC. 11-17** Final examinations
- DEC. 17—TUESDAY** Quarter ends

WINTER QUARTER, 1964

REGISTRATION PERIOD

- OCT. 29-Nov. 22** Advance Registration only for students in residence Autumn Quarter, 1963. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
- DEC. 30-JAN. 2** In-Person Registration for students in residence Autumn Quarter, 1963, who did not complete Winter Quarter, 1964, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
- DEC. 30-JAN. 2** In-Person Registration for former students not in residence Autumn Quarter, 1963. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. *Deadline for applying for Registration Appointments or Permits is December 1.*

DEC. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
DEC. 20	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
DEC. 30-JAN. 2	In-Person Registration for ALL new students.
JAN. 2	Last day to register for Winter Quarter, 1964. Note application deadlines above.
JAN. 6-10	Change of Registration by appointment only.

ACADEMIC PERIOD

JAN. 6—MONDAY	Instruction begins
JAN. 10—FRIDAY	Last day to add a course
FEB. 21—FRIDAY	Last day to submit applications for advanced credit examinations
FEB. 22—SATURDAY	Washington's Birthday and Founder's Day holiday
MAR. 7—SATURDAY	Advanced credit examinations
MAR. 13-19	Final examinations
MAR. 19—THURSDAY	Quarter ends

SPRING QUARTER, 1964**REGISTRATION PERIOD**

JAN. 27—FEB. 21	Advance Registration only for students in residence Winter Quarter, 1964. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
MAR. 24-26	In-Person Registration for students in residence Winter Quarter, 1964, who did not complete Spring Quarter, 1964, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
MAR. 24-26	In-Person Registration for former students not in residence Winter Quarter, 1964. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is March 1.</i>
MAR. 1	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

MAR. 15	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
MAR. 24-26	In-Person Registration for ALL new students.
MAR. 26	Last day to register for Spring quarter, 1964. Note application deadlines above.
MAR. 30—APRIL 3	Change of registration by appointment only.

ACADEMIC PERIOD

MAR. 30—MONDAY	Instruction begins
APRIL 3—FRIDAY	Last day to add a course
MAY 8—FRIDAY	Last day to submit applications for advanced credit examinations
MAY 23—SATURDAY	Advanced credit examinations
MAY 30—SATURDAY	Memorial Day holiday
JUNE 5-11	Final examinations
JUNE 7—SUNDAY	Baccalaureate Sunday
JUNE 11—THURSDAY	Quarter ends
JUNE 13—SATURDAY	Commencement

SUMMER QUARTER, 1964**REGISTRATION PERIOD**

General In-Person Registration for ALL students (*by appointment only*):

June 1-4

June 11-19

New students. Admission to the University is a prerequisite for registration in Summer Quarter classes. Complete credentials must be filed with the Office of Admissions by May 15 to be considered for admission with *Regular* standing. See *Summer Quarter Bulletin* regarding admission as a *nondegree* candidate with status *Summer Quarter Only*. New (entering) students will be mailed Registration Appointments with their Official Notice of Admission.

Students in residence Spring Quarter, 1964. Registration Appointments or Permits to register will be issued according to class, *only upon presentation of ASUW card in person*, at the Registrar's Office as follows:

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Juniors	Tuesday, April 21, 8 a.m. to 5 p.m.
Sophomores	Wednesday, April 22, 8 a.m. to 5 p.m.
Freshmen	Thursday, April 23, 8 a.m. to 5 p.m.

Former students not in residence Spring Quarter, 1964, may obtain an Application for Appointment or Permit by writing to, or calling in person, at the Registrar's Office, Room 109, Administration Building, or telephoning 543-5910 beginning April 20 and preferably *no later than May 15*. Registration may be delayed by later application. Registration materials cannot be prepared until an application is received. The application deadline for term "a" and full Summer Quarter is June 15.

All students in the Schools of Law, Dentistry, and Medicine must file an Application for Registration Permit, although no appointment date is necessary.

ACADEMIC PERIOD

JUNE 22—MONDAY	Instruction begins
JUNE 23—TUESDAY	Last day to add a course for the first term
JUNE 26—FRIDAY	Last day to add a course for the full quarter
JULY 3—FRIDAY	Last day to submit applications for advanced credit examinations for first term
JULY 18—SATURDAY	Advanced credit examinations
JULY 22—WEDNESDAY	Final examinations and first term end
JULY 23—THURSDAY	Second term begins
JULY 24—FRIDAY	Last day to add a course for the second term
JULY 31—FRIDAY	Last day to submit applications for advanced credit examinations for second term
AUG. 15—SATURDAY	Advanced credit examinations
AUG. 21—FRIDAY	Final examinations and second term end

AUTUMN QUARTER, 1964**REGISTRATION PERIOD**

MAY 4-29	Advance Registration only for students in residence Spring Quarter, 1964. A service charge of \$15.00 will be assessed any student eligible for Advance Registration who fails to participate and then applies for In-Person Registration for that quarter.
SEPT. 1-24	In-Person Registration for students in residence Spring Quarter, 1964, who did not complete Autumn Quarter, 1964, Advance Registration. ALL must pick up a Registration Appointment or Permit to register at the Registrar's Office.
SEPT. 1-24	In-Person Registration for former students not in residence Spring Quarter, 1964. Appointments and Permits to register may be obtained by writing to or calling at the Registrar's Office. <i>Deadline for applying for Registration Appointments or Permits is August 15.</i>
JULY 15	Deadline for ALL new students to submit Applications for Admission with complete credentials. Registration Appointment will be mailed with Official Notice of Admission.
AUG. 28	Deadline for return to Student Health Service (Hall Health Center) of the Health History and Physical Examination report form by all new students and former students who are returning after an absence of one or more calendar years.
SEPT. 2-24	In-Person Registration for ALL new students.
SEPT. 24	Last day to register for Autumn Quarter, 1964. Note application deadlines above.
SEPT. 28-OCT. 2	Change of Registration by appointment only.

Applications for Admission, Registration Appointments, or Permits received after the deadline for filing will not be considered for the quarter concerned.

Dates in this Calendar are subject to change without notice. Dates appearing in admission and registration instructions take precedence over those in this Bulletin.

ACADEMIC PERIOD

SEPT. 28—MONDAY	Instruction begins
OCT. 2—FRIDAY	Last day to add a course
OCT. 30—FRIDAY	Applications for bachelor's degrees and certificates to be conferred through Summer Quarter, 1965, due at Registrar's Office
NOV. 11—WEDNESDAY	State Admission Day holiday
NOV. 20—FRIDAY	Last day to submit applications for advanced credit examinations
NOV. 25-30	Thanksgiving recess (6 p.m. to 7:30 a.m.)
DEC. 5—SATURDAY	Advanced credit examinations
DEC. 8—TUESDAY	Final examinations begin
DEC. 15—TUESDAY	Quarter ends

For further information concerning subsequent quarters, inquire at the Registrar's Office.

OBSERVANCE OF UNIVERSITY RULES AND REGULATIONS

It is the University's expectation that a student will follow University rules and regulations as they are stated in the Bulletins. In instances where no appeal procedure is spelled out and the student is persuaded that a special set of circumstances makes appeal reasonable, he may appeal the application of specific rules or regulations to the Office of the Dean of the School or College in which he is enrolled in the case of an academic matter, or to the Office of the Dean of Students in the case of a nonacademic matter. These offices will either render a decision on the appeal or refer the student to the proper office for a decision.

CHANGES IN UNIVERSITY REGULATIONS

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

A graduate student must satisfy the requirements for an advanced degree which are in force at the time the degree is to be awarded.

ADMINISTRATION**BOARD OF REGENTS**

MRS. A. SCOTT BULLITT, <i>President</i>	Seattle
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OFFICERS OF ADMINISTRATION

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GLENN LEGGETT, Ph.D.	<i>Vice-Provost of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
HAROLD A. ADAMS, M.S.	<i>Director of Admissions</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>
DAVID H. GRONEWOLD, M.A.	<i>Acting Dean of the School of Social Work</i>

FACULTY OF THE SCHOOL OF SOCIAL WORK

(As of September, 1962)

A single date following the name indicates the beginning of service in the University. When two dates are given, the second, in parentheses, is the date of the promotion to present academic rank.

Abrahamson, Arthur Clarence, 1956 (1959), *Associate Professor of Social Work*
B.A., 1942, Augustana College; M.A., 1947, Minnesota

Burg, Mildred M., 1961, *Assistant Professor of Social Work*
B.A., 1931, Minnesota; M.A., 1949, Pennsylvania School of Social Work

DeNoon, Barbara A., 1961 (1962) *Assistant Professor of Social Work*
B.A., 1944, California; M.S.W., 1960, Southern California

Ferguson, Grace B., 1941 (1945) (1960), *Professor Emeritus of Social Work*
B.A., 1917, Minnesota; M.A., 1930, Indiana

Gronevold, David H., 1954 (1960), *Professor of Social Work*
B.A., 1929, North Central College; M.A., 1952, Chicago

Hanneman, Carl Fred, 1960, *Assistant Professor of Social Work*
B.A., 1949, Washington State University; M.A., 1951, Indiana University

Hunt, Marguerite, 1949 (1960), *Professor of Social Work*
A.B., 1929, Brown; M.S., 1936, Western Reserve

Justice, Robert S., 1960, *Clinical Instructor of Social Work*
B.A., 1949, University of Puget Sound; M.S.W., 1955, Washington

Kelley, Jerry L., 1962, *Assistant Dean and Assistant Professor of Social Work*
B.A., 1944, Reed College; A.M., 1949, Chicago

Lawrence, Richard Glenn, 1956 (1961), *Associate Professor of Social Work*
B.A., 1948; M.A., 1951, Iowa

MacDonald, Catherine J., 1945 (1954), *Assistant Professor of Social Work*
B.A., 1936, Washington

- Macdonald, Robert W., 1960, *Assistant Professor of Social Work*
B.A., 1948, Manitoba; B.S.W., 1949, British Columbia; M.S.W., 1956, British Columbia
- Maier, Henry W., 1959, *Associate Professor of Social Work*
A.B., 1947, Oberlin College; M.S.Sc., 1949, Western Reserve University;
Ph.D., 1959, Minnesota
- Mundt, LeNora B., 1957 (1960), *Associate Extension Lecturer of Social Work*
B.S., 1944, Utah; M.S.W., 1950, Washington
- Mykut, Margaret C., 1951 (1960), *Clinical Associate Professor of Social Work*
B.S., 1938, Oregon; M.S.W., 1944, Washington
- Northwood, Lawrence K., 1959, *Associate Professor of Social Work*
B.A., 1947, Wayne University; Ph.D., 1953, Michigan
- Parsons, Jack R., 1955 (1957), *Associate Professor of Social Work*
B.A., 1935, M.A., 1940, College of the Pacific; M.S., 1943, Columbia; Ph.D., 1958, Chicago
- Reiss, Grace Dewey, 1947 (1959), *Associate Professor of Social Work*
B.A. 1932, Iowa; M.A., 1940, Minnesota
- Smith, Edmund Arthur, 1957 (1962), *Associate Professor of Social Work*
B.A., M.A., 1954, Washington; Ph.D., 1957, Harvard
- Stutsman, Louise M., 1956 (1959), *Assistant Professor of Social Work*
B.A., 1940, Cornell College; A.M., 1949, Chicago
- Takagi, Calvin Y., 1961, *Assistant Professor of Social Work*
B.A., 1950, M.S.W., 1952, Ph.D., 1958, Minnesota
- Walter, Edward D., 1953 (1957), *Associate Professor of Social Work*
B.A., 1940, Carleton College; M.S.W., 1951, Southern California
- Weller, Bruce Colin, 1962, *Extension Instructor of Social Work*
A.B., 1950, M.S.W., 1957, Washington

AFFILIATED FACULTY FROM OTHER UNIVERSITY DEPARTMENTS

- Fletcher, Robert L., 1956 (1960), *Professor of Law*
A.B., 1939, LL.B., 1947, Stanford
- Gose, J. Gordon, 1944 (1946), *Professor of Law*
A.B., 1926, Whitman College; LL.B., 1929, Washington; LL.D., 1956, Whitman College
- Heilbrunn, Gert, *Clinical Associate Professor of Psychiatry*
B.A., 1929, City College of Nuremberg; M.D., 1935, Bern (Switzerland)
- Kaufman, S. Harvard, *Clinical Associate Professor in Psychiatry*
B.S., 1934, M.D., 1936, Wisconsin
- Schwartz, Lawrence H., *Clinical Instructor in Psychiatry*
M.D., 1949, Duke
- Rieke, Luvern V., 1949 (1956), *Professor of Law*
B.S., 1948, LL.B., 1949, Washington; LL.M., 1953, Chicago; LL.D., 1959, Pacific Lutheran University
- Strother, Charles Riddell, *Professor of Psychology in the College of Arts and Sciences, and Professor of Clinical Psychology in the School of Medicine*
B.A., 1929, M.A., 1932, Washington; Ph.D., 1935, Iowa
- Stevens, George Neff, 1952, *Professor of Law*
A.B., 1931, Dartmouth College; LL.B., 1935, Cornell; M.A., 1941, Louisville; S.J.D., 1951, Michigan
- Trautman, Philip A., 1956 (1961) *Professor of Law*
B.A., 1952, LL.B., 1954, Washington

LIBRARY AND ADMINISTRATIVE STAFF

- Carlson, Edith, *Administrative Assistant*
- Persson, Pat, *Secretary to the Dean, Assistant Dean, and Admissions Secretary*
- Humes, Guela G., *Library Supervisor*

FIELD TEACHING CENTERS**Board of Prison Terms and Paroles:**

Harris G. Hunter, *Chairman*
 Ellis Stout, *Chief Probation and Parole Officer*
 Donald Rinehart, M.S.W., *Training Consultant*

Juvenile Court of King County:

William Long, *Judge*
 Robert F. Utter, *Court Commissioner*
 Carl Erickson, *Director*
 Richard Buckland, M.S.W., *Assistant Director*

Seattle Public Schools:

Ernest Campbell, *Superintendent*
 Frederick E. Bright, *Deputy Superintendent*
Department of Guidance Services
 Hildegard Berthiaume, *Director*
 Amorette Richards, *Director, School Social Service Section*
 Jane Baker Rutherford, M.S.W., *Field Instructor*
 Tom Cooney, M.S.W., *Field Instructor*
 Sylvia LaForrest, M.S.W., *Field Instructor*

State Department of Institutions:

Garrett Heyns, Ph.D., *Director*

Bureau of Juvenile Rehabilitation:

Maurice Harmon, M.S.Sc., *Chief*
 Dan Jensen, M.S.W., *Training Consultant*
Juvenile Parole Services
 Lloyd Bates, *Supervisor*
Seattle District Office of Juvenile Parole
 James Giles, *Supervisor*
 Bonnie Logan, M.S.W., *Training Consultant*

Bureau for Handicapped Children

Van R. Hinkle, *Supervisor*
Rainier School, Buckley, Washington
 Charles H. Martin, *Superintendent*
 Emilie Johnson, M.S.W., *Director, Social Service Department*
 Peggy Luening, M.S.W., *Training Consultant*
Lakeland Village, Medical Lake, Washington
 L. F. Mason, *Superintendent*
 Eugene Garms, M.S.W., *Director, Social Service Department*
 Lois Wallace, M.S.W., *Training Consultant*

State Department of Public Assistance:

Leonard Hegland, *Director*
 Marion Wold, M.S.W., *Supervisor of Training*
King County Office, State Department of Public Assistance
 Emil F. Klein, *Administrator*
Children's Services Unit
 Marianna Kyle, *Supervisor*
 Esther Alexander, M.A., *Training Consultant*
South District Branch Office
 Phyllis Verhuel, *Supervisor*
 Adele von Lubken, M.S.W., *Training Consultant*

University of Washington, University Hospital:

LeRoy Rambeck, B.A., *Administrator*

Margaret Mykut, M.S.W., *Director, Department of Social Services*

Robert S. Justice, M.S.W., *Coordinator for Social Work Education*

Bertha L. Doremus, M.A., *Field Instructor*

Carlah Lytle, M.S.W., *Field Instructor*

Esther Urdang, M.S.S., *Field Instructor*

FIELD INSTRUCTORS AND AFFILIATED AGENCIES

Adams, Roberta, *Washington Children's Home Society*

M.S.W., Washington

Alexander, Esther, *State Department of Public Assistance*

M.A., Ohio State

Allen, Allethia, *Lutheran Family and Child Service*

M.S.W., Boston

Bartleson, Jack A., *Alcoholism Treatment Center*

M.S.W., Washington

Bentz, Wilbert G., *Veterans Administration, Mental Hygiene Clinic*

M.A., Chicago

Berleman, William C., *Seattle Atlantic Street Center*

M.S.W., Washington

Broad, Audrey E., *Travelers Aid Society*

M.S., Columbia

Bryce, John, *Green Hill School*

M.S.W., Michigan

Bundas, Lourene, *Community Psychiatric Clinic*

M.S.W., Washington

Cooney, Tom, *Seattle Public Schools*

M.S.W., Washington

Curtis, Lewis H., *Veterans Administration, Outpatient, Social Service*

M.S.W., Washington

Dallas, Constance, *Catholic Children's Services, Tacoma*

M.S.W., Washington

Dick, Luther, *Community Psychiatric Clinic*

M.S.W., Washington

Doremus, Bertha, *Social Service, University Hospital*

M.A., Chicago

Eby, Lenna, *Firland Sanatorium*

M.S.W., Washington

Edwards, Burdette, *Fircrest School*

M.S.W., Washington

Frankel, Sol, *Caroline Kline Galland Home*

M.S., Illinois

Gerber, Bertha, *Maple Lane School*

M.S.S., Smith

Gilbertson, William H., *Tacoma Public Schools*

M.S.W., Washington

Justice, Robert S., *Clinic for Child Study (University of Washington)*

M.S.W., Washington

Kazama, Donald, *Veterans Administration (Social Service)*

M.S.W., Washington

La Forrest, Sylvia, *Seattle Public Schools*

M.S.W., Washington

Logan, Bonnie B., *Seattle Area Juvenile Parole*

M.S.W., Washington

- Luening, Peggy, *Rainier School*
M.S.W., Washington
- Lundelius, Rhesa M., *Eastern State Hospital, Spokane*
M.S.W., Smith
- Lytle, Carlah, *Child Psychiatry Clinic, University Hospital*
M.S.W., Denver
- McLeod, Margaret, *Children's Orthopedic Hospital*
M.S.W., Washington
- Miller, Clementine M., *U.S. Veterans Hospital*
M.S.W., Washington
- Miller, Sidney, *Ryther Child Center*
M.S.W., Washington
- Morton, Margaret, *Fort Worden Diagnostic and Treatment Center*
M.S.W., Utah
- Nelson, Robert D., *Psychiatric Clinic for Students, University of Washington*
M.S.W., Washington
- Newkirk, Jeanne, *YWCA*
M.S.W., Connecticut
- Parrott, George, *Western State Hospital, Fort Steilacoom*
M.S.W., Washington
- Peterson, Lorena, *Martha Washington School*
M.S.W., Washington
- Pratt, Bettye, *Neighborhood House*
M.S.W., Atlanta
- Putman, Lawrence R., *Federal Penitentiary, McNeil Island*
M.S.W., Washington
- Rinehart, Donald, *Board of Prison Terms and Paroles*
M.S.W., Washington
- Rutherford, Jane Baker, *Seattle Public Schools*
M.S.W., Washington
- Simester, Patricia, *Veterans Administration (Mental Hygiene)*
M.S.W., Washington
- Smith, Betsie DeBeer, *Jewish Family and Child Services*
M.S.W., Washington
- Swartz, Irene, *Family Counseling Service*
M.S.W., Washington
- Thompson, Victor, *Bremerton Child Guidance Center*
M.S.W., Washington
- Urdang, Esther, *Child Health Center, University Hospital*
M.S.S., Adelphi
- von Lubken, Adele, *King County Public Assistance (South End Branch)*
M.S.W., Denver
- Wallace, Lois, *Lakeland Village, Spokane*
M.S.W., Washington
- Warfield, Robert L., *Fort Worden Diagnostic and Treatment Clinic*
M.A., Iowa
- Webber, Fred, *Parkland Children's Home*
M.S.W., British Columbia
- Wilson, Frances N., *Medina Children's Service*
M.S.W., California
- Wood, Vivian, *Tacoma Public Schools*
M.S.W., Washington



GENERAL INFORMATION

GENERAL INFORMATION

THE SCHOOL OF SOCIAL WORK was established in March, 1958, by the Board of Regents of the University of Washington. Prior to this date, instruction in social work was offered through the Graduate School of Social Work, a division of the Graduate School of the University.

Instruction in social work was first offered at the University in 1919 under the Department of Sociology. The Graduate Division of Social Work was established in 1934, and in 1939 it became the Graduate School of Social Work under the Graduate School. The School of Social Work was recognized as an independent professional school in 1958. It is fully accredited by the Accreditation Commission of the Council on Social Work Education.

PHILOSOPHY AND OBJECTIVES

The School of Social Work provides educational activities for: (1) an undergraduate curriculum in Social Welfare through affiliation with the Division of General Studies, College of Arts and Sciences; (2) a post-baccalaureate (graduate) professional curriculum preparing for positions of professional social work responsibility in public and private agencies; (3) a program of courses in the field of social welfare for graduate-level students in other units of the University; (4) a program of courses in the field of social welfare for students enrolled in the adult evening classes program; (5) a program of short courses, institutes, and workshops for professional practitioners who enroll in such postgraduate activities as the means to improve professional competence; (6) a program of courses, seminars, institutes, and workshops for staff members of social welfare agencies whose interests are allied to the professional practice of social work.

An on-going research program is conducted by members of the faculty and students.

The professional curriculum, one of the major program responsibilities for the School of Social Work, provides an educational experience which has been designed to prepare students:

- a. To help individuals, groups, or communities with what are to them or to society unsatisfactory social situations where:
 - (1) an individual, group, or community is dissatisfied with his or its performance;
 - (2) an individual, group, or community violates explicitly stated requirements of society.
- b. To expand the knowledge upon which social work practice is based.
- c. To record and impart social work knowledge pertinent to social welfare.

ADMISSION TO THE GRADUATE SCHOOL AND THE SCHOOL OF SOCIAL WORK

Admission to the graduate professional program of the School of Social Work requires formal admission to the Graduate School, as well as acceptance by the School of Social Work.

In general, properly qualified students who are graduates of the University of Washington or of other colleges or Universities of recognized rank may be admitted to the Graduate School.

The primary criterion for admission to the Graduate School is the applicant's apparent ability, as decided by the University, to progress satisfactorily in a graduate degree program. The applicant's scholastic record is of major importance and, ordinarily, the applicant should have at least a B or 3.00 grade-point average for the courses taken during the junior and senior years of his undergraduate study. He should also show completion of an undergraduate program appropriate as preparation for graduate study in his chosen field. Consideration will also be given to other evidence which may be available. In some cases, an applicant may give promise of making satisfactory progress in graduate work although his undergraduate grade average may be less than B or 3.00 or his undergraduate preparation may be inadequate; in these cases and other unusual cases, an applicant may be admitted to the Graduate School on the favorable written recommendation of the appropriate University of Washington executive officer with approval by the Dean of the Graduate School. The University will be able to grant admission only if sufficient faculty and facilities are available to provide for the applicant's program.

Ordinarily, only students who have been admitted to the Graduate School are permitted to enroll in courses numbered 500 or above and to gain credits applicable to the fulfillment of advanced degree programs.

Admission to the Graduate School provides the opportunity for continuance of graduate study and research only for the period during which the graduate student maintains satisfactory performance and progress toward completion of his graduate degree program along with a status of physical and mental health approved by the University. The Dean of the Graduate School may alter the status of a graduate student.

ADMISSIONS PROCEDURE

Admission to the School of Social Work is accomplished through:

- a. the filing of an application for admission to the Graduate School and credentials with the University's Office of Admissions, and
- b. the filing of a second special application form and other credentials with the School of Social Work, and
- c. arranging for an interview with a representative of the School of Social Work.

The necessary application forms, which are self-explanatory, may be obtained from the University's Office of Admissions and the School of Social Work, respectively. Complete credentials, as indicated, must be filed prior to the following dates in order to be assured of consideration for admission to the quarter for which application is being made: July 15 for Autumn Quarter; December 1 for Winter Quarter; March 1 for Spring Quarter; May 15 for Summer Quarter.

When the required application forms and credentials have been received and evaluated, the applicant will be notified of his admission status. Students wishing an unofficial evaluation of their transcripts and advanced information regarding their eligibility for admission may submit credentials in the spring term preceding graduation.

All records become a part of the official file and can neither be returned nor duplicated for any purpose. Failure to submit complete credentials will be considered a serious breach of honor, and may result in permanent dismissal from the University.

A leaflet giving general information and instructions for registration is mailed with the Notice of Admission. In the event of a discrepancy, instructions in the leaflet supersede those found in earlier publications. *The University assumes no responsibility for students who do not apply the information or observe the instructions given in the leaflet, or for applicants who come to the campus before they have been officially notified of their admission.*

The admissions credentials of applicants who do not register for the quarter to which they have been admitted are normally retained in the Office of Admissions for a period of one year from the date of application. At the end of this period, credentials on file are discarded unless the applicant has notified the Office of his continued interest in attending the University, or of his enrollment in the Evening Classes program. Should a student wish to renew his application after the one-year lapse, he must submit new credentials in advance of the date given above for the quarter desired.

A student entering the University for the first time is required to submit to the Student Health Service (Hall Health Center) a form containing his health history and a report of a physical examination by a physician. The Office of Admissions will send new students the form and necessary instructions. See page 25.

ADMISSION OF UNIVERSITY OF WASHINGTON STUDENTS

University of Washington graduates apply for admission in the same manner and satisfy the same requirements as students completing their baccalaureate degrees at other schools. They may obtain the appropriate forms from the Office of Admissions and the School of Social Work.

University of Washington students who are within 6 credits of completing their undergraduate work, and who otherwise meet the requirements for admission to the Graduate School, may register the quarter just prior to admission to the Graduate School for as many as 6 credits in graduate courses. This is in addition to their 6 credits of undergraduate work. Although this dual registration must receive prior approval by the Graduate School, students concerned will not be reclassified as graduates until the bachelor's degree has been granted and after official admission to the Graduate School. Only under these circumstances may graduate work taken as an undergraduate be applied toward an advanced degree.

Former students of the University of Washington who were not in residence the preceding Spring Quarter are given until September 1 to file complete credentials for an application for Autumn Quarter, 1962, and until August 15 to file credentials for subsequent Autumn Quarter applications. However, *the special application form must be filed with the School of Social Work before August 1.*

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Applicants for admission with graduate or advanced undergraduate standing are expected to meet the same general requirements as nonresidents of Washington educated in American schools. However, they must file their credentials before March 1 to be considered for admission Autumn Quarter, or six months before the opening of another quarter in which they may wish to enroll. In addition, they must demonstrate a satisfactory command of the English language, and must have sufficient funds available in the United States to meet their expenses.

The official record of the Canadian student is the matriculation certificate or university admission certificate of his province. Canadian and foreign students who have been in university attendance must have official transcripts forwarded as required of all students. High school graduates and university transfer students must meet the scholarship requirements for nonresident students. See above.

ADMISSION OF VETERANS

Veterans and children of deceased veterans should meet the general admission criteria and follow the general procedures outlined for all applicants. Applications for and questions about government aid should be addressed to the Veterans Administration Regional Office.

World War I or II Veterans

Under certain conditions a veteran who is not eligible for Veterans Administration benefits is fully or partly exempt from tuition charges. See page 27.

Korean Veterans

A Korean veteran under Public Law 550 should obtain admittance to the University prior to making application for a Certificate for Education and Training, thus eliminating the chance of obtaining a certificate valid for an incorrect degree. If the veteran has any questions regarding application for a certificate, he should consult the Veterans Division, Safety Division Building. Educational allowance payments are made directly to the veteran by the Veterans Administration after the veteran and institution submit a monthly attendance certification.

Korean Certificate

Application for this certificate should be made at least four weeks prior to the beginning of University instruction. If the veteran is eligible, the Veterans Administration will issue him a Certificate for Education and Training which must be presented, along with his Program of Studies, to the Veterans Division, Safety Division Building as soon as registration is completed. A Korean veteran should be prepared to meet all his own expenses as well as the cost of tuition, fees, and supplies for at least two months, because allowances are not made until after a full month's attendance has been established.

Quarter Credit Requirements (Public Law 550)

14 credits	Full subsistence
10 to 13 credits	Three-fourths subsistence
7 to 9 credits	One-half subsistence
6 credits or less	Established tuition and fees
	or credits $\div 14 \times \$110.00$, whichever is the lesser.

Graduate Credit Requirements (Public Law 550) 500-level Courses or Above

9 credits	Full subsistence
7 to 8 credits	Three-fourths subsistence
5 to 6 credits	One-half subsistence
4 credits or less	Established tuition and fees
	or credits $\div 14 \times \$110.00$, whichever is the lesser.

If a graduate is combining 400-level courses with 500-level courses, he should consult with the Veterans Division, Safety Division Building, to determine the scale of pay.

Termination of Training

A veteran *eligible* under Public Law 550 must complete his training by *eight* years after his release from active service, or by January 31, 1965, whichever is earlier.

Disabled Veterans

A veteran with a disability under Public Law 894 should contact a training officer in the nearest Veterans Administration Office approximately four weeks prior to registration.

Children of Deceased Veterans

Public Law 634 grants federal benefits to children of deceased veterans of World War I, World War II, or the Korean Conflict who died as a result of injury or disease incurred or aggravated while in the service. Information regarding eligibility under this law should be requested from a Veterans Administration Regional Office.

The Certificate for Education and Training issued to those eligible persons by the Veterans Administration is to be presented, along with the Program of Studies, to the Veterans Division, Safety Division Building, as soon as registration is completed.

MEDICAL EXAMINATION

A student entering the University for the first time, or returning to the University after an absence of more than one calendar year, or who has previously attended Summer Quarter classes but is entering regular University classes for the first time, is required to submit to the Student Health Service (Hall Health Center) a form containing his health history and a report of a physical examination by a physician. The form will be sent to new students by the Office of Admissions and to returning former students by the Registrar. This examination, which is required before a student may register, is taken at the student's expense. A chest X ray, also required of the above students, is given at the Student Health Service without charge.

With the exception of Canadian students, who will follow the above instructions, foreign students must take the required physical examination at the Student Health Service when they arrive on the campus.

REGISTRATION**REGULAR STUDENTS**

A regular student is a student who fulfills the following requirements: (1) he has been granted admission to the Graduate School and the School of Social Work; (2) his current Program of Studies is satisfactory to the Dean of the School of Social Work; (3) he has received medical clearance, and has completed his registration, including payment of tuition and fees, the filing of class cards, and the depositing of registration materials at Sections.

PART-TIME STUDENTS

Insofar as resources permit, the School of Social Work attempts to meet the needs of employed social workers in the community for part-time and/or continued study. Those persons meeting requirements for admission as regular students may take selected courses from the graduate curriculum for credit. Students who expect to use graduate credit accruing from part-time work must apply for admission and have admissibility established, to be assured that work satisfactorily completed may be credited toward degree requirements. Some of the advanced courses in the curriculum may be taken by graduates of schools of social work who wish "refresher courses."

Professional seminars are offered regularly for employed social workers. It is assumed that all who register for these seminars have completed the professional curriculum. Through the professional seminars, employed social workers may meet their need for continued study. Institutes and workshops on selected topics are regularly offered. In general, workshops and institutes are developed following requests from professional membership groups and/or employing agencies.

PROCEDURE

Each regular student will receive directions for registration from the Office of the School of Social Work. *Course programming and directions on registration in classes issued by the School of Social Work substitute for the registration appointment and directions incident thereto issued by the Registrar's Office. Directions pertaining to the payment of fees issued by the Registrar's Office are to be followed by social work students.*

REGISTERED CREDITS ALLOWED EACH QUARTER

A total of 15 credits per quarter is regarded as the maximum load in graduate work; 12 credits constitute a normal load. The programs of students employed in the University or elsewhere will be limited; such students must discuss their schedules with the Dean when they register. Students who are employed full time cannot register for more than 6 credits.

Only courses numbered 400, 500, and 600 in the major field can be applied to credit for advanced degrees. Courses numbered 300 are not applicable to credit toward advanced degrees, except when applied by permission toward the graduate minor, or as supporting courses.

CHANGES OF REGISTRATION

After students have registered, they cannot change their schedules except with permission of the School of Social Work and the Dean of the Graduate School. No student is permitted to make a registration change that involves entering a new course after the first calendar week of the quarter. After that time no student may register without the consent of the Dean of the Graduate School, the Office of the School of Social Work, and the instructor whose class the student wishes to enter.

WITHDRAWALS

WITHDRAWAL FROM A COURSE

Official withdrawal from a course is made only under the following conditions: (1) during the first fifteen calendar days of a quarter, with the consent of the withdrawing student's adviser; (2) after the first fifteen calendar days of a quarter and before the end of the first six calendar weeks of a quarter, with the approval of both the instructor of the course from which withdrawal is sought and of the dean of the college in which the withdrawing student is enrolled; and (3) after the first six calendar weeks of a quarter and before final examination week, only upon certification in writing to the Registrar by the dean of the college in which the withdrawing student is enrolled that, in the judgment of the dean, withdrawal is necessitated by the student's hardship. Withdrawals from courses accomplished by any other method are unofficial withdrawals which are entered on a student's record as EW, and are assigned the value of E in the computation of the student's grade-point average. No official withdrawal may be made during final examination week.

Official withdrawals are entered on a student's record as follows: (1) a withdrawal within the first fifteen calendar days of a quarter, as W; (2) a withdrawal after the first fifteen calendar days of a quarter, as PW, if the student's work has been satisfactory, and as E, if the student's work has been unsatisfactory. Grades of PW and W are assigned no value in the computation of grade-point averages.

WITHDRAWAL FROM THE UNIVERSITY

The student should obtain at the office of the Dean of the Graduate School the Request for Withdrawal From the University form.

SCHOLASTIC PERFORMANCE

Students are expected to make satisfactory progress toward degree requirements. Each student must present 72 quarter credits of passing work, of which 65 quarter credits must be of B work or better. Each student must maintain a grade-point average of B in all courses numbered 300 and above. If a grade of less than B is received in one of the prescribed or elective courses, the student is automatically issued an academic warning. If the student's record indicates that he is not making satisfactory progress toward the requirements enumerated above, he may be placed upon academic probation. If work in succeeding quarters is satisfactory, the student is automatically removed from probation. If the student is placed on probation in successive quarters, he may be dropped from the School of Social Work.

ADVISING

Each accepted applicant to the School of Social Work will be assigned a faculty adviser. Notification of adviser assignments is included with the registration materials forwarded to the student from the Office of the School of Social Work about September 1 preceding the opening of the Autumn Quarter.

FEES, EXTRA SERVICE CHARGES, AND RENTALS

All fees, extra service charges, and rentals are payable in United States dollars at the time of registration, except that new students must submit a \$50.00 advance payment of fees at the time they are admitted to the University. This advance

payment is applied against the total tuition and the fees collected from the student. In the event of failure to register, the \$50.00 advance payment is not refundable to the student. The University reserves the right to change any of its fees and charges without notice.

The fee schedules for resident and nonresident students, following, apply to the academic year (Autumn, Winter, and Spring Quarters). Summer fees are listed in the *Summer Quarter Bulletin*.

EXEMPTIONS

Veterans of World Wars I or II

Exemption from tuition charges is granted resident students who either (1) served in the United States Armed Forces during World War I and received honorable discharges; or (2) served in the United States Armed Forces during World War II at any time after December 6, 1941, and before January 1, 1947, and received honorable discharges, but are no longer entitled to federal educational benefits; or (3) are United States citizens who served in the armed forces of governments associated with the United States during World Wars I or II and received honorable discharges. Nonresident students who meet one of these requirements pay one-half of the nonresident tuition. This exemption is not granted to Summer Quarter students.

Proof of eligibility should be met as follows:

- (1) World War I veterans should present copy of discharge papers to Comptroller's Office, 203 Administration Building.
- (2) World War II veterans with Korean service or who have suffered disability should present a letter from the Veterans Administration Regional Office to the Veterans Division, Safety Division Building, stating they are no longer eligible for any federal educational benefits. (Excepted are those veterans who have had both World War II benefits and Korean benefits and have expired those benefits at the University of Washington.)
- (3) World War II veterans who have not suffered any disability or served in the Korean Conflict should present an 8½-inch x 11-inch photostat of discharge papers to the Veterans Division, Safety Division Building.

Exemption must be cleared prior to student's appointment day for registration in order to prevent personal payment.

EXTRA SERVICE CHARGES

A registration service charge of \$15.00 is assessed those students: (1) eligible for Advance (mail) Registration who fail to participate; or (2) who, after the established application deadline, are granted Appointments or Permits to register by In-Person Registration by action of the Registration Appeal Board. A late registration charge of \$15.00 is assessed any student granted permission to register after the last registration day before the opening of Autumn, Winter, or Spring Quarters by action of the Registration Appeal Board. A charge of \$5.00 is made Autumn, Winter, and Spring Quarters 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.

Special Examination \$1.00

Removal of an Incomplete 2.00

Athletic Admission Ticket (Optional for ASUW members) 3.50-6.50
Autumn, Winter, and Spring Quarters, \$6.50; Winter and Spring Quarters, \$3.50;
Spring Quarter, \$3.50.

Breakage Ticket (required for Social Work 515 and Social Work 535)
(three quarters) 24.00

Thesis Only 56.50

Those registered for thesis only (for credit or final) must be certified by the Dean of the Graduate School and are required to pay this charge and any laboratory breakage charge.

Degree Final Only 56.50

Nonthesis students registered for degree final only must be certified by the Dean of the Graduate School and are required to pay this charge and any laboratory breakage charge.

Quarterly Grade Report .50

One grade report will be issued each quarter without charge; the charge, payable in advance, is made for each additional copy.

Transcripts 1.00

One transcript is furnished without charge; the charge, payable in advance, is made for each additional copy.

Thesis Binding and Publication 2.00

Master's degree candidates

The charge covers the cost of binding one copy for the University Library.

Diploma 5.00**FEES FOR RESIDENT STUDENTS**

A resident is one who has been domiciled in Washington for at least a year immediately prior to registration. The children of federal employees residing within the state of Washington and the children and spouses of staff members of the University are considered as residents for tuition purposes.

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

Type of Registration	Tuition Fee	Incidental Fee	Other Fees* Autumn, Winter, and Spring Quarters	Total Fees Autumn, Winter, and Spring Quarters
Full-time students (undergraduate and graduate) except in Medical and Dental Schools	\$35.00	\$56.50	\$8.50	\$100.00
Auditors		39.00	†	39.00
Part-time (max. 6 credits exclusive of ROTC)§	35.00	39.00	†	74.00
Ex-service personnel of World Wars I and II† (Chapter 46, Laws of 1945)				
Full-time		56.50	8.50	65.00
Part-time (max. 6 credits)§		39.00	†	39.00
Students registered for thesis only (for credit or final)||		56.50	†	56.50
Students registered for degree final only (nonthesis)||		56.50	†	56.50

* Other fees consist of Student Activities, \$2.50; ASUW Bond Redemption, \$3.50; Hub Bond Redemption, \$1.00; Building Fund, \$1.50.

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

‡ See Exemptions (page 27) to determine eligibility.

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

|| Must be approved by the Graduate School.

PHYSICAL EDUCATION ACTIVITIES, per quarter: bowling, \$5.00; canoeing, \$3.00; golf instruction, \$1.50.

REFUND OF FEES, CHARGES, AND RENTALS

All fees will be refunded in full if complete withdrawal is made during the first three calendar days of the quarter; one-half the amount will be refunded if withdrawal is made during the first thirty calendar days. Refunds are not made to students withdrawing under discipline.

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

At least two weeks must elapse between payment and refund, if payment was made by check.

FEES FOR NONRESIDENT STUDENTS

Prospective students are classified as nonresidents when their credentials come from schools outside Washington. If they believe they are residents, they may petition the Residence Classification Office, 205A Administration Building, for a change of classification.

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

Type of Registration	Tuition Fee	Incidental Fee	Other Fees*	Total Fees
			Autumn, Winter, and Spring Quarters	Autumn, Winter, and Spring Quarters
Full-time students (undergraduate and graduate) except in Medical and Dental Schools	\$105.00	\$ 86.50	\$8.50	\$200.00
Auditors		39.00	†	39.00
Part-time (max. 6 credits exclusive of ROTC)§	105.00	69.00	†	174.00
Ex-service personnel of World Wars I and II† (Chapter 46, Laws of 1945)				
Full-time	52.50	86.50	8.50	147.50
Part-time (max. 6 credits)§	52.50	69.00	†	121.50
Students registered for thesis only (for credit or final)||		56.50	†	56.50
Students registered for degree final only (nonthesis)||		56.50	†	56.50

* Other fees consist of Student Activities, \$2.50; ASUW Bond Redemption, \$3.50; Hub Bond Redemption, \$1.00; Building Fund, \$1.50.

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

‡ See Exemptions (page 27) to determine eligibility.

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

|| Must be approved by the Graduate School.

ESTIMATE OF YEARLY EXPENSES

The figures given here are minimum estimates for an academic year, which includes Autumn, Winter, and Spring Quarters. Living costs and personal expenses vary widely with the needs of the individual student.

Tuition, Incidental, and Other Fees

Full-time resident student \$300.00

Full-time nonresident student 600.00

Athletic Admission Ticket (optional) 6.50

<i>Health and Accident Insurance (optional)</i>	17.25
<i>Breakage Tickets</i>	24.00
<i>Books and Supplies</i>	90.00
<i>Board and Room</i>	
Room and meals in Men's Residence Halls	720.00
Room and meals in Women's Residence Halls	660.00-765.00
Room and meals in fraternity or sorority house	670.00-760.00
(Including dues and special assessments.)	
Initial cost of joining is not included; this information may be obtained from the Interfraternity Council or Panhellenic Council.	
<i>Personal Expenses</i>	300.00

STUDENT ACTIVITIES AND SERVICES

STUDENT SOCIAL WORK CLUB

All students enrolled in the professional curriculum in social work are eligible for membership in the Student Social Work Club. Through participation in the Club program and committee work, students have an opportunity to participate in activities which are pertinent to their professional career interests. The Club serves as sponsor of several social events.

STUDENT SOCIAL WORK CONFERENCE

The Student Club of the School of Social Work, the Alumni Association, and the Puget Sound Chapter of the National Association of Social Workers annually plan a Student Social Work Conference to honor students who have written outstanding papers during the academic year. The conference provides an occasion for members of the professional group to welcome graduates to its ranks and to provide an opportunity for undergraduate students to learn about social work from students of the School.

Papers are presented in workshops or read at general sessions by students; representatives of agencies active in the topic area discuss practice implications. Students gain experience in planning, organizing, and operating a conference.

OFFICE OF THE DEAN OF STUDENTS

The Office of the Dean of Students is concerned with the general welfare of students and welcomes correspondence and conferences with both parents and students. The Office works closely with the advisory system of the colleges and schools of the University; it directs students to faculty advisers, the Counseling Center, and other persons and agencies offering information and assistance with personal and similar problems. The Dean of Students Office also has current information on Selective Service Regulations.

The Foreign Students Office operates through the Office of the Dean of Students. The Foreign Student Adviser and his staff offer guidance on all nonacademic problems to students from other countries. Questions about immigration regulations, housing, social relationships, personal problems, finances, minimum course requirements, and employment should be referred to this Adviser. Students who are interested in study abroad may obtain from him information about schools in other countries and about Fulbright and other scholarships.

COUNSELING CENTER

The Counseling Center in Lewis Hall Annex offers vocational and educational counseling to students who need help in their adjustments to college. The staff of the Center, which includes vocational counselors and psychologists, works closely with other student services and supplements the academic advisory program.

HOUSING

Information and applications for residence in University-owned housing for single persons may be obtained by writing to the Manager, Men's Residence Halls, 1201 N.E. Campus Parkway, Seattle 5, or to the Manager, Women's Residence Halls, University of Washington, Seattle 5. Preference in assignment to vacancies is given to students under twenty-one years of age until August 1; thereafter assignments are made in the order of application. Prospective students may apply for the residence halls prior to their acceptance by the University but not before April 15.

University regulations require that women students under twenty-one who do not live at home must live in approved group residences such as the Women's Residence Halls, sororities, and church-sponsored living groups. Other types of living arrangements must be reported to the Dean of Women and be approved by the student's parents or guardian.

Information about fraternities or sororities may be obtained by writing to the Interfraternity Council or the Panhellenic Council, Student Union Building, University of Washington, Seattle 5.

The Office of Student Residences maintains listings of off-campus rooms, rooms with board, housekeeping rooms, apartments, and houses which are available to University students. These listings must, however, be consulted in person.

Teaching and research assistants and other part-time sub-faculty personnel are given first priority for assignment to University-owned housing facilities for married students. Second preference for assignment to Union Bay Village or Sand Point Homes is given to graduate, medical, dental, and law students who have children. Prospective students are eligible to apply when they have been accepted for admission. Write to the Office of Student Residences, 23 Administration Building, for further information and application forms.

A complete statement of University housing policy appears in the *Student Handbook of University Rules and Regulations* and the *Housing Bulletin*.

HEALTH SERVICES

The University maintains a health service and infirmary to help guard against infectious diseases and incipient ill health.

The infirmary receives bed patients at any hour and provides nursing care, medicines, and the attendance of a staff doctor up to one week each quarter free of charge. For a period longer than one week, a charge of \$2.00 a day is made. At their own expense, infirmary patients may consult any licensed physician in good standing.

Health and accident insurance for students is available at the time of registration.

EMPLOYMENT

Information concerning part- and full-time work off campus may be obtained through the University Placement Office. Applications are accepted from students or graduates of the University and from the wives or husbands of University students. Applications must be made in person after residence in Seattle has been established. Placement in jobs on the campus is handled by the Personnel Department and by the ASUW Personnel Office.

Listings of part-time work in social agencies in the community are included in placement files within the School of Social Work. Faculty advisers are in a position to help students find part-time work.

SCHOLARSHIP AWARDS, FELLOWSHIPS, AND LOANS

Social work students are eligible to receive a number of awards for outstanding achievement. Awards are made on the basis of past academic record and professional promise. Financial need is a part of the Faculty Scholarship Committee's consideration, if the foregoing factors place the student in a competitive position

for an award. The School of Social Work participates with agencies and foundations in making many awards of varying amounts available to students who are in attendance at the School. Awards run from approximately \$300 per academic year to \$2,400 per academic year.

Scholarships and loans through the University are also available. Information may be obtained by writing to the Office of the Dean of Students, University of Washington.

The University of Washington also awards 100 tuition scholarships each academic year to worthy students from other countries. There are no scholarships available for the Summer Quarter. These awards are made on the basis of the academic record of the student, recommendations from his professors, his need for such assistance, and the availability of such openings in his department at the University. These scholarships cover tuition only and are administered by the Foreign Exchange Scholarship Committee, Foreign Students Office, University of Washington, Seattle 5, Washington, U.S.A. Application for these scholarships must be made by March 1 for the following year.

Social work students may apply for loans from the Mildred Buck Loan Fund and Family Counseling Service Student Loan Fund, which were established for social work students by friends of the School of Social Work.

Some of the awards annually made under the administration of the School of Social Work Faculty Scholarship Committee are:

CROWN ZELLERBACH FOUNDATION SCHOLARSHIP AND FELLOWSHIP AWARDS, \$1,200 and \$600.

NATIONAL INSTITUTE OF MENTAL HEALTH TRAINEESHIPS, from \$1,800 to \$2,000.

VOCATIONAL REHABILITATION SCHOLARSHIP AWARDS, from \$1,800 to \$2,000.

FLORENCE MARY HAMMOND MEMORIAL SCHOLARSHIP, at least one award of \$1,800.

Interest in applying for a scholarship award, fellowship, or training stipend should be indicated on the application form submitted to the School of Social Work or by letter to the Chairman of the Faculty Scholarship Committee. In turn, the interested student will receive a listing of available financial aids from the Chairman of the Committee. Scholarship awards are made annually about the middle of May.

PLACEMENT AFTER GRADUATION

Because of the critical shortage of professionally prepared social workers, employment opportunities for graduates are numerous. Position vacancies in agencies and organizations in the immediate geographical region are maintained in a placement file within the library of the School of Social Work. All agencies and organizations in the region are encouraged to list their vacancies with the School of Social Work. A file of announcements of position vacancies nationwide and in foreign countries is maintained as received through the initiation of the agencies-seeking staff. Representatives of major agencies visit the campus each year to recruit graduating students. Students are encouraged to interview agency representatives.



THE SOCIAL WORK PROGRAMS

THE SOCIAL WORK PROGRAMS

UNDERGRADUATE CURRICULUM IN SOCIAL WELFARE

The School of Social Work offers a program leading to an undergraduate major in Social Welfare in collaboration with the Division of General Studies of the College of Arts and Sciences. Students planning to undertake professional study in social work, students who are interested in appointment to social welfare positions which do not require professional education, and students who wish a liberal arts background with a concentration in the social sciences and social welfare, may fulfill their interests by enrollment in the Division of General Studies, College of Arts and Sciences. This program includes a pattern of study in the social sciences to achieve a broader and deeper understanding of man and society and the organization of social welfare institutions designed to meet human need. Depth of study is achieved through the advanced requirements in psychology and sociology and through the pattern of study in the social work courses and the senior thesis. These latter courses provide an integrative educational experience as well as an opportunity for extended study by which students may critically examine and systematically observe the system and structure of social welfare institutions. Educational advising for this curriculum is provided by staff of the Office of the Division of General Studies and/or the Director of the undergraduate curriculum in the School of Social Work. Members of the faculty of the School of Social Work are available to advise students on their career interests and career planning in professional social work.

COURSES

- | | | |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| 300 | Survey of Social Service Programs (3)
Social welfare programs in the United States. Exploration of the principles and practices in the use of these programs to meet human needs. Prerequisite, upper-division standing. (Offered in Evening Classes and Summer Quarter only.) | Kelley, Lawrence |
| 391 | Supervised Study (2-6, maximum 6)
Specialized academic and field study in an agency of a selected social welfare problem. Prerequisite, permission. | Kelley, Lawrence |
| 400 | Field of Social Welfare (5)
The origin, development, and present status of social service programs, with particular emphasis on the relationship of program resources, human needs, and the methods through which services are provided. Prerequisite, upper-division standing. | Kelley, Lawrence |

401 Principles of Interviewing (2)

Kelley, Lawrence, Reiss

The interview as a basic method in helping people. Analysis from case records with objective of identifying processes and techniques of skillful interviewing; ways in which purpose and setting of the interview influence its nature and course. Prerequisite, upper-division standing.

COURSES ON CHILD CARE

Courses for child-care personnel are generally offered during the Summer Quarter only, however, 301, 302, and 303 are also offered in the Evening Classes program. These courses are specifically planned for child-care staff presently employed in children's institutions. Registration may be on a credit or noncredit basis. Applicants who wish University credit must have had at least two full years of undergraduate college work. Regular attendance and participation in these courses will be recognized with a certificate of attendance. Application for the Child-Care Courses must be made to the Dean, School of Social Work, University of Washington.

301 Child Care: Social Development (2)

Understanding of human growth and development in its continuum and developmental phases as related to the social development of children and youth. Prerequisite, permission.

302 Child Care: Care of Children in Groups (2)

Identification and analysis of roles and responsibilities of child-care staff in working with groups of children and youth. Prerequisite, permission.

303 Child Care: Play and Leisure-time Activities (2)

Introduction and assessment of relevancy of play and leisure-time activities associated with child-care function. Prerequisite, permission.

304 Child Care: Supervision of Child-care Personnel (2)

Introduction to roles and processes of supervision of personnel in residential child-care and treatment programs. Prerequisite, permission.

305 Child Care: Care and Treatment of Pathological Group Situations (2)

Study of a range of pathological group situations in the context of group living within institutional settings and application of such knowledge in dealing with these situations. Prerequisite, permission.

REFRESHER COURSES

Refresher courses are offered each Summer Quarter for students who have earned a professional degree, but for whom there has been a lapse in professional practice. These courses are specifically helpful to students who have completed one year of post-baccalaureate professional study in an accredited school of social work and who wish to return for continued study leading to the professional degree. For students whose previous social work education was completed six years before re-entry to full-time study, satisfactory completion of the refresher courses is one of the qualifications for admission as a degree candidate. Credits earned in refresher courses are not applicable toward degree requirements.

461 Refresher Course: Social Work Methods (2)

A review of the basic principles and concepts underlying professional practice of social work methods. Also, a review of recent professional literature and clinical materials.

462 Refresher Course: Human Growth and Behavior (2)

A review of knowledge pertaining to concepts of development and behavior as related to social behavior and social work practice.

463 Refresher Course: Social Services (2)

A review and analysis of organization and structure of social welfare services and programs.

Application Procedure: Application for the refresher courses must be made to the Dean, School of Social Work, University of Washington, Seattle 5, Washington. After the applicant has been accepted, a Summer Quarter Bulletin with instructions for registration will be mailed.

THE MASTER OF SOCIAL WORK PROGRAM

The program of professional social work education at the University of Washington is designed to prepare students for professional practice in social

work. It is a two-year program of study leading to the Master of Social Work degree. Among the areas of practice in which students are prepared to accept staff positions are the following: adoptions, foster home care, institutional care, child protection, child guidance, family counseling, probation and parole, medical social work, psychiatric social work, school social work, public assistance service, community center work, social group service programs.

The course of study is composed of courses concerned with the philosophy, organization, and administration of social service programs; the understanding of human growth and behavior; the use of professional social work methods, and the use of research methods. It is divided into five curriculum segments. Each student must present 8 credits of satisfactory work in the social welfare organization segment of the curriculum. Courses in this segment are included in those numbered from 502 through 504 and in the 520 seminar series. Courses in Sociology listed as 472, 473, 474, 571, 572, and 573, in the section, "Courses in Affiliated Departments" may be elected as equivalents to required social work seminars. A minimum of 11 credits of satisfactory work must be presented in the Human Growth and Behavior segment of the curriculum. These courses are included in those Psychiatry and Psychology courses indicated as "Courses in Affiliated Departments" and courses numbered 556 and 557. A total of 18 credits is required in the Social Work Methods sequence of the curriculum. Each student must satisfactorily complete the beginning course in Social Case Work, Social Group Work, and in Social Community Organization. In addition, the student must complete a course in Basic Values and Concepts in Social Work Method and a pattern of five sequential courses in one of the direct service methods. Research requirements in the curriculum include 2 credits in the beginning course in research (590) and satisfactory completion of a group research project (593-594-595) or a thesis (700).

Each student spends a portion of his time testing his developing knowledge and skill in a health, welfare, or group-service agency. This laboratory experience is under the supervision and instruction of carefully selected, professionally-prepared social workers. It provides students with an opportunity to develop skills in working with individuals and groups; to integrate classroom theoretical material with an actual work experience, and to develop professional attitudes and efficient methods of professional work. In addition to tuition costs and general fees, each student must plan for the costs of transportation to and from the field instruction agencies (approximately \$15.00 per month), and the payment of a special laboratory fee for the field instruction courses.

Requirements for the degree include: Completion of the prescribed curriculum, a minimum of three quarters in residence at this School, the equivalent of field instruction in six quarters, and completion of either an individual thesis or a group research project. Each student must present a total of 72 quarter credits of passing work and maintain a B average in all courses numbered 300 and above. In addition, the student must present a minimum of 65 quarter credits of B work or better. The degree is awarded on the basis of the student's competence in theory and practice, as evidenced through satisfactory completion of courses. The field work performance is a further test of competence. There is no foreign language requirement.

PROGRAM OPTIONS FOR THE MASTER OF SOCIAL WORK DEGREE

The University of Washington, School of Social Work, offers its degree program through two options. Under one, the student may enroll and complete his program on the Seattle campus. Under the second, he may complete a substantial part of his education through a field teaching program established in Spokane, Washington. The development of the Spokane Program has enabled us to utilize the excellent field instruction resources of eastern Washington.

Under each option, students receive comparable education. The course and field requirements are the same; the standards of instruction and performance are the same. Differences occur primarily in the sequential arrangement of the cur-

riculum. Under the Seattle campus plan, students begin immediately with field and classroom instruction which continues concurrently throughout the six quarters of work (excluding summers) required for graduation. These students remain in the Seattle area throughout this period of time. The normal quarter credit load is 12 credits.

Under the Spokane Program option, students begin in Seattle with classroom work only. This continues for two quarters, during which time they are grounded in basic knowledge and theory relevant to professional social work. Subsequently, they shift to Spokane for three consecutive quarters (including summer). Here, they also have a concurrent program, but primary emphasis is placed on the field experience. All field requirements are completed within these three quarters. One or two courses in methods or human growth and behavior are also taken each quarter. The student then shifts back to Seattle for a final two quarters of classroom work which particularly is focused on integration of learning experiences. The usual quarter-credit load under this plan is 10 credits. Students normally graduate at the same time as their peers enrolled in the Seattle program.

A regular member of the School of Social Work faculty is in residence in the Spokane area. Field instruction in agencies is provided by well-qualified social workers. Currently, field instruction settings related to work with families and children and to mental health problems are being utilized.

APPLICATION PROCEDURE

Information about application procedure for admission to the professional degree program is found under the heading, "Admission to the Graduate School and the School of Social Work" page 21.

COURSES

- 502, 503, 504 Social Welfare Organization (2,2,2)** **Parsons, Smith**
Historical origins of concepts, policies, and social welfare institutions, critical analysis of current public and private programs at all jurisdictional levels; use of social welfare concepts in planning.
- 508 Basic Values and Concepts in Social Work Method (2)** **Abrahamson, Maier, Walter**
An identification and analysis of basic value concepts and principles underlying social case work, social group work, and social community organization practice.
- 509 Readings in Social Work (*, maximum 6)**
Prerequisite, permission.
- 510 Social Case Work (2)** **Abrahamson, Burg, Reiss**
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 (2)** **Abrahamson, Burg, Reiss**
Continuation of generic case-work theory, with emphasis on diagnosis and case-work treatment. Prerequisite, 510.
- 512 Social Case Work (2)** **Abrahamson, Burg, Reiss**
Elaboration and intensification of basic case-work concepts and their application in practice to various types of agencies. Prerequisite, 511.
- 515 Field Instruction (4-8, maximum 12)** **C. Macdonald**
Prerequisite, permission.
- 520 Seminar (*, maximum 6)**
Prerequisite, permission.
- 521 Social Group Work (2)** **DeNoon, Maier, Walter**
Professional social group work as a method and process; objectives, techniques, skills, and media of group work method, and criteria for evaluation of results. Prerequisite, permission.
- 522 Social Group Work (2)** **Maier**
Continuation of social group work study with emphasis on process in groups and identification of group goals.
- 523 Social Group Work (2)** **Walter**
Continuation of study in social group work with emphasis on method, skill, and analysis of the professional role.
- 524 Advanced Social Group Work (2)** **Walter**
Continued intensive study on social group work method with emphasis on the utilization of program media and the concept of program planning process.

- 525 Advanced Social Group Work (2)** **DeNoon**
Continued intensive study on social group work method with emphasis on structuring group situations, and application of the method to institutional settings.
- 526 Advanced Social Group Work** **Maier**
Continued intensive study of social group work method with emphasis on the integration of prerequisite course content and the analysis of issues and trends in social group work practice.
- 530 Advanced Social Case Work (2)** **Abrahamson, Hunt, Reiss, Takagi**
Intensive study of the case-work process to deepen and broaden the caseworker's knowledge and understanding of the dynamics of human behavior and to enable him to develop greater skill in interviewing. Prerequisite, permission.
- 531 Advanced Social Case Work (2)** **Abrahamson, Hunt, Reiss, Takagi**
Continuation of intensive study of case material, with emphasis on sound direction in case-work treatment. Prerequisite, 530.
- 532 Advanced Social Case Work (2)** **Abrahamson, Hunt, Reiss, Takagi**
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.
- 533, 534 Trends in Social Case Work (2,2)** **Abrahamson, Hunt, Reiss**
Generic and differential factors in understanding and utilizing various administrative settings in social case-work practice. Study of developments and trends in social case-work practice. Prerequisite, permission.
- 535 Advanced Field Instruction (4-8, maximum 12)** **C. Macdonald**
Prerequisite, 515.
- 556 Social Aspects of Illness and Disability (2)** **R. Macdonald**
Physical growth and change of the individual as correlated with factors of emotional and social development; consideration of specific medical problems. Prerequisite, permission.
- 557 Social Work with Sick, Disabled, or Handicapped Persons** **R. Macdonald**
Application of select behavioral science concepts to social work practice with persons who are ill, handicapped, or disabled. Prerequisite, 556.
- 570 Administration of Social Agencies (2)** **Parsons**
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 Social Community Organization (2)** **Walter**
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.
- 573 Social Welfare Planning Process (2)** **Walter**
An examination of the process of promoting and sustaining an adjustment between social welfare resources and social welfare needs. Analysis of personal and social factors in specific community organization efforts and the nature of the professional worker's participation in them. Discussion based upon records of specific community situations. Prerequisite, 572.
- 580 Public Welfare (2)** **Parsons**
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.
- 586 Statistics in Social Work (2)**
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 Welfare (2)** **Gronewold**
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.
- 590, 591, 592 Social Work Research (2,2,2)** **Stutsman, Northwood**
Methods used in the study of social work practice, program evaluation, and community needs and resources. Study of current social work research field practice through group research projects. Presentation and evaluation of research projects currently carried by students in the research program. Prerequisite, second-year graduate standing for 590; 590 for 591; 591 for 592.
- 593-594-595 Field Practice in Research (2-2-2)**
Field practice in a group project in lieu of an individual thesis. Includes development of research design, collection of data, tabulation and analysis, and report writing. Prerequisite, 590 or its equivalent.
- 700 Thesis (*)**
- 702 Degree Final (0)**
Limited to students completing a nonthesis degree program.

COURSES IN AFFILIATED DEPARTMENTS**PSYCHIATRY**

450 Principles of Personality Development (2)	Kaufman
451 Principles of Personality Development (2)	Heilbrunn
452 Clinical Psychiatry (2)	Schwartz
553 Psychodynamics and Psychopathology (2)	Heilbrunn
559 Child Psychiatry (2)	Kaufman

PSYCHOLOGY

599 Survey of Clinical Psychometrics (2)	Strother
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SOCIOLOGY

472 Juvenile Delinquency (5)	Hayner, Schrag
473 Corrections (5)	Hayner, Schrag
474 Probation and Parole (3)	Hayner
571 Correctional Communities (3)	Hayner
572 Analysis of Criminal Careers (3)	Hayner
573 Crime Prevention (3)	Hayner
574 Seminar in Methods of Criminological Research (3)	Schrag