

P 1287
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BULLETIN • UNIVERSITY OF WASHINGTON



**COLLEGE OF
ARTS AND SCIENCES
1955-1957**

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes two general bulletins; bulletins of the colleges and schools; two Summer Quarter announcements; and publications of the Division of Adult Education and Extension Services, the correspondence study and extension class announcements.

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 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.

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

UNIVERSITY REGULATIONS (FOR REGISTERED STUDENTS ONLY)
INTRODUCTION TO THE UNIVERSITY

Bulletins of the Colleges and Schools

COLLEGE OF ARTS AND SCIENCES
COLLEGE OF BUSINESS ADMINISTRATION
COLLEGE OF EDUCATION
COLLEGE OF ENGINEERING
COLLEGE OF FORESTRY
GRADUATE SCHOOL
SCHOOL OF LAW
COLLEGE OF PHARMACY
SCHOOLS OF MEDICINE AND DENTISTRY
SCHOOL OF NURSING

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT
SUMMER QUARTER ANNOUNCEMENT
CORRESPONDENCE STUDY
EXTENSION CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 891
May, 1955

Published monthly at Seattle, Washington, by the University of Washington from October to July, inclusive. No issues in August and September. Entered as second-class matter December 18, 1947, at the post office at Seattle, Washington, under the Act of August 24, 1912.

CONTENTS

CALENDAR	4
ADMINISTRATION	9
Board of Regents	
Officers of Administration	
College of Arts and Sciences Faculty	
Cooperating Faculty	
GENERAL INFORMATION	35
Facilities and Services	
Admission	
Registration	
Tuition and Fees	
Estimate of Yearly Expenses	
Student Activities and Services	
THE DEPARTMENTAL PROGRAMS	49
Bachelor's Degrees	
Graduate Degrees	
Anthropology	53
Architecture	56
Art	58
Astronomy	66
Basic Medical Science	66
Biology	67
Botany	67
Chemistry	70
Classics	74
Communications	76
Dental Hygiene	81
Dentistry	81
Drama	81
Economics	83
Education	88
English	88
Far Eastern and Russian Institute	92
Far Eastern and Slavic Languages	95
Fisheries	100
Food Technology	104
General and Comparative Literature	105
General Education	107
General Studies	109
Geography	110
Geology	113
Germanic Languages	116
History	119
Home Economics	124
Law	132
Liberal Arts	133
Librarianship	133
Mathematics	134
Medical Technology	138
Medicine	139
Meteorology and Climatology	140
Microbiology	143
Music	145
Oceanography	154
Philosophy	157
Physical and Health Education	159
Physics	169
Political Science	175
Psychology	180
Public Health	183
Romance Languages	187
Scandinavian Languages	193
Social Work	195
Sociology	195
Speech	199
Zoology	203
RESERVE OFFICERS TRAINING PROGRAMS	209

CALENDAR

All fees must be paid at the time of registration. Registration is by appointment only.

SUMMER QUARTER, 1955

REGISTRATION PERIOD

JUNE 1-JUNE 3	Registration for all students. (<i>Registration appointments for students in residence Spring Quarter, 1955, and for former students not in residence Spring Quarter, 1955, may be obtained from the Registrar's Office beginning April 18. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.</i>)
JUNE 13-JUNE 17	

ACADEMIC PERIOD

JUNE 20-MONDAY	Instruction begins
JUNE 21-TUESDAY	Last day to add a course for the first term
JUNE 24-FRIDAY	Last day to add a course for the full quarter
JULY 4-MONDAY	Independence Day holiday
JULY 20-WEDNESDAY	First term ends
JULY 21-THURSDAY	Second term begins
JULY 22-FRIDAY	Last day to add a course for the second term
AUG. 19-FRIDAY	Instruction ends

AUTUMN QUARTER, 1955

REGISTRATION PERIOD

SEPT. 6-SEPT. 27	Registration for students in residence Spring Quarter, 1955. (<i>Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 23, but no later than September 16.</i>)
SEPT. 9-SEPT. 27	Registration for former students not in residence Spring Quarter, 1955. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 23, but no later than September 16.</i>)
SEPT. 12-SEPT. 23	Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (<i>August 26 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.</i>)
SEPT. 12-SEPT. 27	Registration for new transfer students with at least full sophomore standing. (<i>August 26 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

SEPT. 26—MONDAY	Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing.
SEPT. 28—WEDNESDAY	Instruction begins (8 a.m.) for all other students
OCT. 4—TUESDAY	Last day to add a course
NOV. 11—FRIDAY	State Admission Day holiday
NOV. 23—NOV. 28	Thanksgiving recess (6 p.m. to 8 a.m.)
DEC. 16—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1956

REGISTRATION PERIOD

NOV. 21—DEC. 9	Registration for students in residence Autumn Quarter, 1955. (<i>Registration appointments will be issued on presentation of ASUW cards beginning October 21.</i>)
DEC. 28—DEC. 30	Registration for former students not in residence Autumn Quarter, 1955. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 21.</i>)
DEC. 28—DEC. 30	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Winter Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

JAN. 3—TUESDAY	Instruction begins
JAN. 9—MONDAY	Last day to add a course
FEB. 22—WEDNESDAY	Washington's Birthday and Founder's Day holiday
MAR. 16—FRIDAY	Instruction ends

SPRING QUARTER, 1956

REGISTRATION PERIOD

FEB. 23—MAR. 9	Registration for students in residence Winter Quarter, 1956. (<i>Registration appointments will be issued on presentation of ASUW cards beginning January 20.</i>)
MAR. 21—MAR. 23	Registration for former students not in residence Winter Quarter, 1956. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 20.</i>)
MAR. 21—MAR. 23	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

MAR. 26—MONDAY	Instruction begins
MAR. 30—FRIDAY	Last day to add a course
MAY 18—FRIDAY	Governor's Day
MAY 30—WEDNESDAY	Memorial Day holiday
JUNE 3—SUNDAY	Baccalaureate Sunday
JUNE 8—FRIDAY	Instruction ends
JUNE 9—SATURDAY	Commencement

SUMMER QUARTER, 1956

REGISTRATION PERIOD

MAY 29—JUNE 1	<i>Registration for all students. (Registration appointments for students in residence Spring Quarter, 1956, and for former students not in residence Spring Quarter, 1956, may be obtained from the Registrar's Office beginning April 16. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.)</i>
JUNE 11—JUNE 15	

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
JULY 4—WEDNESDAY	Independence Day holiday
JULY 18—WEDNESDAY	First term ends
JULY 19—THURSDAY	Second term begins
JULY 20—FRIDAY	Last day to add a course for the second term
AUG. 17—FRIDAY	Instruction ends

AUTUMN QUARTER, 1956

REGISTRATION PERIOD

SEPT. 11—OCT. 2	<i>Registration for students in residence Spring Quarter, 1956. (Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 21, but no later than September 21.)</i>
SEPT. 14—OCT. 2	<i>Registration for former students not in residence Spring Quarter, 1956. (Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 21, but no later than September 21.)</i>
SEPT. 17—SEPT. 28	<i>Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (August 31 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.)</i>
SEPT. 17—OCT. 2	<i>Registration for new transfer students with at least full sophomore standing. (August 31 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.)</i>

ACADEMIC PERIOD

OCT. 1—MONDAY	Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing.
OCT. 3—WEDNESDAY	Instruction begins (8 a.m.) for all other students
OCT. 9—TUESDAY	Last day to add a course
NOV. 12—MONDAY	State Admission Day holiday
NOV. 21—NOV. 26	Thanksgiving recess (6 p.m. to 8 a.m.)
DEC. 21—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1957

REGISTRATION PERIOD

NOV. 26—DEC. 14	Registration for students in residence Autumn Quarter, 1956. (<i>Registration appointments will be issued on presentation of ASUW cards beginning October 26.</i>)
JAN. 2—JAN. 4	Registration for former students not in residence Autumn Quarter, 1956. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 26.</i>)
JAN. 2—JAN. 4	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Winter Quarter. Registration appointments will be mailed with notification of admission.</i>)

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. 22—FRIDAY	Instruction ends

SPRING QUARTER, 1957

REGISTRATION PERIOD

FEB. 27—MAR. 15	Registration for students in residence Winter Quarter, 1957. (<i>Registration appointments will be issued on presentation of ASUW cards beginning January 25.</i>)
MAR. 27—MAR. 29	Registration for former students not in residence Winter Quarter, 1957. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 25.</i>)
MAR. 27—MAR. 29	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

APR. 1—MONDAY	Instruction begins
APR. 5—FRIDAY	Last day to add a course
MAY 24—FRIDAY	Governor's Day
MAY 30—THURSDAY	Memorial Day holiday
JUNE 9—SUNDAY	Baccalaureate Sunday
JUNE 14—FRIDAY	Instruction ends
JUNE 15—SATURDAY	Commencement

SUMMER QUARTER, 1957

REGISTRATION PERIOD

JUNE 5—JUNE 7	<i>Registration for all students. (Registration appointments for students in residence Spring Quarter, 1957, and for former students not in residence Spring Quarter, 1957, may be obtained from the Registrar's Office beginning April 22. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.)</i>
JUNE 17—JUNE 21	

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 24—WEDNESDAY	First term ends
JULY 25—THURSDAY	Second term begins
JULY 26—FRIDAY	Last day to add a course for the second term
AUG. 23—FRIDAY	Instruction ends

CHANGES IN UNIVERSITY REGULATIONS

The University and its colleges and schools reserve the right to change the rules regulating admission to, instruction in, and graduation from the University and its various divisions, and to change any other regulations affecting the study 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 and change fees at any time.

ADMINISTRATION

BOARD OF REGENTS

MRS. J. HERBERT GARDNER, <i>President</i>	La Conner
CHARLES M. HARRIS, <i>Vice-President</i>	Entiat
GRANT ARMSTRONG	Chehalis
THOMAS BALMER	Seattle
DONALD G. CORBETT	Spokane
CHARLES F. FRANKLAND	Seattle
WINLOCK W. MILLER	Seattle

HELEN HOAGLAND, *Secretary*

OFFICERS OF ADMINISTRATION

HENRY SCHMITZ, Ph.D.	<i>President of the University</i>
HAROLD P. EVEREST, M.A.	<i>Vice-President of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
NELSON A. WAHLSTROM, B.B.A.	<i>Comptroller and Business Manager</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>
LLOYD S. WOODBURN, Ph.D.	<i>Dean of the College of Arts and Sciences</i>
WALTER L. RILEY, M.A.	<i>Assistant Dean of the College of Arts and Sciences</i>
EDWARD H. LAUER, Ph.D.	<i>Dean Emeritus of the College of Arts and Sciences</i>

FACULTY OF THE COLLEGE OF ARTS AND SCIENCES

(As of May 6, 1955)

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

ELMENDORF, WILLIAM WELCOME, 1946 (1950)	<i>Assistant Professor of</i>
B.A., 1934, M.A., 1935, Washington; Ph.D., 1949, California	<i>Anthropology</i>
GARFIELD, VIOLA EDMUNDSON, 1937 (1955)	<i>Associate Professor of Anthropology</i>
B.A., 1928, M.A., 1931, Washington; Ph.D., 1939, Columbia	
GUNTHER, ERNA, 1923 (1941)	<i>Professor of Anthropology; Director of</i>
A.B., 1919, Barnard College; A.M., 1920, Ph.D., 1928, Columbia	<i>the Museum</i>
HULSE, FREDERICK SEYMOUR, 1948 (1949)	<i>Associate Professor of Anthropology</i>
A.B., 1927, M.A., 1928, Ph.D., 1934, Harvard	
JACOBS, MELVILLE, 1928 (1952)	<i>Professor of Anthropology</i>
A.B., 1922, City College of New York; A.M., 1923, Ph.D., 1931, Columbia	
MASSEY, WILLIAM CLIFFORD, 1950 (1955)	<i>Acting Assistant Professor of</i>
A.B., 1940, California	<i>Anthropology</i>
MCCLELLAN, CATHERINE, 1952	<i>Assistant Professor of Anthropology</i>
A.B., 1942, Bryn Mawr; Ph.D., 1950, California	
OSBORNE, H. DOUGLAS, 1949 (1952)	<i>Assistant Professor of Anthropology;</i>
B.A., 1938, M.A., 1941, New Mexico;	<i>Curator of the Museum</i>
Ph.D., 1951, California	
RAY, VERNE FREDERICK, 1933 (1947)	<i>Professor of Anthropology</i>
B.A., 1931, M.A., 1933, Washington; Ph.D., 1937, Yale	
WATSON, JAMES BENNETT, 1955	<i>Professor of Anthropology; Executive Officer</i>
A.B., 1941, A.M. 1945, Ph.D., 1948,	<i>of the Department of Anthropology</i>
Chicago	

SCHOOL OF ARCHITECTURE

- DIETZ, ROBERT HENRY, 1947 (1953)..... *Associate Professor of Architecture*
 B.Arch., 1941, Washington; M.Arch., 1944, Massachusetts Institute of
 Technology
- GOWEN, LANCE EDWARD, 1924 (1937)..... *Professor of Architecture*
 B.A., in Arch., 1916, M.A. in Arch., 1921, Gr. Arch., 1922, California
- HERRMAN, ARTHUR PHILIP, 1923 (1937)..... *Professor of Architecture; Director of*
 B.A. in Arch., 1921 Carnegie Institute of *the School of Architecture*
 Technology
- JENSEN, ALFRED, 1930 (1952)..... *Professor of Architectural Engineering*
 B.S. in C.E., 1925, M.S. in C.E., 1932, Washington
- KOLB, KEITH ROBERT, 1952..... *Assistant Professor of Architecture*
 B.Arch., 1947, Washington; M.Arch., 1950, Harvard
- LOVETT, WENDELL HARPER, 1948 (1951)..... *Assistant Professor of Architecture*
 B.Arch., 1947, Washington; M.Arch., 1948, Massachusetts Institute of
 Technology
- MITHUN, OMER LLOYD, 1947 (1950)..... *Assistant Professor of Architecture*
 B.Arch., 1942, Minnesota
- PRIES, LIONEL HENRY, 1928 (1948)..... *Professor of Architecture*
 A.B., 1920, California; M.Arch., 1921, Pennsylvania
- RADCLIFFE, DONALD GREGG, 1947 (1948)..... *Assistant Professor of Architectural*
 B.S. in C.E., 1932, M.S. in C.E., 1934, Illinois *Engineering*
- ROHRER, JOHN ABRAM, 1948 (1951)..... *Instructor in Architecture*
 B.Arch., 1937, Washington
- SPROULE, JOHN ROBERT, 1948 (1951)..... *Assistant Professor of Architecture*
 B.Arch., 1934, Washington
- STEINBRUECK, VICTOR, 1946 (1954)..... *Associate Professor of Architecture*
 B.Arch., 1935, Washington
- TORRENCE, GERARD RUTGERS, 1954..... *Assistant Professor of Architectural*
 B.S. in C.E., 1949, Washington; M.S. in S.E., 1950, *Engineering*
 Massachusetts Institute of Technology
- WHERRETTE, WILLIAM CARNES, 1948 (1953)..... *Assistant Professor of Architecture*
 B.Arch., 1948, Carnegie Institute of Technology
- WOLFE, MYER RICHARD, 1949 (1954)..... *Associate Professor of City Planning*
 B.S., 1940, New Hampshire; M. Regional Planning, 1947, Cornell

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 (1955)..... *Assistant Professor of Art*
 B.A., 1943, Washington; M.F.A., 1954, Minnesota
- BONIFAS, PAUL AMI, 1946 (1947)..... *Associate Professor of Art*
- BRAZEAU, WENDELL PHILLIPS, 1945 (1955)..... *Associate Professor of Art*
 B.F.A., 1933, M.F.A., 1947, Washington
- CURTIS, ELIZABETH LONG, 1930 (1947)..... *Assistant Professor 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 (1954)..... *Associate Professor of Art*
 B.F.A., 1937, Yale
- FOOTE, HOPE LUCILLE, 1923 (1948)..... *Professor of Art*
 A.B., 1920, Iowa State Teachers College; M.A., 1923, Columbia
- FULLER, STEVEN D., 1946 (1955)..... *Assistant Professor of Art*
 B.A., 1939, M.F.A., 1948, Washington
- GONZALES, BOYER, 1954..... *Professor of Art; Director of the School of Art*
 B.A. in Arch., 1931, Virginia; Art Students League, New York
- HENSLEY, MERCEDES HOOVER, 1939 (1952)..... *Lecturer in Art*
 B.F.A., 1930, M.F.A., 1938, Washington

- HILL, RAYMOND LEROY, 1927 (1945)..... *Professor of Art*
 Graduate, 1913, Rhode Island School of Design
- HIKSON, WILLIAM JOHN, 1950 (1955)..... *Assistant Professor of Art*
 B.A., 1948, M.F.A., 1950, Oregon
- ISAACS, WALTER F., 1922 (1929)..... *Professor of Fine Arts*
 B.S.F.A., 1909, James Millikin, Illinois
- JOHNSON, PAULINE, 1941 (1945)..... *Associate Professor of Art*
 B.A., 1929, Washington; M.A., 1936, Columbia
- MASON, ALDEN C., 1946 (1952)..... *Assistant Professor of Art*
 B.A., 1942, M.F.A., 1947, Washington
- MOSELEY, SPENCER ALTEMONT, 1948 (1954)..... *Assistant Professor of Art*
 B.A., 1948, M.F.A., 1951, Washington
- PATTERSON, AMBROSE MCCARTHY, 1919 (1947)..... *Professor Emeritus of Painting;*
 National School of Art (Melbourne); Juliens, Colorossi, *Consultant*
 Delacuse, Whistler Simon, and Lhote Schools of Art (Paris) *in Painting*
- PATTERSON, VIOLA HANSEN, 1947 (1955)..... *Assistant Professor of Art*
 B.A., 1921, B.S. in L.S., 1921, 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
- REED, TRUMAN GERVAIS, 1951 (1952)..... *Curator of Henry Art Gallery*
 B.A., 1949, Yale
- ROGERS, MILLARD BUXTON, 1952..... *Lecturer in Art*
 B.F.A., 1937, M.F.A., 1940, Art Institute of Chicago; M.A., 1940, Chicago
- SMITH, CHARLES WALLACE, 1948 (1951)..... *Instructor in Art*
 Pratt Institute; B.A., 1954, Washington
- TSUTAKAWA, GEORGE, 1946 (1952)..... *Assistant Professor of Art*
 B.A., 1937, M.F.A., 1950, Washington
- WELMAN, VALENTINE S., 1954..... *Instructor in Art*
 B.F.A., 1952, Denver; M.F.A., 1954, Colorado

ASTRONOMY

- JACOBSEN, THEODOR SIEGUMFELDT, 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;*
 B.S., 1894, Illinois; Ph.D., 1902, Chicago *Research Consultant*
- HITCHCOCK, CHARLES LEO, 1937 (1944)..... *Professor of Botany; Executive*
 A.B., 1927, Pomona College; A.M., 1929, Claremont *Officer of the Depart-*
 Colleges; Ph.D., 1931, Washington University, St. Louis *ment of Botany*
- HOTSON, JOHN WILLIAM, 1911 (1947)..... *Professor Emeritus of Botany;*
 A.B., 1901, A.M., 1902, McMaster (Toronto); *Research Consultant*
 Ph.D., 1913, Harvard
- KRUCKEBERG, ARTHUR RICE, 1950 (1954)..... *Assistant Professor of Botany*
 B.A., 1941, Occidental College; Ph.D., 1950, California
- MEEUSE, BASTIAAN JACOB DIRK, 1952 (1955)..... *Associate 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
- RIGG, GEORGE BURTON, 1909 (1947)..... *Professor Emeritus of Botany;*
 B.S., 1896, Iowa; M.A., 1909, Washington; *Research Consultant*
 Ph.D., 1914, Chicago
- ROMAN, HERSCHEL LEWIS, 1942 (1952)..... *Professor of Botany*
 A.B., 1936, Ph.D., 1942, Missouri

- STUNTZ, DANIEL ELLIOT, 1940 (1950).....*Associate Professor of Botany*
 B.S., 1935, Washington; Ph.D., 1940, Yale
 WALKER, RICHARD BATTSON, 1948 (1950).....*Assistant Professor of Botany*
 B.S., 1938, Illinois; Ph.D., 1948, California

DEPARTMENT OF CHEMISTRY

- ANDERSON, ARTHUR G., JR., 1946 (1953).....*Associate Professor of Chemistry*
 A.B., 1940, Illinois; M.S., 1942, Ph.D., 1944, Michigan
 CADY, GEORGE HAMILTON, 1938 (1947).....*Professor of Chemistry*
 A.B., 1927, A.M., 1928, Kansas; Ph.D., 1930, California
 CRITTENDEN, ALDEN LARUE, 1947 (1949).....*Assistant Professor of Chemistry*
 B.S., 1942, Ph.D., 1946, Illinois
 CROSS, PAUL CLIFFORD, 1949.....*Professor of Chemistry; Executive Officer of*
 B.S., 1928, Geneva College; *the Department of Chemistry; Director*
 M.S., 1930, Ph.D., 1932, Wisconsin *of Bagley Hall Laboratories*
 DAUBEN, HYP JOSEPH, JR., 1945 (1950).....*Associate Professor of Chemistry*
 B.A., 1937, M.S., 1937, Ohio State; A.M., 1941, Ph.D., 1941, Harvard
 EGGERS, DAVID FRANK, JR., 1950 (1952).....*Assistant Professor of Chemistry*
 B.S., 1943, Illinois; Ph.D., 1950, Minnesota
 FAIRHALL, ARTHUR W., 1954.....*Assistant Professor of Chemistry*
 B.Sc., 1946, Queen's (Kingston, Ontario); Ph.D., 1952,
 Massachusetts Institute of Technology
 GREGORY, NORMAN WAYNE, 1946 (1953).....*Associate Professor of Chemistry*
 B.S., 1940, M.S., 1941, Washington; Ph.D., 1943, Ohio State
 HALSEY, GEORGE DAWSON, JR., 1951 (1954).....*Associate Professor of Chemistry*
 B.S., 1943, South Carolina; Ph.D., 1948, Princeton
 LINGAFELTER, EDWARD CLAY, JR., 1939 (1952).....*Professor of Chemistry*
 B.S., 1935, Ph.D., 1939, California
 POWELL, SARGENT GASTMAN, 1919 (1943).....*Professor of Chemistry*
 B.S., 1916, M.S., 1916, Washington; Ph.D., 1920, Illinois
 RABINOVITCH, BENTON SEYMOUR, 1948.....*Assistant Professor of Chemistry*
 B.S., 1939, Ph.D., 1942, McGill
 RITTER, DAVID MOORE, 1944 (1948).....*Acting Associate 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 (1954).....*Associate Professor of Chemistry*
 B.S., 1941, Illinois; Ph.D., 1947, Minnesota
 SIMPSON, WILLIAM TRACY, 1948 (1954).....*Associate Professor of Chemistry*
 A.B., 1943, Ph.D., 1948, California
 SIVERTZ, VICTORIAN, 1926 (1949).....*Associate Professor of Chemistry;*
 B.S., 1922, Washington; M.S., 1924, *Executive Secretary of the*
 West Virginia; Ph.D., 1926, McGill *Department of Chemistry*
 WIBERG, KENNETH BERLE, 1950 (1952).....*Assistant 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;*
 A.B., 1903, Oregon; A.B., 1907, Oxford *Research Consultant*
 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.....*Associate Professor of Classics; Executive*
 B.A., 1936, Toronto; Ph.D., *Officer of the Department of Classics*
 1940, Johns Hopkins
 PASCAL, PAUL, 1953.....*Instructor in Classics*
 B.A., 1948, Vermont; Ph.D., 1953, North Carolina

PICKEL, FRANK GIVENS, 1954.....*Acting Assistant Professor of Classics*
 A.B., 1941, Oberlin College; Ph.D., 1949, Chicago
 READ, WILLIAM MERRITT, 1927 (1945).....*Professor of Classics; University Editor*
 A.B., 1923, DePauw; M.A., 1924, Ph.D., 1927, Michigan

SCHOOL OF COMMUNICATIONS

ADAMS, EDWIN HUBBARD, 1939 (1950).....*Associate Professor in Charge of*
 B.A., 1927, M.A., 1931, *Division of Radio and Television;*
 Washington State College *Manager of University Radio Station KUOW*
 ASTEL, GEORGE BERNARD, 1943 (1944).....*Assistant Professor of Journalism*
 B.A., 1923, Washington
 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.....*Instructor in Radio-Television*
 B.A., 1944, M.A., 1954, Texas
 EVEREST, HAROLD PHILIP, 1940 (1952).....*Professor of Journalism;*
 B.A., 1938, M.A., 1950, Washington *Vice-President of the University*
 JENKINS, LESTER P., 1950.....*Lecturer in Journalism*
 LAFROMBOISE, CLARENCE BROWN, 1950.....*Assistant Professor of Journalism;*
 B.B.A., 1926 *Executive Secretary of the Washington Newspaper*
 Washington *Publishers Association*
 MANSFIELD, ROBERT STUART, 1932 (1950).....*Professor of Journalism*
 B.A., 1926, M.A., 1931, Michigan
 MCKENZIE, VERNON, 1928.....*Professor of Journalism*
 B.A., 1909, Toronto; M.A., 1914, Harvard
 MURTON, CLARENCE CHARLES, 1943.....*Acting Instructor in Journalism*
 B.A., 1924, Washington
 PEARSON, HARRY S., 1950 (1952).....*Lecturer in Journalism*
 ROOT, CORNELIUS, 1947.....*Director of Laboratories, Journalism*
 RYAN, MILO, 1946 (1952).....*Associate Professor of Journalism*
 B.A., 1928, M.A., 1934, Michigan *and Radio-Television*
 SETHRE, ROBERT ARTHUR, 1950 (1953).....*Assistant Professor of Journalism*
 B.A., 1947, M.A., 1953, Washington
 SMITH, HENRY LADD, 1955.....*Professor of Journalism;*
 Ph.B., 1929, Yale; M.A., 1936, *Director of the School*
 Ph.D., 1946, Wisconsin *of Communications*
 STREHLAU, BETTY GENE, 1953.....*Lecturer in Communications*
 B.A., 1944, M.A., 1954, Washington
 WARNER, DANIEL S., 1954 (1955).....*Associate Professor of Journalism*
 B.A., 1928, Michigan

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 R., 1952.....*Instructor in Drama*
 B.A., 1945, Cornell College, Iowa; M.A., 1950, Washington
 DAVIS, ALANSON BEWICK, 1947 (1952).....*Stage Designer*
 A.B., 1947, Washington
 GALSTAUN, VANICK SAMUEL, 1950 (1951).....*Acting Instructor in Drama*
 B.A., 1946, San Francisco State College; M.A., 1948, Washington

GRAY, ROBERT SIMPSON, 1939 (1951)..... *Assistant Professor of Drama*
 B.A., 1936, M.A., 1938, Washington
 HAAGA, AGNES MARIE, 1947 (1955)..... *Assistant 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 State; M.A., 1933, Columbia
 HUGHES, GLENN ARTHUR, 1919 (1930)..... *Professor of Drama; Director*
 B.A., 1916, Stanford; M.A., 1920, Washington *of the School of Drama*
 LOUNSBURY, WARREN CARSON, 1948 (1954)..... *Acting Assistant Professor*
 A.B., 1946, Western Reserve *of Drama*
 SIKS, GERALDINE BRAIN, 1950 (1951)..... *Acting Instructor in Drama*
 B.A., 1935, Central Washington College of Education;
 M.A., 1940, Northwestern

DEPARTMENT OF ECONOMICS

BUECHEL, HENRY THEODORE, 1946 (1949)..... *Associate Professor of Economics*
 B.A., 1929, M.A., 1937, Washington State College; Ph.D., 1949, Wisconsin
 CARTWRIGHT, PHILIP WINDSOR, 1947 (1952)..... *Associate Professor of Labor*
 A.B., 1940, M.A., 1942, *Economics; Assistant Director of the*
 Ph.D., 1950, Stanford *Institute of Labor Economics*
 CRUTCHFIELD, JAMES ARTHUR, JR., 1949 (1950)..... *Assistant Professor*
 A.B., 1940, M.A., 1942, California, Los Angeles; *of Economics*
 Ph.D., 1954, California
 GILLINGHAM, JOHN BENTON, 1947..... *Assistant Professor of Economics*
 A.B., 1939, Washington State College; M.A., 1941, Wisconsin
 GORDON, DONALD FLEMMING, 1950..... *Assistant Professor of Economics*
 B.A., 1944, Saskatchewan; M.A., 1946, Toronto; Ph.D., 1949, Cornell
 HALD, EARL CARLSEN, 1946 (1947)..... *Associate Professor of Economics*
 B.S., 1931, A.M., 1932, Nebraska; Ph.D., 1939, California
 HALL, JAMES KENDALL, 1930 (1934)..... *Professor of Economics*
 B.A., 1925, M.A., 1926, Oregon; Ph.D., 1929, Stanford
 HOLZMAN, FRANKLYN DUNN, 1952 (1954)..... *Associate Professor of Economics*
 B.A., 1940, North Carolina; M.A., 1948, Ph.D., 1952, Harvard
 HOPKINS, WILLIAM STEPHEN, 1946..... *Professor of Economics; Director of*
 B.S., 1925, M.A., 1928, Oregon; *the Institute of Labor Economics*
 Ph.D., 1932, Stanford
 HUBER, JOHN RICHARD, 1939 (1949)..... *Professor of Economics; Executive*
 B.A., 1931, College of Wooster; *Officer of the Department of Economics*
 M.A., 1933, Ph.D., 1937, Princeton
 LAMPMAN, ROBERT JAMES, 1948 (1953)..... *Associate Professor of Economics;*
 B.A., 1942, Ph.D., 1950, *Assistant Director of the Institute*
 Wisconsin *of Labor Economics*
 MCCAFFREE, KENNETH MAURICE, 1949 (1950)..... *Assistant Professor of Economics*
 B.A., 1940, Southwestern College; M.A., 1942, Denver; Ph.D., 1950, Chicago
 MORRIS, MORRIS DAVID, 1949 (1950)..... *Assistant 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 (1951)..... *Assistant Professor of Economics*
 B.A., 1942, Ph.D., 1952, California
 SHELDON, CHARLES STUART, II, 1940 (1946)..... *Assistant Professor of Economics*
 B.A., 1936, M.A., 1938, Washington; A.M., 1939, Ph.D., 1942, Harvard
 WORCESTER, DEAN AMORY, JR., 1946 (1952)..... *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 College; Ph.D., 1937, Chicago
 ANDERSON, SYLVIA FINLAY, 1920 (1947)..... *Assistant Professor of English*
 B.A., 1919, M.A., 1923, Washington
 BENHAM, ALLEN ROGERS, 1905 (1949)..... *Professor Emeritus of English;*
 A.B., 1900, A.M., 1901, Minnesota; *Research and Editorial Consultant*
 Ph.D., 1905, Yale

- BENTLEY, G. NELSON, 1952..... *Instructor in English*
A.B., 1941, M.A., 1945, Michigan
- BLANKENSHIP, WILLIAM RUSSELL, 1932 (1943)..... *Professor of English*
A.B., 1914, Missouri; M.A., 1929, Ph.D., 1935, Washington
- BOSTETTER, EDWARD EVERETT, 1940 (1947)..... *Associate Professor of English*
A.B., 1935, Franklin and Marshall College, Pennsylvania;
M.A., 1937, Ph.D., 1938, Princeton
- BROWN, MALCOLM JOHNSTON, 1946 (1947)..... *Assistant Professor of English*
B.A., 1931, Ph.D., 1946, Washington
- BURGESS, JANNA POTGIETER, 1937 (1947)..... *Assistant Professor 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
- 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;*
B.A., 1899, Wabash College; *Editorial Consultant and Managing*
M.A., 1901, Ph.D., 1906, Cornell *Editor of Modern Language Quarterly*
- DAVIS, MERRELL REES, 1947 (1953)..... *Associate Professor of English*
A.B., 1935, Whitman; M.A., 1937, Tufts; Ph.D., 1948, Yale
- 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*
B.A., 1927, M.A., 1928, Iowa
- ETHEL, GARLAND ORAL, 1927 (1947)..... *Assistant Professor of English*
B.A., 1923, M.A., 1927, Ph.D., 1928, Washington
- FOWLER, DAVID COVINGTON, 1952 (1953)..... *Assistant Professor of English*
B.A., 1942, Florida; M.A., 1947, Ph.D., 1949, Chicago
- GOULD, FLORENCE JONES, 1948 (1951)..... *Assistant Professor of English*
A.B., 1928, M.A., 1931, Oregon
- GRIFFITH, DUDLEY DAVID, 1924 (1952)..... *Professor Emeritus of English;*
B.A., 1903, Simpson College; Ph.D., 1916, Chicago *Graduate Adviser*
- GUBERLET, MURIEL LEWIN, 1943 (1946)..... *Assistant Professor of English*
A.B., 1910, Bethany College, Kansas; A.M., 1928, Washington
- HALL, JAMES WINFORD, 1949 (1955)..... *Associate Professor of English*
A.B., 1937, Kansas City; M.A., 1938, Wisconsin; Ph.D., 1949, Cornell
- HALL, WILLIAM FREDERICK, 1955..... *Instructor in English*
B.A., 1950, M.A., 1951, Cambridge; Ph.D., 1954, Johns Hopkins
- HAMILTON, ALBERT CHARLES, 1952..... *Assistant Professor of English*
B.A., 1945, Manitoba; M.A., 1948, Ph.D., 1952, Toronto
- HARRIS, MARKHAM, 1946 (1947)..... *Assistant Professor of English*
A.B., 1929, M.A., 1931, Williams College
- HARRISON, JOSEPH BARLOW, 1913 (1933)..... *Professor of English*
B.A., 1910, Washington; A.B., 1913, Oxford (England)
- HEILMAN, ROBERT BECHTOLD, 1948..... *Professor of English; Executive Officer*
A.B., 1927, Lafayette College; M.A., 1930, *of the Department of English*
Ohio State; M.A., 1931, Ph.D., 1935, Harvard
- HILEN, ANDREW REUBEN, JR., 1945 (1954)..... *Associate Professor of English*
B.A., 1937, Washington; Ph.D., 1943, Yale
- HOOVER, BENJAMIN BEARD, 1952 (1954)..... *Assistant Professor of English*
A.B., 1947, M.A., 1948, Ph.D., 1951, California
- KAUFMAN, HELEN ANDREWS, 1930 (1954)..... *Associate Professor of English*
B.A., 1909, Wilson College, Pennsylvania; M.A., 1911, Indiana;
Ph.D., 1934, Washington

- KUHN, BERTHA MEHITABLE, 1940 (1947)..... *Assistant Professor of English*
 B.A., 1916, M.A., 1917, North Dakota; Ph.D., 1941, Washington
- LAWSON, JANE SORRIE, 1922 (1952)..... *Professor Emeritus of English;*
 M.A., 1907, St. Andrews (Scotland) *Consultant in Composition*
- LEGGETT, GLENN HUBERT, 1952..... *Associate Professor of English;*
 B.A., 1940, Middlebury College; *Director of Freshman English*
 B.A., 1941, Ph.D., 1949, Ohio State
- MARQUARDT, WILLIAM F., 1954..... *Assistant Professor of English*
 B.A., M.A., 1939, Wisconsin; Ph.D., 1949, Northwestern
- MATCHETT, WILLIAM, 1954..... *Instructor in English*
 B.A., 1949, Swarthmore; M.A., 1950, Harvard
- McKINLAY, FLORENCE DILLOW, 1937 (1950)..... *Assistant Professor of English*
 B.A., 1908, Lombard, Illinois; M.A., 1931, Washington
- NIX, MARTHA JEANETTE, 1928 (1947)..... *Assistant Professor of English*
 B.A., 1922, M.A., 1925, Washington
- PELLEGRINI, ANGELO M., 1930 (1951)..... *Associate Professor of English*
 B.A., 1927, Ph.D., 1942, Washington
- PERRIN, PORTER GALE, 1947..... *Professor of English*
 A.B., 1917, Dartmouth College; M.A., 1921, Maine; Ph.D., 1936, Chicago
- PERSON, HENRY AXEL, 1937 (1947)..... *Assistant Professor of English*
 B.A., 1927, Ph.D., 1942, Washington
- PHILLIPS, WILLIAM LOUIS, 1949 (1952)..... *Assistant Professor of English*
 B.A., 1942, Iowa State Teachers College; M.A., 1947, Ph.D., 1949, Chicago
- REDFORD, GRANT H., 1945..... *Assistant Professor of English*
 B.S., 1937, Utah State; M.A., 1940, Iowa
- RIVENBURGH, VIOLA K., 1944 (1955)..... *Acting Assistant Professor of English*
 A.B., 1919, Nebraska; M.A., 1926, Hawaii
- ROETHKE, THEODORE HUEBENER, 1947 (1948)..... *Professor of English*
 A.B., 1929, A.M., 1936, Michigan
- STEIN, ARNOLD SYDNEY, 1948 (1953)..... *Professor of English*
 A.B., 1936, Yale; A.M., 1938, Ph.D., 1942, 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
- THORPE, BERENICE DU RAE, 1946 (1952)..... *Assistant Professor of English*
 B.A., 1924, M.A., 1949, Washington
- WAGONER, DAVID R., 1954..... *Assistant 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
- 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
- WOODCOCK, GEORGE, 1954 (1955)..... *Assistant Professor of English*
- YAGGY, ELINOR MAY, 1943 (1950)..... *Assistant Professor of English*
 B.A., 1929, M.A., 1939, Idaho; Ph.D., 1946, Washington
- ZILLMAN, LAWRENCE JOHN, 1932 (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

- BALLIS, WILLIAM BELCHER, 1948..... *Professor of Russian Government and Politics*
 B.A., 1929, Stanford; Ph.D., 1936, Chicago
- CHANG, KUN, 1951 (1954)..... *Acting Assistant Professor of Far Eastern and*
 B.A., 1938, National Tsinghua (China); *Slavic Languages and Literature*
 M.A., 1949, Yale

- ERLICH, VICTOR, 1948 (1955).....Associate Professor of Slavic Languages
M.A., 1937, Free Polish University (Warsaw); and Literature
Ph.D., 1951, Columbia
- GERSHEVSKY, NOAH DAVID, 1943 (1947).....Assistant Professor of Russian Language
B.S. in Met., 1930, Montana School of Mines
- HSIAO, KUNG-CHUAN, 1952.....Visiting Professor of Far Eastern Languages
Graduate, 1920, National Tsinghua (China); B.A., 1922, and Literature
M.A., 1923, Missouri; Ph.D., 1926, Cornell
- JANSEN, MARIUS BERTHUS, 1950 (1955).....Associate Professor of Japanese History
A.B., 1943, Princeton; M.A., 1948, Ph.D., 1950, Harvard
- LEE, CHANG-HEI, 1949.....Acting Instructor in Far Eastern and Slavic Languages
B.A., 1934, B.D., 1937, Vanderbilt; and Literature
M.A., 1935, George Peabody College
- LI, FANG-KUEI, 1949 (1950).....Professor of Chinese Linguistics
A.B., 1926, Michigan; A.M., 1927, Ph.D., 1928, Chicago
- MAKI, JOHN MCGILVREY, 1939 (1950).....Associate Professor of Japanese
B.A., 1932, M.A., 1936, Washington; Government and Politics
Ph.D., 1948, Harvard
- McKINNON, RICHARD NICHOLS, 1951 (1952).....Assistant Professor of Japanese
A.B., 1947, A.M., 1949, Ph.D., 1951, Harvard Language and Literature
- MICHAEL, FRANZ HENRY, 1942 (1948).....Professor of Far Eastern History and
Dr. Jur., 1933, Government; Assistant Director of the Far
Freiburg (Germany) Eastern and Russian Institute
- MICKELSEN, LEW REID, 1953.....Assistant Professor of Slavic Languages
B.S., 1942, Minnesota; Ph.D., 1951, Harvard
- NOVIKOW, ELIAS THEODORE, 1947 (1948).....Instructor in Russian Language
B.M., 1939, Oklahoma; M.Mus., 1942, Michigan; M.A., 1946, Washington
- PAHN, VADIM OTTO, 1946 (1948).....Instructor in Russian Language
B.A., 1935, B.S.Agr., 1938, British Columbia
- POPPE, NICHOLAS NIKOLAEVICH, 1949 (1951).....Professor of Far Eastern and
Master's, 1923, Petrograd; Ph.D., 1934, Slavic Languages and Literature
Petersburg University (Russia)
- REIFLER, ERWIN, 1947 (1955).....Professor of Chinese Language
Dr. Rer. Pol., 1931, Vienna (Austria)
- SHAW, JOHN ROGER, 1950 (1951).....Acting Instructor in Russian Language
B.A., 1942, Washington
- SHIH, VINCENT YU-CHUNG, 1945 (1951).....Associate Professor of Chinese
B.A., 1925, Fukien Christian (China); Literature and Philosophy
M.A., 1930, Yenching (China); Ph.D., 1939, Southern California
- SPECTOR, IVAR, 1931 (1943).....Associate Professor of Russian Language
Graduate, 1919, Teachers' Seminar (Russia); and Literature
M.A., 1926, Northwestern; Ph.D., 1928, Chicago
- 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
A.B., 1927, A.M., 1928, Politics; Executive Officer of the Department
Birmingham (England) of Far Eastern and Slavic Languages and
Literature; Director of the Far Eastern
and Russian Institute
- TREADGOLD, DONALD WARREN, 1949 (1955).....Associate 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
Ph.D., 1932, Berlin (Germany) Literature
- WILLISTON, FRANK GOODMAN, 1943 (1949).....Professor of Far Eastern History
A.B., 1922, Ohio Wesleyan; M.A., 1926, Ph.D., 1935, Chicago
- WITTFOGEL, KARL AUGUST, 1947 (1949).....Professor of Chinese History
Ph.D., 1928, Frankfurt (Germany)
- YANG, RICHARD FU-SEN, 1948 (1951).....Acting Instructor in Chinese Language
B.A., 1943, Yenching (China); M.A., 1950, Washington

SCHOOL OF FISHERIES

- BELL, FREDERICK HEWARD, 1931..... *Lecturer in Fisheries*
B.A., 1924, British Columbia
- BELL, MILO CARSNER, 1953..... *Special Lecturer in Fisheries*
B.S., 1930, Washington
- DELACY, ALLAN CLARK, 1946 (1951)..... *Associate Professor of Fisheries*
B.S., 1932, M.S., 1933, Ph.D., 1941, Washington
- DONALDSON, LAUREN RUSSELL, 1935 (1948)..... *Professor of Fisheries; Director of*
A.B., 1926, Intermountain Union College *the Applied Fisheries Laboratory*
(Montana); M.S., 1931, Ph.D., 1939, Washington
- DUNLOP, HENRY ADAM, 1931 (1947)..... *Lecturer in Fisheries*
B.A., 1919, M.A., 1922, British Columbia
- LYNCH, JAMES ERIC, 1931 (1943)..... *Professor of Fisheries*
B.A., 1917, M.A., 1921, Nebraska; Ph.D., 1929, California
- STERN, JOSEPH AARON, 1953..... *Assistant Professor of Fisheries*
S.B., 1949, S.M., 1950, Ph.D., 1953, Massachusetts Institute of Technology
- THOMPSON, WILLIAM FRANCIS, 1930..... *Professor of Fisheries; Director of the*
B.A., 1911, Ph.D., 1930, Stanford *Fisheries Research Institute*
- VAN CLEVE, RICHARD, 1948..... *Professor of Fisheries; Director of the*
B.S., 1927, Ph.D., 1936, Washington *School of Fisheries*
- WELANDER, ARTHUR DONOVAN, 1937 (1954)..... *Associate Professor of Fisheries;*
B.S., 1934, M.S., 1940, Ph.D., *Associate Researcher in Applied Fisheries*
1946, Washington *Laboratory*

DIVISION OF GENERAL STUDIES

- LUTEY, WILLIAM GLEN, 1934 (1949)..... *Assistant Professor of Liberal Arts;*
B.A., 1930, M.A., 1931, Washington *Director of General Studies*

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
- EYRE, JOHN DOUGLAS, 1951..... *Assistant Professor of Geography*
A.B., 1945, M.A., 1947, Ph.D., 1951, Michigan
- GARRISON, WILLIAM LOUIS, 1950..... *Assistant Professor of Geography*
B.S., 1946, M.A., 1947, George Peabody College; Ph.D., 1950, Northwestern
- HUDSON, GEORGE DONALD, 1951..... *Professor of Geography; Executive Officer of*
Ph.B., 1925, A.M., 1926, Ph.D., 1933, Chicago *the Department of Geography*
- JACKSON, W. A. DOUGLAS, 1955..... *Assistant Professor of Geography*
B.A., 1946, M.A., 1949, Toronto; Ph.D., 1953, Maryland
- MARTIN, HOWARD HANNA, 1930 (1940)..... *Professor of Geography*
B.S., 1922, Pennsylvania; M.A., 1923, Ph.D., 1929, George Washington;
Sc.D. (Hon.), 1937, Monmouth College
- MARTS, MARION ERNEST, 1946 (1955)..... *Associate Professor of Geography*
B.A., 1937, M.A., 1944, Washington; Ph.D., 1950, Northwestern
- MURPHEY, WILLIAM RHOADS, III, 1952..... *Assistant 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
- 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*
B.S., 1929, M.S., 1932, *of the Department of Geology*
Ph.D., 1935, Washington

FULLER, RICHARD *Research Professor of Geology*
 B.S., 1924, Ph.D., 1930, Washington
 GOODSPEED, GEORGE EDWARD, 1919 (1934) *Professor 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 *Assistant Professor of Geology*
 A.B., 1943, Oberlin College; M.A., 1948, Ph.D., 1952, California
 MISCH, PETER HANS, 1947 (1950) *Professor of Geology*
 D.Sc., 1932, Goettingen (Germany)
 NEUMANN, FRANK, 1953 *Seismologist and Research Geologist*
 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

BUCK, GEORGE CRAWFORD, 1950 (1954) *Lecturer in German*
 B.A., 1942, Amherst; M.A., 1948, Ph.D., 1954, Yale
 ECKELMAN, ERNEST OTTO, 1911 (1947) *Professor Emeritus of Germanic*
 B.A., 1897, Northwestern; B.L., 1898, *Literature; Librarian in Germanics*
 Wisconsin; Ph.D., 1906, Heidelberg (Germany)
 KAHN, ROBERT LUDWIG, 1948 (1955) *Assistant Professor of German*
 B.A., 1944, M.A., 1945, Dalhousie (Nova Scotia); Ph.D., 1950, Toronto
 LAUER, EDWARD HENRY, 1934 (1955) *Professor Emeritus of Germanic*
 A.B., 1906, A.M., 1909, *Languages and Literature; Dean Emeritus*
 Ph.D., 1916, Michigan *of the College of Arts and Sciences*
 MEISNET, FREDERICK WILLIAM, 1927 (1947) *Professor Emeritus of Germanic*
 B.S., 1893, Ph.D., 1905, Wisconsin *Literature; Graduate Examiner*
 MEYER, HERMAN CARL HENRY, 1934 (1942) *Associate Professor of Germanic*
 B.A., 1924, Capital; Ph.D., 1936, Chicago *Languages*
 REED, CARROLL EDWARD, 1946 (1952) *Associate Professor of Germanic*
 B.A., 1936, M.A., 1937, Washington; Ph.D., 1941, Brown *Languages*
 REY, WILLIAM HENRY, 1950 (1955) *Associate Professor of Germanic Literature*
 Ph.D., 1937, Frankfurt (Germany)
 SAUERLANDER, ANNEMARIE MARGARET, 1947 (1949) *Associate Professor*
 B.A., 1928, M.A., 1930, Buffalo; Ph.D., 1936, Cornell *of Germanic Literature*
 SCHERTEL, MAX, 1931 (1950) *Assistant Professor Emeritus of German;*
 B.Ed., 1909, Colorado State College *Consultant on Reading Examinations*
 of Education; B.A., 1923, M.A., 1928, *for Advanced Degrees*
 Ph.D., 1938, Washington
 SOMMERFELD, FRANZ RENE, 1947 (1952) *Acting Assistant Professor of Germanic*
 B.A., 1944, California; M.A., 1946, Columbia *Literature*
 VAIL, CURTIS C. D., 1939 *Professor of Germanic Languages and Literature;*
 A.B., 1924, Hamilton College; *Executive Officer of the Department of*
 M.A., 1929, Ph.D., 1936, Columbia *Germanic Languages and Literature*
 WESNER, ELENORA M., 1924 (1950) *Assistant Professor Emeritus*
 B.Ped., 1909, Colorado State Normal School; *of German; Undergraduate*
 A.B., 1915, Chicago; M.A., 1923, Northwestern *Examiner*
 WILKIE, RICHARD FRANCIS, JR., 1937 (1948) *Assistant Professor*
 B.A., 1934, M.A., 1936, Washington; *of Germanic Literature*
 Ph.D., 1953, California

DEPARTMENT OF HISTORY

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
 DOBIE, EDITH, 1926 (1952) *Professor 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
- HOLT, WILLIAM STULL, 1940..... *Professor of History*
 A.B., 1920, Cornell; Ph.D., 1926, Johns Hopkins
- KATZ, SOLOMON, 1936 (1950)..... *Professor of History; Executive Officer of the*
 A.B., 1930, Ph.D., 1933, Cornell *Department of History*
- LUCAS, HENRY STEPHEN, 1921 (1934)..... *Professor of History*
 A.B., 1913, Olivet College; A.M., 1915, Indiana; Ph.D., 1921, Michigan
- LYTLE, SCOTT HARRISON, 1949..... *Assistant Professor of History*
 A.B., 1940, Princeton; Ph.D., 1948, Cornell
- PRESSLY, THOMAS JAMES, 1949 (1954)..... *Associate Professor of History*
 A.B., 1940, A.M., 1941, Ph.D., 1950, Harvard
- ROBERTS, FREDERICK DAVID, 1952..... *Instructor in History*
 B.A., 1948, M.A., 1949, Washington; Ph.D., 1953, Yale
- SAVELLE, MAX, 1947..... *Professor of History*
 A.B., 1924, M.A., 1926, Ph.D., 1932, Columbia
- TREADGOLD, DONALD WARREN, 1949 (1955)..... *Associate Professor of History*
 B.A., 1943, Oregon; M.A., 1947, Harvard; D.Phil., 1950, Oxford (England)

SCHOOL OF HOME ECONOMICS

- BONNELL, MILDRED, 1947 (1951)..... *Acting Assistant Professor*
 B.A., 1927, Illinois; *of Home Economics; Assistant Director*
 M.A., 1942, Columbia *of the University Dining Halls*
- BROCKWAY, DORIS J., 1951..... *Associate Professor of Home Economics*
 B.A., 1926, Washington State College; M.A., 1939, Washington
- DRESSLAR, MARTHA ESTELLA, 1918 (1955)..... *Associate Professor Emeritus*
 A.B., 1913, Southern California; *of Home Economics*
 B.S., 1917, Washington; M.S., 1918, Columbia
- HOSMER, MARGARET GEORGE, 1948 (1950)..... *Lecturer in Home Economics*
 B.S., 1918, North Carolina
- HULTGREN, INA VIRGINIA, 1949 (1954)..... *Acting Assistant Professor*
 B.A., 1944, M.A., 1949, Washington *of Home Economics*
- JOHNSON, MARY LOUISE, 1945 (1955)..... *Associate Professor of Home Economics*
 B.A., 1940, Hardin-Simmons; M.S., 1942, Wisconsin; D.Sc., 1954, Harvard
- MCADAMS, LAURA ELIZABETH, 1941 (1945)..... *Associate Professor*
 B.S., 1923, M.S., 1932, Kansas State College *of Home Economics*
- MORRISON, MARY ALICE, 1952..... *Acting Assistant Professor of Home Economics*
 B.S., 1949, Alberta; M.S., 1951, Washington State College
- PARKS, DORIS HAZEL, 1947..... *Instructor in Home Economics*
 B.S., 1940, Illinois; M.B.A., 1948, Northwestern;
 C.P.A., 1947, state of Illinois
- PAYNE, BLANCHE, 1927 (1942)..... *Professor of Home Economics*
 B.S., 1916, Kansas State Teachers College; M.A., 1924, Columbia
- ROSE, THELMA SOULE, 1946 (1952)..... *Assistant Professor*
 B.S., 1940, M.S., 1951, Washington *of Home Economics*
- ROWNTREE, JENNIE IRENE, 1925 (1932)..... *Professor of Home Economics;*
 B.S., 1918, Wisconsin; *Director of the School of Home Economics*
 M.S., 1925, Chicago; Ph.D., 1929, Iowa
- SHIGAYA, MABEL KYO, 1953..... *Acting Instructor in Home Economics*
 B.A., 1951, Washington
- SMITH, HAZEL MARTHA, 1944 (1948)..... *Acting Instructor in Home Economics*
 B.S., 1927, Oregon State College
- TERRELL, MARGARET ELMA, 1928 (1944)..... *Professor of Home Economics;*
 B.A., 1923, Penn College, Iowa; *Director of University Food Service*
 M.A., 1927, Chicago

TURNBULL, FLORENCE, 1952 *Assistant Professor of Home Economics*
 B.S., 1943, Manitoba; M.S., 1945, Minnesota
 WYBOURN, MARJORY, 1948 (1952) *Assistant Professor of Home Economics*
 B.S., 1944, Washington; M.A., 1948, Columbia

DEPARTMENT OF MATHEMATICS

ALLENDORFER, CARL BARNETT, 1951 *Professor of Mathematics; Executive*
 B.S., 1932, Haverford College; *Officer of the Department of Mathematics*
 B.A., 1934, M.A., 1939, Oxford (England); Ph.D., 1937, Princeton
 ARSOVE, MAYNARD GOODWIN, 1951 (1953) *Assistant 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
 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;*
 LL.M., 1925, Ph.D., 1929, *Director of the Laboratory of*
 John Casimir (Lwow, Poland) *Statistical Research*
 BROWNELL, FRANK H., III, 1950 *Assistant Professor of Mathematics*
 B.A., 1943, M.S., 1947, Yale; Ph.D., 1949, Princeton
 CHAPMAN, DOUGLAS GEORGE, 1949 *Assistant Professor of Mathematics*
 B.A., 1938, B.A., 1939, Saskatchewan; M.A., 1940,
 Ph.D., 1949, California
 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 (1951) *Assistant Professor of Mathematics*
 A.B., 1941, California; M.S., 1943, Illinois Institute of Technology;
 Ph.D., 1948, California
 FORRESTER, HEBERT AMASA, 1954 *Instructor in Mathematics*
 B.S., 1950, California Institute of Technology;
 M.A., 1951, Ph.D., 1954, Princeton
 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
 JERBERT, ARTHUR RUDOLPH, 1921 (1937) *Associate Professor of Mathematics*
 B.S., 1916, M.S., 1923, Ph.D., 1928, Washington
 KINGSTON, JOHN MAURICE, 1940 (1946) *Assistant Professor of Mathematics*
 B.A., 1935, Western Ontario; M.A., 1936, Ph.D., 1939, Toronto
 KLEE, VICTOR L., 1953 (1954) *Associate Professor of Mathematics*
 B.A., 1945, Pomona College; Ph.D., 1949, Virginia
 LEIPNIK, ROY BERGH, 1950 *Assistant Professor of Mathematics*
 S.B., 1945, S.M., 1948, Chicago; Ph.D., 1950, California
 LIVINGSTON, ARTHUR E., 1953 (1955) *Assistant Professor of Mathematics*
 B.A., 1949, Fresno State College; M.A., 1950, Ph.D., 1952, Oregon
 MCFARLAN, LEE HORACE, 1927 (1946) *Professor of Mathematics*
 B.S., 1917, Kansas State Teachers College; A.M., 1921, Ph.D., 1924, Missouri
 MICHAEL, ERNEST ARTHUR, 1953 *Assistant Professor of Mathematics*
 B.A., 1947, Cornell; M.A., 1948, Harvard; Ph.D., 1951, Chicago
 PIERCE, RICHARD SCOTT, 1955 *Assistant Professor of Mathematics*
 B.S., 1950, Ph.D., 1952, California Institute of Technology
 TATE, ROBERT FLEMMING, 1953 (1955) *Assistant Professor of Mathematics*
 A.B., 1944, California; M.A., 1949, North Carolina; Ph.D., 1952, California
 VAUGHT, ROBERT LAWSON, 1954 *Instructor in Mathematics*
 A.B., 1945, Ph.D., 1954, California

- WALTER, JOHN HARRIS, 1954 *Instructor in Mathematics*
 B.S., 1951, California Institute of Technology;
 M.S., 1954, Ph.D., 1954, Michigan
- WINGER, ROY MARTIN, 1918 (1925) *Professor of Mathematics*
 A.B., 1906, Baker; Ph.D., 1912, Johns Hopkins
- 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 (1951) *Assistant Professor of Meteorology*
 B.S., 1935, Chicago; M.S., 1948, Ph.D., 1951, New York and *Climatology*
- BUETTNER, KONRAD J. K., 1953 *Acting Associate Professor of Meteorology*
 B.S., 1922, Gymnasium (Pforte, Germany); Dr.phil., 1926, and *Climatology*
 Goettingen (Germany); Dr.phil.habil., 1934, Kiel (Germany)
- CHURCH, PHIL EDWARDS, 1935 (1948) *Professor of Meteorology and*
 B.S., 1923, Chicago; M.A., 1932, *Climatology; Executive Officer of the*
 Ph.D., 1937, Clark *Department of Meteorology and Climatology*
- FLEAGLE, ROBERT GUTHRIE, 1948 (1951) *Associate Professor of Meteorology*
 A.B., 1940, Johns Hopkins; and *Climatology*
 M.S., 1944, Ph.D., 1949, New York
- REED, RICHARD JOHN, 1954 *Assistant Professor of Meteorology*
 B.S., 1945, California Institute of Technology;
 Sc.D., 1949, Massachusetts Institute of Technology

SCHOOL OF MUSIC

- BEALE, JAMES MACARTHUR, JR., 1948 *Assistant Professor of Music*
 B.A., 1945, Harvard; B.Mus., 1946, M.Mus., 1947, Yale
- BOSTWICK, IRENE NEILSON, 1930 (1942) *Assistant Professor of Music*
 B.Mus., 1922, M.A., 1950, Washington
- CHAPPLE, STANLEY, 1948 *Professor of Music; Director of the School of Music*
 D.Mus. (Hon.), 1947, Colby College
- EICHINGER, WALTER A., 1936 (1954) *Associate Professor of Music*
 B.Mus., 1932, M.Mus., 1933, Northwestern
- GEISSMAR, ELSE JOHANNA-MARIE, 1947 (1952) *Assistant Professor of Music*
 L.R.A.M., 1937, Royal Academy (London); M.Mus., 1944, Michigan
- HALL, HELEN MARIE, 1931 (1943) *Associate Professor of Music*
 B.Mus., 1925, Washington
- HARRIS, EDISON DAVIS, 1947 *Associate Professor of Music*
 B.S., 1942, New York
- HEINITZ, EVA MARIA, 1948 (1949) *Assistant Professor of Music*
- HOKANSON, RANDOLPH, 1949 *Assistant Professor of Music*
- IRVINE, DEMAR BUEL, 1937 (1947) *Associate 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)
- KANTNER, KATHRYNE KARLA, 1950 *Instructor in Music*
 B.A., 1938, Washington
- KINSCILLA, HAZEL GERTRUDE, 1942 (1947) *Professor of Music*
 B.Mus., 1916, B.F.A., 1928, B.A., 1931, Nebraska; M.A., 1934, Columbia;
 Ph.D., 1941, Washington; D.Mus. (Hon.), 1953, Nebraska
- KIRCHNER, GEORGE CASINO, 1919 (1952) *Associate Professor of Music*
 Graduate, 1911, Leipzig (Germany)
- LAWRENCE, CHARLES WILSON, 1926 (1934) *Associate Professor of Music*
 B.M., 1918, Oberlin College; M.A., 1930, Washington
- McKAY, GEORGE FREDERICK, 1927 (1943) *Professor of Music*
 B.Mus., 1923, Rochester

- 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..... *Associate Professor of Music*
 B.A., 1925, Macalaster College; M.A., 1928, Columbia
- 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 (1950)..... *Assistant Professor of Music*
 B.Mus., 1938, Oberlin Conservatory; Grad. Cert., 1939,
 Conservatory of Music (Prague)
- SORENSEN, ALICE J., 1949 (1952)..... *Associate Professor of Music*
 B.M., 1926, Kansas State Teachers College; M.A., 1930, Columbia
- TERRY, MIRIAM, 1930 (1950)..... *Associate Professor of Music*
 B.M., 1926, M.A., 1948, Washington
- VAN OGLE, LOUISE, 1915 (1947)..... *Professor Emeritus of Music;*
Examiner in Piano
- VERRALL, JOHN WEEDON, 1948 (1950)..... *Associate Professor of Music*
 B.Mus., 1929, Minneapolis College of Music; Cert. of Mus., 1932, Liszt
 Conservatory (Budapest); B.A., 1934, Minnesota
- 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
- WILSON, FLORENCE BERGH, 1929 (1947)..... *Associate Professor of Music*
 B.M., 1917, B.A., 1924, Washington; M.A., 1925, Columbia
- 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

- BARNES, CLIFFORD ADRIAN, 1947 (1955)..... *Professor of Oceanography*
 B.S., 1930, Ph.D., 1936, Washington
- FLEMING, RICHARD HOWELL, 1951..... *Professor of Oceanography;*
Executive Officer of the
 B.A., 1929, M.A., 1931, British Columbia;
 Ph.D., 1935, California *Department of Oceanography*
- FROLANDER, HERBERT FARLEY, 1952..... *Instructor in Oceanography*
 Ed.B., 1946, Rhode Island College of Education; Sc.M., 1950, Brown
- GOULD, HOWARD ROSS, 1953..... *Assistant Professor of Oceanography*
 B.A., 1943, Minnesota; Ph.D., 1953, Southern California
- PAQUETTE, ROBERT GEORGE, 1946 (1952)..... *Lecturer in Oceanography;*
 B.S., 1936, Ph.D., 1941, *Research Associate in Naval*
 Washington *Oceanography*
- RATTRAY, MAURICE, JR., 1950..... *Assistant Professor of Oceanography*
 B.S., 1940, M.S., 1947, Ph.D., 1951, California Institute of Technology
- THOMPSON, THOMAS GORDON, 1919 (1929)..... *Professor of Oceanography*
 A.B., 1914, Clark; M.S., 1915, Ph.D., 1918, Washington

DEPARTMENT OF PHILOSOPHY

- MELDEN, ABRAHAM IRVING, 1946 (1950)..... *Associate Professor of Philosophy*
 A.B., 1931, California, Los Angeles; A.M., 1932, Brown;
 Ph.D., 1938, California

MILLER, LEONARD GORDON, 1954 *Assistant Professor of Philosophy*
 B.A., 1948, British Columbia; M.A., 1950, Washington; Ph.D., 1954, Cornell
 MURPHY, ARTHUR EDWARD, 1953 *Professor of Philosophy; Executive*
 B.A., 1923, Ph.D., 1925, California *Officer of the Department of Philosophy*
 RADER, MELVIN MILLER, 1930 (1948) *Professor of Philosophy*
 A.B., 1925, M.A., 1927, Ph.D., 1929, Washington
 SMULLYAN, ARTHUR FRANCIS, 1946 (1950) *Associate Professor of Philosophy*
 A.B., 1937, City College of New York; M.A., 1940, Ph.D., 1941, Harvard

DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

BUCKLEY, ROBERT WILLIAM, 1942 (1954) *Acting Assistant Professor*
 B.A., 1950, Washington *of Physical Education*
 CHERBERG, JOHN ANDREW, 1946 (1953) *Acting Instructor in Physical*
 B.A., 1933, Washington *Education; Head Football Coach*
 CLARK, EARL FRANKLIN, 1933 (1951) *Acting Instructor in Physical Education*
 CUTLER, RUSSELL KELSEY, 1946 (1948) *Associate Professor of Physical*
 B.Ed., 1930, California, Los Angeles; *Education; Executive Officer of the*
 M.S., 1934, Oregon *Department of Physical Education for Men*
 DONHAM, ROBERT EUGENE, 1954 *Acting Instructor in Physical Education*
 B.S., 1950, Ohio State; M.S., 1953, Washington
 DYE, WILLIAM HENRY HARRISON, 1950 (1951) *Acting Instructor in*
 B.S., 1937, Ohio State *Physical Education; Head Basketball Coach*
 HUGHES, ERIC LESTER, 1951 *Acting Instructor in Physical Education*
 B.S., 1947, M.S., 1948, Illinois
 JEFFERSON, WILLIAM, JR., 1947 (1951) *Acting Instructor in Physical Education*
 KUNDE, NORMAN FREDERICK, 1931 (1949) *Associate Professor of Physical*
 B.S., 1928, M.S., 1932, Washington; D.Ed., 1946, New York *Education*
 MILLS, CASWELL ALBERT, 1942 (1950) *Assistant Professor of Physical Education*
 B.A., 1935, North Dakota State Teachers College; M.A., 1943, Washington
 PALMER, CHESTER LEROY, 1950 (1951) *Assistant Professor of Physical*
 B.S., 1942, Rice Institute; A.M., 1949, Ed.D., 1951, Columbia *Education*
 PEEK, CLIFFORD L., 1938 *Assistant Professor of Physical Education*
 B.S., 1929, Washington; M.A., 1931, Columbia
 REEVES, GEORGE SPENCER, 1935 (1948) *Associate Professor of Physical*
 B.S., 1933, Oregon State College; M.S., 1937, Oregon; *Education*
 M.P.H., 1952, California
 SMITH, PAUL, JR., 1949 (1952) *Instructor in Physical Education*
 B.S., 1948, Southern Illinois; M.S., 1951, Washington
 STEVENS, LEONARD WOODBURY, 1937 (1948) *Assistant Professor*
 B.S., 1933, M.S., 1941, Washington *of Physical Education*
 TORNEY, JOHN ALFRED, JR., 1930 (1948) *Associate Professor*
 B.S., 1928, Washington; M.A., 1930, Columbia *of Physical Education*
 ULBRICKSON, ALVIN MARTIN, 1927 (1951) *Acting Instructor*
 B.B.A., 1927, Washington *in Physical Education*

DEPARTMENT OF PHYSICAL EDUCATION FOR WOMEN

BROER, MARION RUTH, 1947 (1955) *Associate Professor of Physical Education*
 B.S., 1933, M.S., 1936, Wisconsin; Ph.D., 1954, New York
 DE VRIES, MARY AID, 1921 (1939) *Associate Professor of Physical Education*
 B.A., 1920, Wisconsin
 FERGUSON, EVELYN VIOLET, 1952 *Instructor in Physical Education*
 B.A., 1927, Washington
 FOX, KATHARINE SHIRLEY, 1945 (1948) *Assistant Professor of Physical Education*
 B.S., 1938, Washington; M.S., 1943, Oregon
 GUNN, ELIZABETH, 1946 *Assistant Professor of Physical Education;*
 B.S., 1921, Washington; M.D., 1927, Oregon *Physician, Hall Health Center*
 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*
 B.S., 1933, Oregon; M.S., 1938, Washington *of Physical Education*

ROLOFF, LOUISE L., 1954..... *Acting Assistant Professor*
 B.S., 1936, Colorado; M.A., 1942, New York; *of Physical Education*
 Ph.D., 1952, Iowa

RULIFSON, LEONE HELMICH, 1926 (1943)..... *Associate Professor*
 B.S., 1922, M.A., 1936, Washington *of Physical Education*

SPENCER, EMMA V., 1954..... *Lecturer in Physical Education*
 B.A., 1928, Florida State; M.A., 1932, Columbia

STALLINGS, IRMA CATHERINE, 1954..... *Instructor in Physical Education*
 B.S., 1952, Maryland; M.S., 1954, Wisconsin

WATERS, ELLEN HARRIET, 1946..... *Assistant Professor of Physical Education*
 B.S., 1927, Washington; M.A., 1940, Columbia; R.P.T., 1946, Stanford

WILSON, RUTH MARIAN, 1936 (1945)..... *Associate Professor of Physical Education;*
 B.S., 1931, Utah; *Executive Officer of the Department of*
 M.S., 1936, Wisconsin *Physical Education for Women*

DEPARTMENT OF PHYSICS

BLAIR, JOHN SANBORN, 1952 (1954)..... *Assistant Professor of Physics*
 B.S., 1943, Yale; M.S., 1949, Ph.D., 1951, Illinois

BODANSKY, DAVID, 1954..... *Assistant Professor of Physics*
 B.S., 1943, M.A., 1948, Ph.D., 1950, Harvard

BRACKEL, HENRY LOUIS, 1905 (1947)..... *Professor Emeritus of Physics;*
 B.A., 1902, Olivet College; *Major Adviser*
 M.A., 1905, Washington; Ph.D., 1912, Cornell

CLARK, KENNETH COURTRIGHT, 1948 (1955)..... *Associate Professor of Physics*
 B.A., 1940, Texas; M.A., 1941, Ph.D., 1947, Harvard

FARWELL, GEORGE WELLS, 1948 (1955)..... *Associate Professor of Physics*
 B.S., 1941, Harvard; Ph.D., 1948, Chicago

GEBALLE, RONALD, 1946 (1954)..... *Associate Professor of Physics*
 B.S., 1938, M.S., 1940, Ph.D., 1943, California

HALPERN, ISAAC, 1953..... *Assistant 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;*
 B.S., 1922, College of Wooster; *Director of the Applied*
 Ph.D., 1928, Yale *Physics Laboratory*

HENLEY, ERNEST M., 1954..... *Assistant Professor of Physics*
 B.E.E., 1944, City College of New York; Ph.D., 1951, California

HIGGS, PAUL MCCLELLAN, 1926 (1939)..... *Assistant Professor of Physics*
 B.S., 1919, Washington

JACOBSON, BORIS ABBOTT, 1948 (1955)..... *Associate 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

LORD, JERE J., 1952 (1954)..... *Assistant Professor of Physics*
 B.A., 1943, Reed College; Ph.D., 1950, Chicago

MANLEY, JOHN HENRY, 1951..... *Professor of Physics; Executive Officer of the*
 B.S., 1929, Illinois; Ph.D., 1934, Michigan *Department of Physics*

NEDDERMEYER, SETH HENRY, 1946 (1952)..... *Professor of Physics*
 B.A., 1929, Stanford; Ph.D., 1935, California Institute of Technology

PROCTOR, WARREN GEORGE, 1952 (1954)..... *Assistant Professor of Physics*
 B.S., 1942, California Institute of Technology; Ph.D., 1950, Stanford

SANDERMAN, LLEWELLYN ARTHUR, 1928 (1952)..... *Associate Professor of Physics*
 B.S., 1923, Linfield College; M.S., 1931, Ph.D., 1943, Washington

SCHMIDT, FRED HENRY, 1946 (1952)..... *Associate Professor of Physics*
 B.S.E., 1937, Michigan; M.A., 1940, Buffalo; Ph.D., 1945, California
 STREIB, JOHN FREDERICK, JR., 1947..... *Assistant 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

DEPARTMENT OF POLITICAL SCIENCE

BALLIS, WILLIAM BELCHER, 1948..... *Professor of Political Science*
 B.A., 1929, Stanford; Ph.D., 1936, Chicago
 BONE, HUGH ALVIN, 1948..... *Professor of Political Science*
 B.A., 1931, North Central College; M.A., 1935, Wisconsin;
 Ph.D., 1937, Northwestern
 BRADDICK, HENDERSON BAMPFIELD, 1952..... *Academic Counselor;*
 A.B., 1942, Washington; *Executive Secretary, Institute of*
 LL.B., 1949, Harvard *International Affairs*
 CAMPBELL, ERNEST HOWARD, 1946 (1949)..... *Assistant Professor*
 B.A., 1932, LL.B., 1935, M.A., 1936, *of Political Science; Assistant Director*
 Washington; M.A., 1942, *of the Bureau of Governmental*
 Ph.D., 1945, Harvard *Research and Services*
 COLE, KENNETH CAREY, 1924 (1936)..... *Professor of Political Science*
 B.Litt. in Law, 1924, Oxford *Executive Officer of the Department of*
 (England); Ph.D., 1930, Harvard *Political Science*
 GORE, WILLIAM JAY, 1951..... *Instructor in Political Science*
 B.A., 1948, Washington; M.S., 1950, D.P.A., 1952, Southern California
 GOTTFRIED, ALEX, 1950..... *Assistant 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
 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*
 B.Litt., 1914, A.M., 1915, California; *of the Institute of International Affairs*
 Ph.D., 1918, Columbia; LL.D., 1942, Southern California
 RILEY, WALTER LEE, 1946 (1951)..... *Acting Assistant Professor of Political*
 B.A., 1933, Adams State College; *Science; Assistant Dean of the College*
 M.A., 1935, Stanford *of Arts and Sciences*
 SHIPMAN, GEORGE ANDERSON, 1946..... *Professor of Political Science;*
 B.A., 1925, M.A., 1926, *Director of the Institute of Public Affairs*
 Wesleyan, Connecticut; Ph.D., 1931, Cornell
 STOEKE, HAROLD W., 1951..... *Professor of Political Science; Dean of*
 B.A., 1924, Marion College; M.A., 1925, Southern *the Graduate School*
 California; Ph.D., 1930, Johns Hopkins; LL.D. (Hon.), 1946, Maine
 WEBSTER, DONALD HOPKINS, 1939 (1948)..... *Professor of Political Science;*
 B.A., 1929, LL.B., *Director of the Bureau of Governmental*
 1931, Ph.D., 1933, Washington *Research and Services*

DEPARTMENT OF PSYCHOLOGY

AX, ALBERT F., 1951 (1952)..... *Instructor in Psychology in the Department of*
 B.S., 1940, Washington; *Psychiatry; Lecturer in Psychology*
 A.M., 1950, Ph.D., 1950, Harvard
 BIJOU, SIDNEY WILLIAM, 1948, (1951)..... *Professor of Psychology; Director of the*
 B.S., 1933, Florida; *Institute of Child Development*
 M.A., 1936, Columbia; Ph.D., 1941, Iowa

- CULBERT, SIDNEY SPENCE, 1947 (1950).....Assistant 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 (1934).....Professor of Psychology
B.A., 1917, M.A., 1920, Ph.D., 1923, Ohio State
- GUTHRIE, EDWIN RAY, 1914 (1928).....Professor of Psychology;
B.A., 1907, M.A., 1910, Nebraska; Dean Emeritus of the Graduate School
Ph.D., 1912, Pennsylvania; LL.D., 1946, Nebraska
- HEATHERS, LOUISE BUSSARD, 1945.....Assistant Professor of Psychology;
B.A., 1933, Washington; Senior Clinical Psychologist in
Ph.D., 1940, Yale the Counseling Center
- HERMANS, THOMAS GERALD, 1929 (1940).....Assistant Professor of Psychology;
B.S., 1923, M.A., 1927, Washington Chief Examiner, Bureau of Testing
- HORST, A. PAUL, 1947.....Professor of Psychology; Executive Director of Division
A.B., 1927, California; Ph.D., 1931, Chicago of Counseling and Testing
- HORTON, GEORGE PLANT, 1934 (1946).....Associate Professor of Psychology;
B.S., 1926, M.A., 1930, Executive Officer of the Department
Ph.D., 1932, Princeton of Correspondence Study
- KATCHER, ALLAN, 1951.....Assistant Professor of Psychology
B.S., 1946, Michigan; M.A., 1949, City College of New York;
Ph.D., 1951, California
- LOUCKS, ROGER BROWN, 1936 (1948).....Professor of Psychology;
B.S. in C.E., 1927, Executive Officer of the
Ph.D., 1930, Minnesota Department of Psychology
- MCKEEVER, BENJAMIN BUTLER, 1949.....Associate Professor of Psychology
A.B., 1930, M.A., 1931, Harvard; Ph.D., 1940, Iowa
- SMITH, MONCRIEFF HYNSON, JR., 1949 (1953).....Associate Professor of Psychology
A.B., 1940, M.A., 1941, Missouri; Ph.D., 1947, Stanford
- STROTHER, CHARLES RIDDELL, 1947.....Professor of Psychology;
B.A., 1929, M.A., 1932, Professor of Clinical Psychology
Washington; Ph.D., 1935, Iowa in the School of Medicine
- WILSON, WILLIAM RONALD, 1929.....Professor of Psychology
B.A., 1917, M.S., 1920, Ph.D., 1925, Washington
- WOODBURNE, LLOYD STUART, 1950.....Professor of Psychology; Dean of the College
A.B., 1929, M.A., 1930, Ph.D., 1932, Michigan of Arts and Sciences

PSYCHOLOGY—INSTITUTE OF CHILD DEVELOPMENT

- BIJOU, SIDNEY WILLIAM, 1948 (1951).....Professor of Psychology; Director of
B.S., 1933, Florida; the Institute of Child Development
M.A., 1936, Columbia; Ph.D., 1941, Iowa
- EVANS, ELEANOR, 1944 (1946).....Assistant Professor and Director of
B.S., 1934, Illinois; M.E., 1940, Winnetka the Nursery School
Teachers College
- HARRIS, FLORENCE R., 1950 (1951).....Head Teacher and Instructor
B.A., 1931, Washington in the Nursery School

DEPARTMENT OF ROMANCE LANGUAGES AND LITERATURE

- CARRILLO, FRANCISCO, 1947 (1953).....Instructor in Romance Languages
B.A., 1949, M.A., 1954, Washington and Literature
- CHANG-RODRIGUEZ, EUGENIO, 1951 (1952).....Acting Instructor in Romance
B.A., 1949, William Penn College, Iowa; Languages and Literature
M.A., 1950, Arizona
- 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
A.B., 1934, M.A., 1936, Rochester; Languages and Literature*
Ph.D., 1939, Johns Hopkins
- DAVID, JEAN FERDINAND, 1936..... *Assistant Professor of Romance Languages
Bacc., 1923, Collège Grandchamp (Versailles, France); and Literature*
A.B., 1929, M.A., 1932, Saskatchewan; Ph.D., 1936, Johns Hopkins
- GARCIA-PRADA, CARLOS, 1925 (1939)..... *Professor of Spanish
Ph.B., 1918, Colegio Del Rosario (Bogotá, Colombia); M.A., 1924,
Michigan; Ph.D., 1929, Universidad Nacional (Bogotá, Colombia)*
- GOGGIO, CHARLES, 1920 (1936)..... *Professor of Romance Languages
A.B., 1910, Harvard; A.M., 1914, Ph.D., 1919, Wisconsin*
- KELLER, ABRAHAM C., 1948 (1953)..... *Associate Professor of Romance
B.A., B.S., 1936, M.A., 1937, Ohio State; Languages and Literature*
Ph.D., 1946, California
- MARTIN, JOHN W., 1947 (1953)..... *Instructor in Romance Languages
B.A., 1949, Washington and Literature*
- NOSTRAND, HOWARD LEE, 1939..... *Professor of Romance Languages and
B.A., 1932, Amherst College; M.A., 1933, Literature; Executive Officer of
Harvard; Docteur, 1934, the Department of Romance
Université de Paris Languages and Literature*
- SIMPSON, LURLINE VIOLET, 1924 (1944)..... *Associate Professor of Romance
B.A., 1920, M.A., 1924, Ph.D., 1928, Washington Languages and Literature*
- VARGAS-BARON, ANIBAL, 1949..... *Associate Professor of Spanish
B.A., 1926, Asbury College; M.A., 1929, Ph.D., 1943, Washington*
- WEINER, SEYMOUR S., 1953 (1954)..... *Assistant Professor of Romance Languages
B.A., 1940, City College of New York; M.A., 1941, and Literature*
California; M.S. in L.S., Ph.D., 1952, Columbia
- WHITTLESEY, WALTER BELL, 1909 (1929)..... *Assistant Professor of
B.A., 1907, M.A., 1909, Washington Romance Languages*
- WILSON, CLOTILDE MARCONNIER, 1929 (1937)..... *Assistant Professor of
B.A., 1926, M.A., 1927, Ph.D., 1931, Washington Romance Languages*
- 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 (1948)..... *Associate Professor of Scandinavian
B.A., 1929, Ph.D., 1938, Languages; Executive Officer of the
Washington Department of Scandinavian Languages and Literature*
- JOHNSON, WALTER GILBERT, 1948 (1949)..... *Associate Professor of
B.A., 1927, Augsburg College; M.A., 1929, Scandinavian Languages*
Minnesota; Ph.D., 1935, Illinois

DEPARTMENT OF SOCIOLOGY

- BOWERMAN, CHARLES EMERT, 1946..... *Assistant Professor of Sociology
B.A., 1935, Denison; M.A., 1941, Ph.D., 1948, Chicago*
- CAMILLERI, SANTO FRANCIS, 1952..... *Instructor in Sociology
B.A., 1947, M.A., 1949, California, Los Angeles*
- COHEN, JOSEPH, 1932 (1941)..... *Assistant Professor of Sociology
B.A., 1925, M.A., 1927, Washington; Ph.D., 1935, Michigan*
- DAY, BARBARA RUTH, 1951 (1953)..... *Acting Instructor in Sociology
B.S., 1946, M.A., 1947, Washington State College*
- DODD, STUART CARTER, 1947..... *Professor of Sociology; Director of the
B.S., 1922, M.A., 1924, Washington Public Opinion Laboratory*
Ph.D., 1926, Princeton
- FARIS, ROBERT E. LEE, 1948..... *Professor of Sociology; Executive Officer
Ph.B., 1928, M.A., 1930, of the Department of Sociology*
Ph.D., 1931, Chicago

GIBBONS, DON CARY, 1952 (1954)..... *Acting Instructor in Sociology*
 B.A., 1951, M.A., 1953, Washington

GRAALFS, HEINZ JOHN, 1952..... *Acting Instructor in Sociology*
 B.A., 1947, San Francisco State College; M.A., 1951, Washington

HAYNER, NORMAN SYLVESTER, 1925 (1937)..... *Professor of Sociology*
 B.A., 1920, Washington; M.A., 1921, Ph.D., 1923, Chicago

HILL, RICHARD JOHNSON, 1953..... *Acting Instructor in Sociology*
 B.A., 1950, Rutgers; M.A., 1951, Stanford

KITSUSE, JOHN ITSURO, 1954..... *Acting Instructor in Sociology*
 B.S., 1946, Boston; M.A., 1952, California, Los Angeles

LARSEN, OTTO NYHOLM, 1949 (1954)..... *Acting Assistant Professor of Sociology*
 B.A., 1947, M.A., 1949, Washington

LUNDBERG, GEORGE ANDREW, 1945..... *Professor of Sociology*
 B.A., 1920, North Dakota; M.A., 1923, Wisconsin; Ph.D., 1925, Minnesota

MILLER, DELBERT CHARLES, 1947..... *Associate Professor of Sociology*
 B.S., 1934, M.A., 1937, Miami, Ohio; Ph.D., 1940, Minnesota

MILLS, DONALD LEON, 1955..... *Acting Instructor in Sociology*
 B.A., 1950, Idaho; M.A., 1952, Stanford

MIYAMOTO, SHOTARO FRANK, 1945..... *Assistant Professor of Sociology*
 B.A., 1936, M.A., 1938, Washington; Ph.D., 1950, Chicago

ORZACK, LOUIS H., 1954..... *Instructor in Sociology*
 B.S., 1943, City College of New York; M.A., 1948, Columbia;
 Ph.D., 1953, Indiana University

SCHMID, CALVIN FISHER, 1937 (1941)..... *Professor of Sociology; Director of the*
 B.A., 1925, Washington; *Office of Population Research*
 Ph.D., 1930, Pittsburgh

SCHRAG, CLARENCE CLYDE, 1944 (1949)..... *Assistant Professor of Sociology*
 B.A., 1939, Washington State College; M.A., 1945, Ph.D., 1953, Washington

VAN ARSDOL, MAURICE D., JR., 1953 (1954)..... *Acting Instructor in Sociology*
 B.A., 1949, M.A., 1952, Washington

WAGER, LEONARD WESLEY, 1954..... *Instructor in Sociology*
 B.A., 1949, M.A., 1952, Washington

WOOLSTON, HOWARD BROWN, 1919 (1947)..... *Professor Emeritus of Sociology;*
 A.B., 1898, Yale; S.T.B., 1901, Chicago; *Research Consultant*
 M.A., 1902, Harvard; Ph.D., 1909, Columbia

DEPARTMENT OF SPEECH

BASKERVILLE, BARNET, 1948 (1954)..... *Associate Professor of Speech*
 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

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 (1955)..... *Assistant Professor of Speech*
 B.A., 1928, Wisconsin; M.A., 1947, Northwestern; Ph.D., 1953, Illinois

HANLEY, CLAIR NORTON, 1952..... *Assistant Professor of Speech*
 B.A., 1947, M.A., 1950, Ph.D., 1952, Iowa

HOLLIDAY, AUDREY ROSE, 1950..... *Lecturer in Speech*
 B.A., 1945, Oregon; M.S., 1950, Washington

NELSON, OLIVER WENDELL, 1945 (1952)..... *Associate Professor of Speech*
 B.A., 1933, M.A., 1939, Ph.D., 1949, Washington

NILSEN, THOMAS ROBERT, 1950 (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;*
 B.L., 1901, Drury College; G.C.D., 1905, Boston *Research Consultant*
 School of Expression; M.A., 1925, Lawrence College, Wisconsin
 PALMER, JOHN MILTON, 1952 (1954)..... *Assistant Professor of Speech*
 B.A., 1946, M.A., 1950, Ph.D., 1952, Michigan
 PENCE, ORVILLE LEON, 1941 (1954)..... *Associate Professor of Speech*
 B.A., 1935, M.A., 1939, Washington; Ph.D., 1946, Iowa
 RAHSKOPF, HORACE G., 1928 (1944)..... *Professor of Speech; Executive Officer*
 B.A., 1920, Willamette; M.A., 1927, *of the Department of Speech*
 Ph.D., 1935, Iowa
 RICHARDS, GALE LEE, 1952..... *Assistant Professor of Speech*
 B.A., 1940, Akron; M.A., 1942, Ph.D., 1950, Iowa
 SHEPHERD, JOHN RALPH, 1954..... *Assistant Professor of Speech*
 B.A., 1946, M.A., 1947, Stanford; Ph.D., 1952, Southern California
 SKALBECK, GRETCHEN, 1954..... *Acting Instructor in Speech*
 B.S., 1952, Minnesota
 TIFFANY, WILLIAM ROBERT, 1951..... *Assistant Professor of Speech*
 B.A., 1946, M.A., 1947, Washington; Ph.D., 1951, Iowa
 WITKIN, BELLE RUTH, 1950 (1951)..... *Instructor in Speech*
 B.A., 1939, College of Puget Sound; M.A., 1951, Washington

DEPARTMENT OF ZOOLOGY

EDMONDSON, WALLIS THOMAS, 1949 (1951)..... *Associate Professor of Zoology*
 B.S., 1938, Ph.D., 1942, Yale
 FERNALD, ROBERT LESLIE, 1946 (1947)..... *Assistant Professor of Zoology*
 A.B., 1937, Monmouth College; Ph.D., 1941, California
 HATCH, MELVILLE HARRISON, 1927 (1941)..... *Professor of Zoology*
 B.A., 1919, M.A., 1921, Ph.D., 1925, Michigan
 HSU, WELLINGTON SIANG, 1944 (1950)..... *Associate Professor of Zoology*
 B.S., 1922, Illinois; M.S., 1924, D.Sc., 1928, Harvard
 ILLG, PAUL LOUIS, 1952 (1954)..... *Associate Professor of Zoology*
 A.B., 1936, M.A., 1941, California; Ph.D., 1952, George Washington
 KINCAID, TREVOR, 1899 (1947)..... *Professor Emeritus of Zoology; Research*
 B.S., 1899, Washington; D.Sc., 1940, College of Puget Sound *Consultant*
 MARTIN, ARTHUR WESLEY, JR., 1937 (1950)..... *Professor of Physiology; Executive*
 B.S., 1931, College of Puget Sound; *Officer of the Department of Zoology*
 Ph.D., 1936, Stanford
 OSTERUD, KENNETH LELAND, 1949..... *Assistant Professor of Zoology*
 B.A., 1935, Randolph-Macon College; Ph.D., 1941, New York
 PASSANO, LEONARD MAGRUDER, III, 1953 (1955)..... *Assistant Professor of Zoology*
 A.B., 1948, Harvard; Ph.D., 1952, Yale
 RAY, DIXY LEE, 1945 (1947)..... *Assistant Professor of Zoology*
 B.A., 1937, M.A., 1938, Mills College; Ph.D., 1945, Stanford
 SNYDER, RICHARD CRAINE, 1949 (1950)..... *Assistant Professor of Zoology*
 A.B., 1940, Bucknell; A.M., 1941, Ph.D., 1948, Cornell
 SVIHLA, ARTHUR, 1938 (1943)..... *Professor of Zoology*
 A.B., 1925, Illinois; M.S., 1928, Ph.D., 1931, Michigan
 WHITELEY, ARTHUR HENRY, 1947 (1952)..... *Associate 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 Food Technology, Medical Technology, Microbiology, and Public Health and Preventive Medicine)

BENNETT, BLAIR MILLER, 1950 (1953)..... *Assistant Professor of Public Health*
 A.B., 1938, Georgetown; M.A., 1940, Columbia; *and Preventive Medicine*
 Ph.D., 1950, California

DOUGLAS, HOWARD CLARK, 1941 (1950)..... *Associate 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

DUNN, WALTER LEE, 1954..... *Assistant Professor of Public Health and Preventive*
B.S. in C.E., 1949, Montana State; *Medicine; Campus Sanitary Engineer*
M.P.H., 1953, California

ELLERBROOK, LESTER D., 1946 (1949)..... *Associate Professor of Pathology*
A.B., 1932, Hope College; Ph.D., 1936, New York

ERIKSEN, NILS, 1952..... *Assistant Professor of Pathology*
B.S., 1939, Ph.D., 1944, Washington

EVANS, CHARLES ALBERT, 1946..... *Professor of Microbiology; Executive Officer*
B.S., 1935, B.M., 1936, M.D., 1937, *of the Department of Microbiology*
Ph.D., 1942, Minnesota

GROMAN, NEAL BENJAMIN, 1950 (1954)..... *Assistant Professor of Microbiology*
S.B., 1947, Ph.D., 1950, Chicago

HATLEN, JACK BERNARD, 1952..... *Lecturer in Public Health and Preventive*
B.S., 1949, Washington *Medicine; Campus Sanitarian*

HENRY, BERNARD STAUFFER, 1931 (1941)..... *Professor of Microbiology*
B.S., 1925, M.A., 1926, Ph.D., 1931, California

KLEIN, HAROLD PAUL (1954)..... *Assistant Professor of Microbiology*
B.A., 1942, Brooklyn College; M.D., 1949, California

LIPPINCOTT, STUART W., 1946..... *Professor of Pathology; Executive Officer of*
A.B., 1929, Clark; M.D., C.M., 1935, McGill *the Department of Pathology*

MILLS, CASWELL ALBERT, 1942 (1950)..... *Assistant Professor of Physical*
B.A., 1935, North Dakota State Teachers *Education and Public Health*
College; M.A., 1943, Washington *and Preventive Medicine*

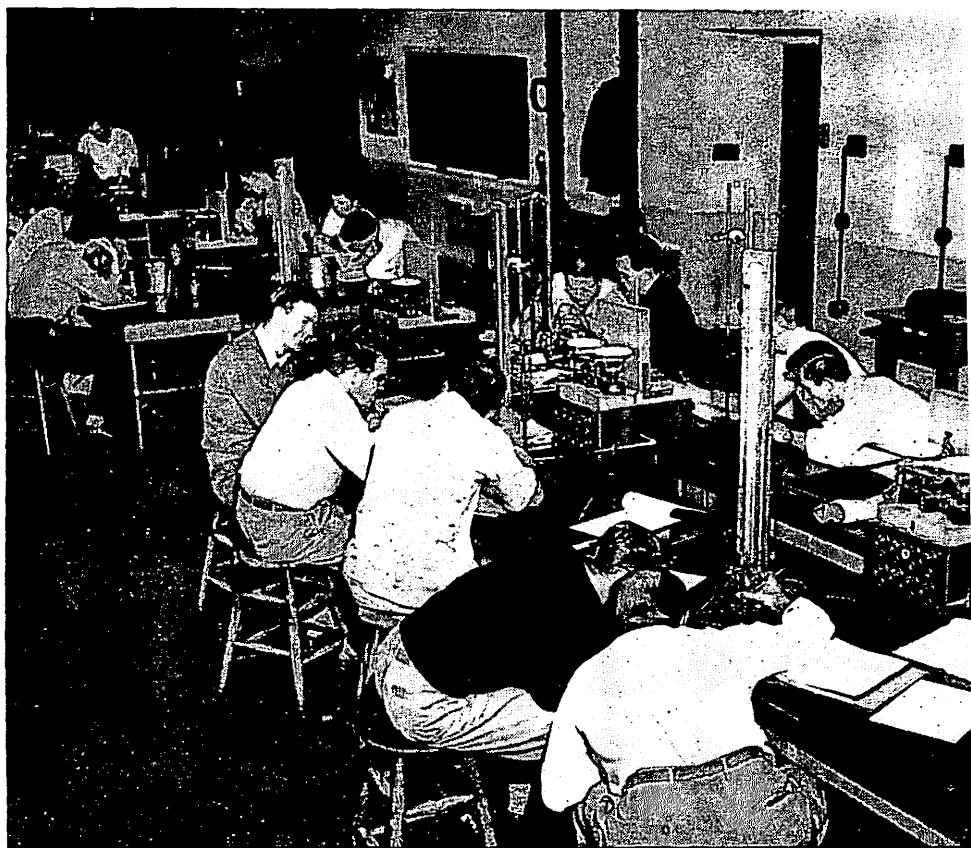
ORDAL, ERLING J., 1937 (1943)..... *Associate Professor of Microbiology*
A.B., 1927, Luther College; Ph.D., 1936, Minnesota

REIFF, ROBERT H., 1952..... *Instructor in Pathology*
A.B., 1939, Whitman College; Ph.D., 1944, Minnesota; M.D., 1948, Tennessee

VAVRA, CATHERINE ELIZABETH, 1950..... *Assistant Professor of Public Health and*
R.N., 1930, St. Mary's Hospital, Minneapolis; *Preventive Medicine*
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

ZAHLER, STANLEY A., 1954..... *Instructor in Microbiology*
A.B., 1948, New York; S.M., 1949, Ph.D., 1952, Chicago



GENERAL INFORMATION

GENERAL INFORMATION

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 literatures, science, and arts, (2) a department of law, (3) a department of medicine, and (4) a military department. As the University grew, the department of literatures, science, and arts developed four distinct programs: classical, scientific, normal, and commercial.

In 1898, the College of Liberal Arts was organized, and by 1909 it offered courses of study in the classics, domestic economy, journalism, philosophy, science, mathematics, and physics. In 1913, the College of Liberal Arts became the College of Arts and Sciences and added preprofessional programs in law and medicine to its curricula.

During the next few years, as a result of the University's rapid growth, several departments developed into separate schools and colleges, but in 1931 a College of Arts and Sciences was established to embrace the fields of liberal arts, science, business administration, fine arts, education, and journalism. This rather unsatisfactory administrative unit was soon dissolved and University College, since renamed the College of Arts and Sciences, was formed to include all departments that provided a broad liberal education in the arts and sciences.

The College of Arts and Sciences is now the largest and most diversified of all the divisions of the University. Its central objective is to provide broad intellectual experience in the fields of the humanities, the physical sciences, and the social sciences. Its program, expanded over the years to meet the needs of society, is directed toward giving its students an opportunity to prepare themselves for useful and satisfying lives in whatever careers they choose.

The demands on the College are diverse and changing and its organization reflects these conditions. In outline, the College of Arts and Sciences includes:

1. The semiprofessional schools within the College (Architecture, Art, Communications, Drama, Fisheries, Home Economics, Music, and Physical Education), which combine professional training with general college work.
2. The subject-matter departments (such as History and Physics) offering courses and curricula in liberal arts and pure science.
3. The preprofessional curricula (in dental hygiene, dentistry, law, librarianship,

medicine, and social work), which prepare students for entrance to professional schools.

4. Special programs (including General Education, General Studies, and Pre-major).

5. Programs offered in conjunction with the School of Medicine (in food technology, medical technology, microbiology, and public health and preventive medicine).

There is, in addition, the Far Eastern and Russian Institute, which offers courses for students in the College.

This complex of academic units and interdepartmental relationships, providing both strength and flexibility, is able to satisfy the student's need for specialized training or for general experience. The College may offer a total experience within itself or it may provide the base from which the student moves into his chosen professional or advanced work.

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 Henry Suzzallo Library, center of the University library system, maintains special collections for architecture, art, chemistry, drama, English and speech, Far Eastern, fisheries and oceanography, the Institute of Labor Economics, journalism, mathematics and physics, music, philosophy, and political science.

The Washington State Museum, administered by the Department of Anthropology, contains natural history and anthropological collections of the Pacific Northwest, Oceania, and the Far East. Three University theatres, 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 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. The Department of Political Science has three bureaus conducting research in government and international relations. These agencies are the Bureau of Governmental Research and Services, the Institute of Public Affairs, and the Institute of International Affairs.

The Washington Public Opinion Laboratory 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 Friday Harbor Laboratories, 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. A field training course in geography is also provided.

Two special activities in fisheries are of importance to the region. The Applied Fisheries Laboratory, associated with the School of Fisheries, is a national center for research in aquatic radiobiology, and the Fisheries Research Institute is working on a long-range survey of Alaska salmon resources.

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

The University Board of Admissions gives first preference to applications from legal residents of Washington and Alaska and to out-of-state applicants who are sons and daughters of University of Washington alumni. The College of Arts and Sciences, like most colleges in the University, admits qualified out-of-state students and encourages those with good scholarship records to apply.

Applications for admission must be submitted by prescribed deadlines and must be substantiated by certain credentials and reports submitted in accordance with University rules and practices. It is important that the student's application be submitted by the proper time, for the University can accept no responsibility for applicants who come to the campus before their credentials have been forwarded or before they have been notified of acceptance.

Correspondence regarding requirements for admission to and graduation from any college or school of the University should be addressed to the Registrar.

It is the student's responsibility to make sure that complete credentials covering all his previous secondary and college education are submitted to the University. To be official they must be forwarded by the principal or registrar of the last school 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.

For admission in Autumn Quarter, the required credentials should be forwarded after high school graduation and before July 15. *The last day for new students to submit applications with complete credentials for admission in Autumn Quarter is August 26, 1955, August 31, 1956, or August 30, 1957.* For admission in the other quarters, applications and credentials should be submitted at least thirty days before the opening of the quarter. This applies to *all* new students seeking admission as graduates or undergraduates. *It is imperative that students observe this deadline in order to insure prompt attention to credentials and replies to correspondence.*

Before notice of admission is given, a medical questionnaire, on a form supplied by the Registrar, is issued to new out-of-state students. This should be completed by a doctor of medicine and returned by him to the Registrar's Office.

ADMISSION FROM ACCREDITED HIGH SCHOOLS

Graduates who earn diplomas of graduation from accredited high schools and who meet the University unit and scholarship requirements for entrance are eligible for admission as freshmen with regular standing.

No out-of-state student will be accepted for admission who would not be acceptable to the university of his own state (see Scholarship Requirement, page 38).

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

UNIT REQUIREMENT. The University unit¹ requirement is 16 high school units (or 15 units exclusive of activity credit in physical education, debate, etc.) with

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

grades certifiable for university entrance. The 16 units should include at least 9 units in academic subjects (a unit equals 2 semester credits, or one full year of high school study). No unit which received lower than the lowest passing grade as defined by the high school itself may be included in the required total. Requirements for admission to the College of Arts and Sciences are as follows:

English	3 units	Social science	1 unit
One foreign language	2 units	One laboratory science	1 unit
Mathematics (elementary algebra and plane geometry)*	2 units	Electives (minimum)	7 units

*Both algebra and geometry are required for architecture and science majors, but nonscience majors may present 2 units of algebra if preferred.

Less than 1 unit in a foreign language will not be counted.

Some schools and departments in the College maintain additional unit requirements for students who expect to enter their major curricula. These requirements are described in the announcements of the departments (see pages 53-205).

SUBJECT MATTER DEFICIENCIES. Applicants with diplomas of graduation from accredited high schools who meet the scholarship requirement and have at least 3 units in English and 6 in other academic subjects, including either 1 unit of algebra or 1 unit of plane geometry, may petition the Dean of the College for permission to enter. (Typical academic subjects are English, foreign languages, mathematics, science, history, and economics. Some nonacademic courses are those in commerce, manual training, home economics, and band). Students who are permitted to enter with provisional standing must register each quarter for make-up courses in the subject they lack until the entrance deficiency is removed. Those deficient in both first-year algebra and plane geometry are seldom admitted on this basis. Provisional standing continues until the student has satisfied the entrance requirements of the college in which he is enrolled. *No application for a degree may be accepted until all entrance deficiencies have been removed.* Deficiencies may be made up with university credit if college courses covering the high school material are available; 10 college credits are considered the equivalent of 1 high school unit, except that for foreign languages 15 quarter credits of college work are considered the equivalent of 2 units (4 semesters) of high school credit. No student may receive credit for repetition of work at the same or at a more elementary level, if credit has been granted in the earlier course. This rule applies whether the earlier course was taken in high school or in college, and whether, in the latter case, course numbers are duplicated or not. University credits earned by removing a deficiency cannot be used to satisfy college group requirements. First-year algebra and plane geometry are offered by the Division of Adult Education and Extension Services (fee \$18.00 per course) and do not carry University credit.

SCHOLARSHIP REQUIREMENT. The University scholarship requirement is a high school grade point of 2.00 (equivalent to a C average on the Washington State grading system). Students from high schools in other states which use different grading systems will find their scholarship averages adjusted to the Washington four-point system (see Admission from Accredited High Schools, second paragraph, page 37).

Graduates of accredited high schools in Washington and Alaska who cannot meet the 2.00 scholarship standard may petition the Board of Admissions for permission to enter on probation if they meet all unit requirements of the University and the College. A petition for admission on probation must be accompanied by evidence that the applicant is able to do better work than is indicated by his high school record.

The student who is admitted on probation may continue his attendance at the University at the discretion of the dean of his college but may not (1) be pledged

to or initiated into a fraternity or sorority, or engage in those other student activities in which his right to participate is restricted by the regulations of the Committee on Student Welfare; (2) engage in those athletic activities in which his right to participate is restricted by the regulations of the University Athletic Committee. He will be removed from probation when he has earned a minimum of 12 credits exclusive of those in lower-division physical education activity and Army, Air Force, and Navy ROTC courses with a 2.00 grade average, except that if he carries less than 12 credits in one quarter, he may not be removed from probation unless he has earned at least a 2.00 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 then is subject to the regular scholarship rules.

ADMISSION BY EXAMINATION

Graduates of nonaccredited high schools in Washington and Alaska may petition the Board of Admissions for permission to enter if they meet other entrance requirements and are recommended by their high school principals. The Board will require these students to take special entrance examinations.

Prospective students who are not high school graduates must pass College Entrance Board Examinations and meet without deficiency requirements for admission to the University and the College. Those who plan to take entrance examinations should write for information to the Educational Testing Service, Box 592, Princeton, New Jersey, or Box 9896, Los Feliz Station, Los Angeles 27, California.

ADMISSION WITH ADVANCED UNDERGRADUATE STANDING

Applicants are admitted to the University and to the College of Arts and Sciences by transfer from accredited colleges, universities, and junior colleges under the following conditions:

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

2. Applicants who have completed a year or more of college work must have a 2.00 (C) grade-point average in their entire college records and in the last term. Those with less than a year of college work must have a 2.00 (C) average in both their college and high school records.

3. Complete transcripts and letters of honorable dismissal must be sent directly to the University Registrar by the registrar of the former school. Failure to supply complete college credentials will be considered a serious breach of honor and may result in permanent dismissal from the University.

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

5. A maximum of 45 credits earned in extension and correspondence courses at other institutions may be transferred, but none of these credits can apply toward the work of the senior year. Extension and correspondence credits from schools that are members of the National University Extension Association are accepted without examination; credits from schools that are not members are accepted only after examination. No correspondence credit is accepted in the combined arts-law program (see Prelaw, page 132).

6. The maximum number of credits obtainable by acceptance of Armed Forces training school 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.

7. Credits earned in extension 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 correspondence credits is acceptable; the 90 credits may include the 45 extension or correspondence credits allowable from other institutions or may consist entirely of courses taken in this University's Division of Adult Education. All credits earned by advanced-credit examination and all acceptable Armed Forces training school credits must be counted in the 90-credit maximum. Up to 10 extension or correspondence credits from this University can apply toward the work of the senior year.

8. The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted. Definite advanced standing is not determined until 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. No credit will be allowed in the senior year.

For work done 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.

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

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Students educated entirely or partially in foreign countries must meet the same general requirements as those educated in American schools and must demonstrate a satisfactory command of the English language. The official record of Canadian students is the matriculation certificate or university admission certificate of their province. A student who has graduated from a school system that provides less than twelve years of instruction may be required to take additional high school work. Students who have been in university attendance must have official transcripts forwarded (see Admission, page 37).

ADMISSION OF SPECIAL STUDENTS AND AUDITORS

Persons twenty-one or over who are legal residents of Washington or Alaska and are not eligible for admission as regular students may apply to the Board of Admissions for 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 requirements for admission to the College, special students may change their status to that of regular students and may receive degrees.

Persons twenty-one or over may register as auditors in nonlaboratory courses or the lecture parts 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. Students who have been dropped for low scholarship or new applicants may not register as auditors until they have been reinstated or accepted in some college of the University.

ADMISSION WITH GRADUATE STANDING

Prospective graduate students must apply for admission to the Graduate School. Entrance requirements are described in the *Graduate School Bulletin*, which may be obtained from the Registrar.

WORLD WAR II AND KOREAN VETERANS**ADMISSION**

The University welcomes veterans under the G.I. Bill, the Vocational Rehabilitation Act, and the Korean Bill, provided they can meet the University of Washington entrance requirements.

ENTITLEMENT TO EDUCATIONAL BENEFITS

Veterans who are accepted for entrance to the College of Arts and Sciences and who expect to study under the provisions of Public Laws 16, 894, or 346 should apply to a Veterans Administration regional office for a Certificate of Eligibility at least one month prior to registration. This certificate should be presented at the Veterans Division, 1B Administration Building, the day of registration. Those who do not have this certificate at the time they register must pay all charges; they will receive refunds when authorization from the Veterans Administration is established.

Korean veterans entering under the provisions of Public Law 550 should apply to a Veterans Administration regional office for a Certificate for Education and Training at least one month prior to registration. This certificate should be presented at the Veterans Division, 1B Administration Building, the day of registration or during the first week of instruction. Under this law, students receive an educational allowance and pay their own tuition and fees. Korean veterans should be prepared to meet all their own expenses as well as the cost of tuition, fees, and supplies for at least two months. Educational allowances are not paid until a full month's attendance has been established.

REGISTRATION

All students must have definite registration appointments each quarter. New students are given appointments when they are notified of admission and 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) may obtain registration appointments by writing or telephoning the Registrar's Office at the time specified in the Calendar (see page 4). Students in residence may obtain appointments at the time announced in the Calendar.

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 Dean's consent.

REGULAR STUDENTS

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

ADVISING

After notification of admission, and before registration, new students should visit or write to the College for help in planning their course programs. The College provides a central advisory office, in 121 Miller Hall, which is designed especially to advise premajor students, those in the General Education program, and those taking preprofessional curricula for dental hygiene, dentistry, education, law, librarianship, and medicine.

The academic advisers, under Walter L. Riley, Assistant Dean, maintain regular conference periods throughout the quarter, and all members of the faculty are available for consultation. Students are urged to take full advantage of these opportunities.

APTITUDE TESTS

New students of freshman standing (including transfer students with less than 45 quarter credits exclusive of credits in physical education activity and Army, Air Force, and Navy ROTC subjects) will take college aptitude tests at a time to be announced each quarter.

The aptitude tests consist of a battery of several tests selected on the basis of their proven value for the prediction of grades most likely to be earned by each student. Thus, the results of testing may be used in advisement of the student and are used as an aid in assigning students to appropriate sections in English composition and other subjects. Little can be gained by preliminary study for these tests. Sample copies are not available. Special, exchange, and blind students and auditors will be exempted. Also, foreign students who have markedly inadequate previous training in the use of English may be exempted.

MATHEMATICS PLACEMENT AND EXEMPTION TESTS

Students who have taken third-semester algebra in high school and who plan to take Mathematics 104 (Trigonometry) and/or Mathematics 105 (College Algebra) are required to take a placement test before they are permitted to register for these University courses. Students who have taken trigonometry and/or college algebra in high school and whose University courses of study require these subjects may obtain exemption from Mathematics 104 and/or 105 by taking an exemption test. Directions for taking these tests are included in *Registration Information for New Students* which is enclosed with the Notification of Admission blank. Students are advised to review their high school work before taking these tests.

MEDICAL EXAMINATIONS

All new students, and all former students who have not attended the University within the preceding calendar year, must take a medical examination, including a chest X ray. For out-of-state students, this examination is in addition to the medical questionnaire required of them as part of the application for admission. An annual chest X ray is required of all students.

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 Announcement*.

Tuition

Resident students, per quarter \$25.00

A resident student is one who has been domiciled in Washington or Alaska for at least a year immediately before registration. The domicile of a minor is that of his parents.

Nonresident students, per quarter 75.00

Prospective students are classified as nonresidents when their credentials come from schools outside Washington and Alaska. If they believe they are residents, they may petition the Nonresident Tuition Office for a change of classification.

Auditors, per quarter 12.00

Veterans of World Wars I and 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, University Comptroller's Office. Nonresident students who meet one of these requirements pay one-half the nonresident tuition.

This exemption is not granted to Summer Quarter students.

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), per year	5.00
Good for all athletic events in the school year; must be validated each quarter when fees are paid.	

Military Uniform Deposit, per year 25.00

Paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. See page 212 for limitation on refund to Army ROTC students.

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 for men students taking physical education activities.

Grade Sheet Fee .25

One grade sheet is furnished each quarter without charge; the fee is charged for each additional copy.

Transcript Fee .50

One transcript is furnished without charge; the fee is charged for each additional copy. Supplementary transcripts are 25 cents each.

Graduation Fee 10.00

SPECIAL FEES

From \$2.00 to \$5.00 is charged for late registration; \$2.00 for each change of registration; \$5.00 for a late medical examination; and \$1.00 for a late X ray. The fee for a special examination is \$1.00; for an advanced-credit examination, \$2.00 per credit; and for removal of an Incomplete, \$2.00.

MUSIC FEES, per quarter are: Private lessons, one-half hour a week (2 credits), \$25.00. Private lessons, one hour a week (3 credits), \$37.50. Group lessons, \$5.00. 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 ACTIVITY FEES, per quarter are: Bowling, \$3.00. Canoeing, \$2.50. Golf Instruction, \$3.00 per quarter; Season Ticket, \$5.00 per quarter, a season ticket is good on the golf course for play and may be purchased alone or in addition to golf instruction fee. Riding Fee is payable to riding academy and varies in amount. Skiing, for transportation and tow charge, \$19.75.

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	\$183.00
Full-time nonresident student	408.00

<i>Athletic Admission Ticket</i> (optional)	5.00
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<i>Accident Insurance</i> (optional)	4.95
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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>	75.00
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Board and Room

Room and meals in Men's Residence Hall	570.00
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Room and meals in Women's Residence Halls	525.00 to 600.00
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Room and meals in student cooperative house	445.00 to 460.00
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Room and meals in fraternity or sorority house	660.00 to 700.00
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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>	200.00
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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.

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.

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

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 Dean of Students Office also provides current information on Selective Service regulations.

The Counselor for International Services, a member of the Dean of Students staff, offers 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 counselor. 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 offers vocational and personal counseling to students who need help in their adjustments to college living. The staff of the Center, which includes vocational counselors, psychiatric social workers, and clinical psychologists, works closely with other student services and supplements the academic advisory program.

HOUSING

Men students may obtain rooms in the Men's Residence Hall through the Office of Student Residences. Housing for women is available in the Women's Residence Halls on the campus. Interested students should write to the Director of Student Residences or the Business Manager of the Women's Residence Halls. The Student Cooperative Association, 1114 East Forty-fifth Street, Seattle 5, provides housing for men and women students. Information about fraternities may be obtained from the Interfraternity Council; information about sororities from the Panhellenic Council.

It is expected that women students under twenty-one who are not living at home will live in approved group residences, such as the Women's Residence Halls, student cooperatives, Wesley House, and sorority houses. Other living arrangements must be approved by the Office of the Dean of Students.

The Office of Student Residences keeps listings of rooms, rooms with board, housekeeping rooms, and a few apartments and houses. These listings must be consulted in person. Married students who are veterans of World War II or Korea may apply to this office for accommodations in Union Bay Village, the University's family housing project. Since there is a long waiting list, new students should not rely on the possibility of immediate housing there.

HEALTH CENTER

The University maintains a health center and infirmary which help to 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 two dollars a day is made. At their own expense, infirmary patients may consult any licensed physician in good standing.

PLACEMENT

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. Placement in jobs on the campus is handled by the Nonacademic Personnel Department and the ASUW Personnel Office.



THE DEPARTMENTAL PROGRAMS

THE DEPARTMENTAL PROGRAMS

THE COLLEGE OF ARTS AND SCIENCES, through its departments, schools, and interdepartmental 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 in the College are in five classifications: prescribed, elective, interdepartmental, nondepartmental, and preprofessional.

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

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

INTERDEPARTMENTAL CURRICULA are given by the Division of General Studies. These curricula meet the individual needs of students whose major field of interest extends beyond the limits of a single department or college. General Studies students are required to complete the College group requirements.

NONDEPARTMENTAL CURRICULA are for premajor students and those enrolled in the General Education program. Students who have not selected a major field of interest may, with the help of their advisers, plan individual premajor programs which will introduce them to a variety of subjects and will help them to meet the general University and College requirements. Premajor students usually select a major field before the beginning of their third year. The General Education program offers a unified two-year sequence of introductory courses in the humanities, social sciences, and physical and biological sciences. Any or all of the General Education courses may be taken by premajor students and by others who want a broad range of learning without specialization.

PREPROFESSIONAL CURRICULA are offered for students who plan to enter the fields of dental hygiene, dentistry, education, law, librarianship, and medicine. These curricula, which vary in length from one to four years, provide educational preparation for entrance to professional schools.

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. Course requirements for each degree are described in the departmental announcements. General requirements for all bachelor's degrees include military training, physical education, scholarship and minimum credits, group requirements, and senior-year residence.

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 appropriate school or college bulletin published most recently before the date of his entry into the college in which he is to graduate, provided that not more than ten years have elapsed since that date. As an alternative he may choose to fulfill the graduation requirements as outlined in the appropriate school or college bulletin published most recently before the date of his graduation. All responsibility for fulfilling graduation requirements will 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.

MILITARY TRAINING

Male students who enter the University as freshmen or sophomores are required to complete six quarters of military training. Students should meet this requirement during the first two years they are in residence (registered in regular University classes).

Students may meet the military training requirement with courses in the Department of Air Science, Military Science and Tactics, or Naval Science (see pages 209-214).

Exemptions from the requirement are granted to:

1. Students who are twenty-three or over at the time of original entrance.
2. Special students.
3. Part-time students, those registered for 6 credits or less.
4. Students who are not citizens of the United States.
5. Students who because of physical condition are exempted by the University Health Officer.
6. 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.
7. Students who are active members or reserve officers of the Armed Forces or Coast Guard, or commissioned officers of the National Guard.
8. Students who are active enlisted members of the National Guard or of the Organized Reserve of the Armed Forces or Coast Guard.
9. 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.
10. 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 4 or 10 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

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.

Men students must take one quarter of swimming, unless the required swimming proficiency (exemption) test has been passed. In the other two quarters, a student can elect any activity course he desires, but only one quarter of any one activity can be counted toward graduation. Any freshman or varsity sport may be substituted for any activity course except swimming.

Women students must complete one quarter of swimming, unless the safety swimming test has been passed, and one of the fundamental movement courses prescribed by the Department during the three quarters.

Exemptions from the activity requirement are granted to:

1. Students who are twenty-five or older at the time of original entrance.
2. Special students.
3. Part-time students, those registered for 6 credits or less.
4. 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 School of Physical Education. All other students who are reported by the University Health Officer as unfitted to join regular classes will be assigned by the Executive Officer of the School of Physical Education to special programs adapted to their needs.
5. Students who are veterans of military service. Complete exemption is granted for six months or more of active service. Veterans with less than six months of service receive no exemption.

6. 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 undergraduates are required to take Physical Education 175, a course in personal health, within the first three quarters of residence. Veterans with six months or more of active service are exempt from this requirement. Other exemptions are by examination and by transfer of credit for a similar course in an accredited college.

Women students who enter the University as freshmen are required to take Physical Education 110, a course in health education, within the first three quarters of residence. This requirement may be satisfied by passing a health-knowledge examination given during the Autumn Quarter registration period for women entering the University for the first time.

SCHOLARSHIP AND CREDITS

Freshman students in their first three quarters, and transfer students in their first quarter, must maintain a grade-point average of at least 1.80. All other students must maintain an average of 2.00, and a cumulative average of 2.00 is required for graduation. Some schools and departments require a higher grade point for graduation through their curricula; these requirements are described in the departmental announcements on the following pages.

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 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.

The University credit requirement for graduation is 180 academic credits (including Physical Education 110 or 175) and the required quarters of military training and physical education activity. The College of Arts and Sciences 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.

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.

GROUP REQUIREMENTS

The subject material available to students in the College is divided into three broad fields of knowledge. The subjects included in these fields are:

<i>I. Humanities</i>	<i>II. Social Sciences</i>	<i>III. Sciences</i>
Architecture	Anthropology	Anatomy 301
Art	Economics	Astronomy
Classics	Far Eastern Institute	Biochemistry
Drama	courses	Biology
English	Geography	Botany
Far Eastern languages and	History	Chemistry
literature	Home economics	Fisheries
General and comparative	Philosophy	Geology
literature	Physical education	Mathematics
Germanic languages and	Political science	Meteorology and
literature	Psychology	Climatology
Humanities 101, 102, 103,	Social Science, 101, 102, 103,	Microbiology
201, 202, 203	201, 202, 203	Oceanography 101
Journalism	Sociology	Pharmacy 115
Liberal arts		Physical Science 101, 102
Librarianship		Physics
Music		Zoology
Radio-Television		
Romance languages and		
literature		
Scandinavian languages and		
literature		
Slavic languages and literature		
Speech		

Students in elective and interdepartmental curricula must have a minimum of 30 credits in one group (usually the major field), 20 credits in another, and 10 credits in the third. Physical Education 110 or 175, English 101, 102, and 103, and courses taken to remove entrance deficiencies may not be used to fulfill group requirements.

SENIOR-YEAR RESIDENCE

Senior standing is attained when 135 credits, plus the required quarters of ROTC and physical education, have been earned. In 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 at this University or in this University's extension or correspondence courses.

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 (see page 50) 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, drama, economics, English (including general and comparative literature), Far Eastern and Slavic languages and literature, fisheries, geography, geology, Germanic languages and literature, history, home economics, mathematics, meteorology and climatology, music, oceanography, philosophy, physical education, physics, political science (including public administration), psychology, Romance languages and literature, Scandinavian languages and literature, sociology, speech, urban planning, and zoology.

Graduate programs leading to the degree of Doctor of Philosophy are available

in the fields of anthropology, botany, chemistry, economics, English (including general and comparative literature), Far Eastern and Slavic languages and literature, fisheries, 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.

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.

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 quarterly *Time Schedule and Room Assignments*.

ANTHROPOLOGY

Executive Officer: JAMES B. WATSON, Museum

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 109).

BACHELOR OF ARTS

In this elective curriculum, the following courses are required: Anthropology 101, 102, 103; three courses from 210, 211, 213, 214, 215; two courses from 270, 272, 273; 380, 450J, 460; three courses from 432, 433, 435, 436, 437, 441, 442.

A 2.50 grade-point average in anthropology courses is required.

If graduate work is contemplated, electives should include two foreign languages, one being German and the other depending on the area of interest.

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*. When graduate students in anthropology are completing their first year's study, they are given a preliminary written examination to determine whether they may apply for candidacy for one or both advanced degrees.

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

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

DOCTOR OF PHILOSOPHY. Candidates should have a general knowledge of ethnology, prehistory, linguistics, and physical anthropology. They are expected to be able to present an upper-division course in one of these areas and to be able to

present introductory courses in two others. The language requirements should be satisfied at least three quarters before the general examination. All candidates for this degree must give evidence of having completed a research project in the form of either a master's thesis or a research paper of similar quality. Field work is required of all candidates. The doctor's thesis may be based on field work or devoted to any topic of anthropological interest.

COURSES FOR UNDERGRADUATES

- | | |
|---|------------------|
| 101 Principles of Anthropology: Race (5) | Staff |
| Evolution and heredity as applied to man; racial classification and its significance. | |
| 102 Principles of Anthropology: Social Customs (5) | Staff |
| Man's social customs, political institutions, religion, art, literature, and language. | |
| 103 Principles of Anthropology: Prehistory (5) | Staff |
| Man's cultural development as revealed by archaeology and carried to the beginning of history. | |
| 210 North American Indians (3) | Staff |
| Historic Indian cultures and their modern representatives. | |
| 211 Oceania (3) | Elmendorf |
| Ethnographic analysis of the islands of the Pacific, including the effects of modern contacts. | |
| 213 Africa (3) | McClellan |
| Discussion of the basic civilizations of Africa. | |
| 214 Eurasia (3) | Staff |
| The cultures of peoples of Europe and Asia. | |
| 215 Native Peoples of Middle and South America (3) | Massey |
| Indigenous cultures of Mexico and Central and South America. Indian elements in modern Latin America. | |
| 270 Field Course in Archaeology (12) | Staff |
| Archaeological methods and techniques as demonstrated through field experience. (Offered Summer Quarter only.) Prerequisite, 5 credits in anthropology. | |
| 272 North American Archaeology: Archaic Period (2) | Osborne |
| The most ancient cultures of the American Indian. (Offered alternate years; offered 1955-56.) | |
| 273 North American Archaeology: Post-Archaic Period (2) | Osborne |
| Archaeological cultures of the American Indian to the contact period. (Offered alternate years; offered 1956-57.) | |
| 280 Theories of Race (2) | Staff |
| Survey of human heredity; racial history; race differences. Not open to students who have had 101 or 390. | |
| 311 Indian Cultures of the Pacific Northwest (3) | Garfield |
| Comparative analysis of material culture and social, religious, and political institutions. | |
| 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. | |
| 320 Primitive Technology (5) | Osborne |
| Study of the material culture of primitive peoples with analysis of techniques of manufacture. Museum material is used for laboratory work. | |
| 350 Basis of Civilization (3) | Staff |
| Basic inventions, discoveries, and technological achievements of the ancient and primitive worlds; the beginnings of science. | |
| 370 Methods and Problems of Archaeology (5) | Staff |
| Field experience in this locality is included. Prerequisite, 103. | |
| 371 Analysis of Archaeological Data (5) | Staff |
| (Offered alternate years; offered 1956-57.) | |
| 380 Primate and Human Evolution (3) | Hulse |
| Development and relationships of primates, including man, traced from comparative and paleontological data. | |
| 390 Introduction to Anthropology (5) | Gunther |
| A survey of anthropology. For nonmajors. Not open to students who have taken 101, 102, or 103. | |
| 417 Middle American Civilization (2) | Massey |
| The high cultures of Mexico, Guatemala, and Northern Central America. Prerequisite, 315. | |
| 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 religious systems, magical 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.
- 435, 436 Early Economic Systems (3,3)** **Massey**
435: a world survey of nonagricultural economies; 436: a study of agricultural societies. (Offered alternate years; 435 offered 1956-57.)
- 437 Primitive Social and Political Institutions (3)** **Ray**
Comparative analysis of selected nonliterate societies.
- 441 Culture and Personality (5)** **Jacobs**
The structure of personality; processes and factors in its development in differing types of culture. Prerequisites, 101, 102, or 390, Psychology 100, and junior standing.
- 442 Socialization of the Child in Primitive Cultures (3)** **Hulse**
How the child is molded in cultural patterns and prepared for adult life in various primitive societies; comparative data from tribes in North and South America, Africa, Asia, Australia, and Oceania. (Offered 1956-57.) Prerequisite, 102 or 15 credits in social sciences.
- 450J Introduction to General Linguistics (5)** **Jacobs, Reed**
Descriptive and historical techniques in the analysis of languages. Offered jointly with the Department of Germanic Languages and Literature.
- 451 American Indian Languages (3)** **Jacobs**
Methods of field research and training in phonetic recording. Prerequisite, 450J.
- 460 History of Anthropological Theory (3)** **Jacobs**
Systematic discussion of the development of the science and the personalities behind its theoretical structure. Prerequisite, 15 credits in anthropology.
- 480, 481, 482 Physical Anthropology (3,3,3)** **Hulse**
Prerequisites, 101, 102, and 103 or Biology 101J-102J.
- 499 Undergraduate Research (*, maximum 12)** **Staff**
Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 500, 501, 502 Preceptorial Reading (3,3,3)** **Staff**
Guided, selected reading from the prepared departmental list with weekly discussion and papers.
- 505 Field Techniques in Ethnography (3)** **Gunther, Ray**
- 511 Cultural Problems of the Northwest Coast (3, maximum 6)** **Garfield**
- 519J Seminar on Asia (3)** **Wilhelm, Staff**
The large cultural regions of the continent are studied in succession with special reference to anthropological problems. Offered jointly with the Far Eastern and Russian Institute.
- N520 Departmental Seminar (0)** **Staff**
Departmental seminar required of all candidates for advanced degrees.
- 521 Native American Culture History (4)** **Ray**
A historical interpretation of the geographical distribution of critical aspects of North and South American Indian cultures.
- 522 Cultural Problems of Western America (3)** **Elmendorf**
(Offered 1955-56.)
- 523 Colloquium on Arid America (5)** **Ray**
(Offered 1956-57.)
- 524 Seminar in Cultural Problems of Arctic and Sub-Arctic (3, maximum 6)** **Garfield, McClellan**
Problems of cultural relationships across the North Pacific, from Asia to the New World and vice versa. (Offered 1956-57.)
- 525 Seminar in Culture Processes (3)** **Staff**
- 531 Analysis of Oral Literature (3, maximum 6)** **Garfield**
(Offered 1956-57.)
- 541 Seminar in Psychological Aspects of Culture (3)** **Jacobs**
- 542 Personality Patterns in Japanese Culture (3)** **Hulse**
(Offered 1955-56.)
- 551 Field Techniques in Linguistics (3)** **Jacobs**
- 553J Analysis of Linguistic Structures (3)** **Jacobs, Li**
Offered jointly with the Far Eastern and Russian Institute.
- 560 Seminar in the History of Anthropology (3)** **Staff**
- 561 Seminar in Methods and Theories (3)** **Ray**
- 570 Seminar in Archaeology (3)** **Osborne**
(Offered 1955-56.)
- 571 Field Course in Archaeology and Historic Anthropology (5)** **Staff**
- 580 Anthropology in Contemporary Problems (3)** **Gunther**

BACHELOR OF ARCHITECTURE IN CITY PLANNING

Third Year		Fourth Year	
	CREDITS		CREDITS
Arch. 200, 201, 202 History	9	Arch. 324, 325 Des., Gr. III	14
Arch. 224, 225, 226 Des., Gr. II	21	Arch. 480 City Planning Practice	3
Arch. 380 Intro. to City Plan	3	Arch. 485 Housing	2
Econ. 200 Introduction	5	Arch. 490 City Planning Problems	7
Gen. Engr. 121 Surveying	3	Bus. Law 307 Business Law	3
Geog. 477 Urban	5	Civil Engr. 429 Urban Traffic	3
	46	Econ. 350 Pub. Finance & Taxation I	5
		Real Estate 301 Urban Real Estate	5
		Approved Electives	3
			45
Fifth Year		CREDITS	
Arch. 491, 492, 493 City Planning Problems & Thesis	21		
Civil Engr. 403 Urban Planning	3		
Pol. Sci. 376 State & Local Govt.	5		
Pol. Sci. 475 Munic. Govt. & Admin.	5		
Approved Electives	10		
	44		

Approved Electives: Pol. Sci. 581, Seminar in Public Policy in Planning (5); Pol. Sci. 470, Introduction to Public Administration (5); Civil Engr. 315, Photogrammetry (3); Civil Engr. 429, Urban Traffic (3); Soc. 430, Human Ecology (5); Soc. 531, Demography (3).

COURSES FOR UNDERGRADUATES

100, 101 Architectural Appreciation (2,2)	Herrman
Survey of architectural design from a historical viewpoint.	
105 The House (2)	Herrman
Analysis of domestic architecture.	
124, 125, 126 Architectural Design, Grade I (6,6,6)	Rohrer, Smith, Steinbrueck, Tsutakawa, Wherrette
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)	Herrman, Pries
Comparative study of the Classic, Byzantine, Romanesque, Gothic, and Renaissance periods. Prerequisite, 101.	
224, 225, 226 Architectural Design, Grade II (7,7,7)	Kolb, Lovett, Mithun, Sproule, Wherrette
Prerequisite, 126.	
235, 236, 237 Mechanical Equipment of Buildings (2,2,2)	Staff
Analysis and methods of plumbing and sanitation; electric wiring and illumination; heating, ventilating, and air conditioning.	
276 Statics (3)	Jensen, 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)	Jensen, 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)	Jensen, Torrence
Determination of roof loads. Complete design of various types of roof trusses in timber and steel. Prerequisite, 277.	
303 History of Architecture (3)	Gowen
Analysis of architectural developments since the Renaissance. Prerequisite, 202.	
314, 315, 316 Architectural Drawing (4,4,4)	Rohrer, Steinbrueck, Tsutakawa
Orthographic projection, shades and shadows, perspective, drafting, and rendering techniques.	
324, 325, 326 Architectural Design, Grade III (7,7,7)	Gowen, Kolb, Lovett, Pries, Sproule
Prerequisite, 226.	
330, 331 Materials and Their Uses (2,2)	Staff
Manufacture, properties, and design potentials of building materials. Prerequisite, Physics 113.	
360 Design Theory and Analysis (3)	Gowen
Design theory, analysis of planning, and building types. Prerequisite, 226.	
369 Specifications and Contracts (3)	Staff
Form and composition of building specifications and related contract documents. Prerequisite, 331.	

- 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.
- 380 Introduction to City Planning (3)** Wolfe
Circulation, recreation, open areas, public buildings, private development, new towns, and garden cities. Prerequisite, urban planning or architecture major.
- 424, 425, 426 Architectural Design, Grade IV (7,7,7)** Dietz, Gowen, Herrman, Pries
Prerequisite, 326.
- 427, 428, 429 Architectural Problems (3-7,3-7,3-7)** Herrman, Staff
Prerequisite, 426.
- 430, 431, 432 Contract Drawings (3,3,3)** Dietz
Lectures and drafting-room practice. Prerequisites, 326 and 378.
- 438 Illumination Seminar (3)** Staff
Principles of illumination as applied to buildings. Prerequisite, senior in architecture.
- 439 Acoustics Seminar (3)** Staff
Principles of acoustical designing as applied to buildings. Prerequisite, senior in architecture.
- 460 Building Economics (2)** Staff
Social, political, and economic factors affecting the location, construction, financing, and marketing of buildings. Prerequisite, senior in architecture.
- 468 Professional Practice (2)** Staff
Introduction to the architectural office, business operation, and professional procedure. Prerequisite, senior in architecture.
- 480 City Planning Practice (3)** Wolfe
Principles, object, and scope. Planning techniques, development of comprehensive plan, and analysis of plan components. Prerequisite, 380 or permission.
- 485 Housing (2)** Wolfe
Survey of housing problems, theories, standards, and practice. Prerequisite, 380.
- 490, 491, 492, 493, 494 City Planning Problems (7,7,7,7)** Wolfe
Multi-building, large-scale projects. Cities, neighborhoods, housing groups, shopping centers, and recreation areas as part of the community pattern. 494 includes a thesis. Prerequisite, 325 or permission.

ART

Director: BOYER GONZALES, 102 Art Building

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

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

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

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

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

BACHELOR OF ARTS

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

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 105 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
Phys. Educ. 110 or 175		Phys. Educ. activity	1	Electives	2
Health	2	ROTC	2-3	Phys. Educ. activity	1
Phys. Educ. activity	1		15-18	ROTC	2-3
ROTC	2-3				17-20
	17-20				

CURRICULUM FOR THE GENERAL MAJOR. Students who are interested in costume design should elect as many as possible of the following courses: Art 369, 370, 371, 479, 480, and 481; and Home Economics 125, 134 or 231, 234, 334, and 433 (permission is required for registration in 433).

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 112 History	5	Art 254 Design	3	Art 255 Design	3
Art 253 Design	3	Art 257 Painting	3	Art 258 Water Color	3
Art 256 Painting	3	Art 272 Sculpture	3	Electives	9
Electives	4	Electives	6	ROTC	2-3
ROTC	2-3	ROTC	2-3		15-18
	15-18		15-18		

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 303 Ceramic or 357		Art 304 Ceramic or 358		Art 362 Life	3
Design in Metal	3	Design in Metal	3	Approved Design	3
Art 360 Life	3	Art 326 History	2	Lab. science	5
Arch. 100 Appreciation	2	Art 361 Life	3	Electives	4
Econ., Pol. Sci., or Sociol.	5	Arch. 101 Appreciation	2		15
Electives	2	Lab. science	5		
	15		15		

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 301 Int. Design	2	Art 450 Illustration or		Art 320 History	2
Art 463 Composition	3	451 Printmaking	5	Electives	13
Electives	10	Art 464 Composition	3		15
	15	Electives	7		
			15		

CURRICULUM IN ART EDUCATION. Students who wish to emphasize high school teaching will follow the curriculum prescribed below. This curriculum includes courses for both first and second teaching areas and meets academic requirements for the provisional general 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
Arch. 100 Appreciation	2	Arch. 101 Appreciation	2	Engl. 103 Composition	3
Engl. 101 Composition	3	Engl. 102 Composition	3	Psychol. 100 General	5
Electives	2	Speech 100 Basic Speech	5	Phys. Educ. activity	1
Phys. Educ. 110 or 175		Phys. Educ. activity	1	ROTC	2-3
Health	2	ROTC	2-3		15-18
Phys. Educ. activity	1		17-20		
ROTC	2-3				
	16-19				

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 112 History	5	Art 254 Design	3	Art 255 Design	3
Art 253 Design	3	Art 272 Sculpture	3	Art 258 Water Color	3
Art 256 Painting	3	Lab. science	5	Educ. 209 Educ. Psychol.	3
Lab. science	5	Electives	4	Educ. 370 Teaching	
ROTC	2-3	ROTC	2-3	Procedures	5
	16-19		15-18	ROTC	2-3
					14-17

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 301 Int. Design	2	Art 300 Crafts	2	Art 302 Bookbinding	2
Art 303 Ceramic	3	Art 304 Ceramic	3	Art 362 Life	3
Art 305 Lettering	3	Educ. 370E Elem.	5	Educ. 374 Reading	3
Music elective	2	School Methods	5	Instruction	5
Electives	5	Electives	5	Educ. 402 Child Study & Development, or Psychol.	3-5
	15		15	306 Child Psychol.	3-5
				Electives	2
					15-17

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 463 Composition	3	Art 466 Comm. Design	5	Educ. 360 Principles	3
Educ. 320 Teachers' Course in Art	2	Educ. 371X or S Directed Teaching Junior or Senior High	8	Educ. 372E Professional Lab. Experiences	3
Educ. 373 State Manual	2	Educ. 390 Evaluation in Educ.	3	Hist. 464 Wash. & the Pacific Northwest	5
Pub. Health 461 School & Community Health Programs	5		16	Philos. 445 or Lib. Arts 111 Fine Arts	3-5
Electives	3				14-16
	15				

The following courses are suggested for the thirteenth quarter; they may be taken either before or after teaching experience: Art 262, 273, 320, 329, 340, 357, 358, 359, 450, 451, 464, and 467.

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

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 112 History	5	Art 151 Fig. Sketching	1	Art 255 Design	3
Art 253 Design	3	Art 254 Design	3	Art 258 Water Color	3
Art 256 Painting	3	Art 257 Painting	3	Art 320 History Mod. Sculpt.	2
Arch. 100 Appreciation	2	Arch. 101 Appreciation	2	Econ. 200 Introduction	5
Electives	3	Psychol. 100 General	5	Electives	2
ROTC	2-3	ROTC	2-3	ROTC	2-3
	16-19		14-17		15-18

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 329 Appreciation	2	Art 305 Lettering	3	Art 306 Adv. Lettering	3
Art 360 Life	3	Art 326 History	2	Art 362 Life	3
Journ. 220 Intro. to Advertising	3	Journ. 370 Advertising Procedures	5	Pol. Sci. 201 Mod. Gov. or Sociol. 310 General	5
Lab. science	5	Lab. science	5	Electives	4
Electives	2	Electives	2		15
	15		17		

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 369 Cost. Design	2	Art 370 Cost. Design	2	Art 467 Comm. Design	5
Art 450 Illust. or 451 Printmaking	5	Art 466 Comm. Design	5	Electives	10
Art 463 Composition	3	Electives	8		15
Electives	5		15		
	15				

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

First Year

FIRST QUARTER	CREDITS	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 272 Sculpture	3
Engl. 101 Composition	3	Engl. 102 Composition	3	Engl. 103 Composition	3
Phys. Educ. 110 or 175 Health	2	Gen. Engr. 107 Engr. Drawing	3	Math. 101 Intermed. Alg.	5
Phys. Educ. activity	1	Phys. Educ. activity	1	Phys. Educ. activity	1
ROTC	2-3	ROTC	2-3	ROTC	2-3
	14-17		15-18		18-21

Second Year

FIRST QUARTER	CREDITS
Art 253 Design	3
Arch. 314 Drawing	4
Mech. Engr. 201 Metal Castings	1
Physics 101 or 104 General	4
Physics 107 Lab.	1
ROTC	2-3
	<hr/> 13-16

SECOND QUARTER	CREDITS
Art 254 Design	3
Arch. 315 Drawing	4
Mech. Engr. 202 Welding ..	1
Physics 112 For Arch. Students	5
ROTC	2-3
	<hr/> 13-16

THIRD QUARTER	CREDITS
Art 255 Design	3
Arch. 316 Drawing	4
Mech. Engr. 203 Metal Machining	1
Physics 113 For Arch. Students	5
ROTC	2-3
	<hr/> 13-16

Third Year

FIRST QUARTER	CREDITS
Art 112 History	5
Art 316 Design for Indus. .	3
Art 329 Appreciation	2
Chemistry	5
	<hr/> 15

SECOND QUARTER	CREDITS
Art 317 Design for Indus. .	3
Chemistry	5
Econ. 200 Introduction	5
Mech. Engr. 411 Engr. Econ.	3
	<hr/> 16

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

Fourth Year

FIRST QUARTER	CREDITS
Art 303 Ceramic	3
Art 445 Adv. Ind. Design .	5
Journ. 220 Intro. to Advertising	3
Psych. 100 General	5
	<hr/> 16

SECOND QUARTER	CREDITS
Art 326 History	2
Art 357 Design in Met.	3
Art 446 Adv. Ind. Design .	5
Bus. Law 307 Bus. Law	3
Journ. 370 Advertising Procedures	5
	<hr/> 18

THIRD QUARTER	CREDITS
Art 301 Int. Design	2
Art 320 History Mod. Sculpt.	2
Art 447 Adv. Ind. Design .	5
Gen. Engr. 351 Inventions and Patents	1
Speech 327 Extemp. Speaking	3
Electives	2
	<hr/> 15

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
Electives	4
ROTC	2-3
	<hr/> 17-20

SECOND QUARTER	CREDITS
Art 281 Furn. Design	3
Arch. 101 Appreciation	2
Arch. 125 Design, Gr. I	6
Electives	6
ROTC	2-3
	<hr/> 17-20

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
Electives	2
ROTC	2-3
	<hr/> 15-18

Third Year

FIRST QUARTER	CREDITS
Art 112 History	5
Art 310 Int. Design	5
Lab. science	5
	<hr/> 15

SECOND QUARTER	CREDITS
Art 311 Int. Design	5
Art 326 History	2
Lab. science	5
Electives	3
	<hr/> 15

THIRD QUARTER	CREDITS
Art 312 Int. Design	5
Econ., pol. sci., or sociol. .	5
Electives	5
	<hr/> 15

Fourth Year

FIRST QUARTER	CREDITS
Art 472 Adv. Int. Design .	5
Home Ec. 125 Textiles	3
Electives	7
	<hr/> 15

SECOND QUARTER	CREDITS
Art 473 Adv. Int. Design .	5
Electives	10
	<hr/> 15

THIRD QUARTER	CREDITS
Art 320 History Mod. Sculpt.	2
Art 474 Adv. Int. Design .	5
Home Ec. 329 Hand Weaving	2
Electives	6
	<hr/> 15

CURRICULUM IN PAINTING**Second Year**

FIRST QUARTER	CREDITS
Art 112 History	5
Art 256 Painting	3
Art 265 Draw. & Paint.	3
Arch. 100 Appreciation	2
Electives	2
ROTC	2-3
	<hr/> 15-18

SECOND QUARTER	CREDITS
Art 257 Painting	3
Art 266 Draw. & Paint.	3
Art 272 Sculpture	3
Arch. 101 Appreciation	2
Electives	4
ROTC	2-3
	<hr/> 15-18

THIRD QUARTER	CREDITS
Art 258 Water Color	3
Art 267 Draw. & Paint.	3
Art 320 History	
Mod. Sculpt.	2
Lab. science	5
Electives	2
ROTC	2-3
	<hr/> 15-18

Third Year

FIRST QUARTER	CREDITS
Art 360 Life	3
Art 375 Adv. Painting	3
Lab. science	5
Electives	4
	<hr/> 15

SECOND QUARTER	CREDITS
Art 326 History	2
Art 361 Life	3
Art 376 Adv. Painting	3
Econ., pol. sci., or sociol.	5
Electives	2
	<hr/> 15

THIRD QUARTER	CREDITS
Art 362 Life	3
Art 377 Adv. Painting	3
Approved design	6
Advanced sculpture	3
	<hr/> 15

Fourth Year

FIRST QUARTER	CREDITS
Art 307 Portrait Painting ..	3
Art 463 Composition	3
Electives	9
	<hr/> 15

SECOND QUARTER	CREDITS
Art 308 Portrait Painting ..	3
Art 464 Composition	3
Electives	9
	<hr/> 15

THIRD QUARTER	CREDITS
Art 309 Portrait Painting ..	3
Art 465 Composition	3
Electives	9
	<hr/> 15

CURRICULUM IN SCULPTURE**Second Year**

FIRST QUARTER	CREDITS
Art 112 History	5
Art 256 Painting	3
Art 272 Sculpture	3
Arch. 100 Appreciation	2
Electives	2
ROTC	2-3
	<hr/> 15-18

SECOND QUARTER	CREDITS
Art 257 Painting	3
Art 273 Sculpture	3
Arch. 101 Appreciation	2
Lab. science	5
Electives	2
ROTC	2-3
	<hr/> 15-18

THIRD QUARTER	CREDITS
Art 253 Design	3
Art 274 Sculpture	3
Art 320 History	
Mod. Sculpt.	2
Lab. science	5
Electives	2
ROTC	2-3
	<hr/> 15-18

Third Year

FIRST QUARTER	CREDITS
Art 303 Ceramic	3
Art 322 Sculpture	3
Art 332 Adv. Sculpture	3
Art 360 Life	3
Electives	3
	<hr/> 15

SECOND QUARTER	CREDITS
Art 304 Ceramic	3
Art 323 Sculpture	3
Art 326 History	2
Art 333 Adv. Sculpture	3
Art 361 Life	3
Electives	1
	<hr/> 15

THIRD QUARTER	CREDITS
Art 324 Sculpture	3
Art 334 Adv. Sculpture	3
Art 362 Life	3
Econ., pol. sci., or sociol.	5
Electives	1
	<hr/> 15

Fourth Year

FIRST QUARTER	CREDITS
Art 436 Sculpture	5
Advanced sculpture	3
Electives	7
	<hr/> 15

SECOND QUARTER	CREDITS
Art 437 Sculpture	5
Electives	10
	<hr/> 15

THIRD QUARTER	CREDITS
Art 438 Sculpture	5
Electives	10
	<hr/> 15

CURRICULUM IN CERAMIC ART**First Year**

FIRST QUARTER	CREDITS
Art 105 Drawing	3
Art 109 Design	3
Chem. 115 General	5
Engl. 101 Composition	3
Phys. Educ. 110 or 175	
Health	2
Phys. Educ. activity	1
ROTC	2-3
	<hr/> 17-20

SECOND QUARTER	CREDITS
Art 106 Drawing	3
Art 110 Design	3
Chem. 116 General Chem.	
and Qual. Anal.	5
Engl. 102 Composition	3
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	<hr/> 17-20

THIRD QUARTER	CREDITS
Art 107 Drawing	3
Art 111 Design	3
Chem. 221 Quant. Anal.	5
Engl. 103 Composition	3
Phys. Educ. activity	1
ROTC	2-3
	<hr/> 15-18

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 253 Design	3	Art 254 Design	3	Art 255 Design	3
Art 256 Painting	3	Art 257 Painting	3	Art 258 Water Color	3
Art 303 Ceramic	3	Art 304 Ceramic	3	Art 330 Adv. Ceramic	3
Physics 100 Survey	5	Electives	5	Electives	7
Electives	2	ROTC	2-3	ROTC	2-3
ROTC	2-3				
	16-19		14-17		16-19

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 112 History	5	Art 273 Sculpture	3	Art 274 Sculpture	3
Art 272 Sculpture	3	Art 326 History	2	Art 301 Elem. Int. Design	2
Art 453 Adv. Ceramic	3	Art 454 Adv. Ceramic	3	Art 320 History	2
Math. 101 Intermed. Alg.	5	Cer. Engr. 202 Raw	4	Mod. Sculpt.	2
	16	Materials	4	Art 455 Adv. Ceramic	3
		Social science electives	5	Cer. Engr. 203 Preparation	3
			17	Electives	5
					18

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 357 Metal Design	3	Art 358 Metal Design	3	Art 305 Lettering	3
Art 360 Life	3	Art 486 Adv. Ceramic	5	Art 487 Adv. Ceramic	5
Art 485 Adv. Ceramic	5	Cer. Engr. 303 Coatings	3	Cer. Engr. 304 Drying &	4
Cer. Engr. 302 Forming	4	Social science electives	5	Firing	4
	15		16	Electives	3
					15

BACHELOR OF ARTS IN CERAMIC ART

A fifth year of work in ceramic art leads to a Bachelor of Arts in Ceramic Art degree.

Fifth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 463 Composition	3	Art 464 Composition	3	Art 465 Composition	3
Art 553 Adv. Ceramic	5	Art 554 Adv. Ceramic	5	Art 555 Adv. Ceramic	5
Electives	7	Cer. Engr. 311 Structure	3	Cer. Engr. 312 Colloids	3
	15	& Reactions	3	& Rheology	3
		Electives	4	Electives	4
			15		15

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.

In lieu of a thesis, candidates may undertake a problem in painting, sculpture, or design.

COURSES FOR UNDERGRADUATES

- 100 Introduction to Art (5)** Moseley
Lecture and studio work. For nonmajors.
- 105, 106, 107 Drawing (3,3,3)** Staff
Perspective, light and shade, composition, pencil and charcoal. Prerequisites, 105 for 106, 106 for 107.
- 109, 110, 111 Design (3,3,3)** Staff
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.
- 112 History of Art through the Renaissance (5)** Read
Survey of the main developments in painting and sculpture from prehistoric times through the Renaissance, illustrated with slides and colored reproductions. Not open to freshmen.

- 115, 116 Laboratory Drawing (3,3)** **Curtis**
Exact representation of objects such as bones, shells, and plants, with emphasis on three-dimensional form. Pencil, pen and ink, carbon pencil, and colored crayon techniques are taught for use in scientific and other work requiring accuracy and detail.
- 151 Figure Sketching (1)** **Alps**
Sketching from the posed model. Prerequisite, 3 credits in drawing.
- 253, 254, 255 Two- and Three-Dimensional Design (3,3,3)** **Staff**
Materials as a factor in design. Class experimentation and research. Prerequisites, 107 and 111.
- 256, 257 Painting (3,3)** **Staff**
Oil painting: still life and landscape. Prerequisites, 105, 106, and 107.
- 258 Water Color (3)** **Hill, Mason, Patterson**
Prerequisites, 256 and 257 or permission.
- 259 Advanced Water Color (3)** **Hill, Mason, Patterson**
Prerequisite, 258.
- 262 Essentials of Interior Design (2)** **Foote**
Illustrated lectures.
- 265, 266, 267 Drawing and Painting (3,3,3)** **Staff**
Continuation of 256, 257, 258; outdoor sketching in oil and water color. 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)** **Foote**
Study of materials and construction; execution of working drawings, color plates, and scale models. 280 is taken concurrently with 283. Prerequisites, 105, 106, 107, 109, 110, and 111.
- 283 History of Furniture and Interior Styles (2)** **Foote**
Illustrated lectures on the historical development of furniture and its architectural backgrounds from the Renaissance to the present.
- 300 Elementary Crafts (2)** **Johnson**
Papier-mache, leather, weaving, and other media and processes used in secondary schools, service organizations, and recreation groups. Open to nonmajors with sophomore standing.
- 301 Elementary Interior Design (2)** **W. Hill**
Fundamental problems in interior design, including floor and wall plans at scale, furnishings, and color schemes. For nonmajors.
- 302 Bookmaking and Bookbinding (2)** **Johnson**
Prerequisite, art major or permission.
- 303 Ceramic Art (2 or 3)** **Bonifas**
Processes of pottery making, coil and slab. Studies of profile and dimensions. Prerequisite, sophomore standing in art.
- 304 Ceramic Art (2 or 3)** **Bonifas**
Glazing and decoration. Contact with clay; glaze composition; packing and firing the kiln. Prerequisite, 303.
- 305 Lettering (3)** **Anderson**
Design in letters and the composition of letters. Prerequisites, 107, 111, and, for nonmajors, permission.
- 306 Advanced Lettering (3)** **Anderson**
Composition of letter forms, with emphasis on the variants of basic types which are most used now. Brief review of the history of letters and their uses, including page design and the format of books. Prerequisite, 305.
- 307, 308, 309 Portrait Painting (3,3,3)** **Isaacs**
Prerequisites, 360, 361, and 362.
- 310, 311, 312 Interior Design (5,5,5)** **Foote**
Fundamentals of interior design. Scale drawings of floor and wall plans; perspective; study of color and texture. For interior design students; others by permission. 312 is taken concurrently with 262. Prerequisites, 105, 106, 107, 109, 110, and 111.
- 316, 317, 318 Design for Industry (3,3,3)** **Del Giudice**
For industrial design students; others by permission.
- 320 History of Modern Sculpture (2)** **Du Pen**
Sculpture since the Renaissance; lectures and slides. Prerequisite, sophomore standing.
- 322, 323, 324 Sculpture (3,3,3)** **Du Pen**
Prerequisites, 272, 273, and 274, or permission.
- 326 History of Painting since the Renaissance (2)** **Moseley**
Illustrated lectures. Prerequisite, sophomore standing.
- 329 Appreciation of Design (2)** **Staff**
Lectures on design fundamentals, illustrated with slides and with paintings, pottery, textiles, and other actual objects. Reading and reference work.
- 330 Advanced Ceramic Art (3)** **Bonifas**
Design, glazing, decoration, throwing, and plaster mold. Prerequisite, 304.

- 332, 333, 334 Advanced Sculpture (3,3,3)** **Du Pen**
Prerequisites, 322, 323, and 324.
- 340 Design for Printed Fabrics (3)** **Penington**
Hand-block and silk-screen printing; mass-production design. Prerequisite, 255 or permission.
- 357, 358, 359 Design in Metal (3,3,3)** **Penington**
Design and construction of objects in copper, pewter, brass, silver, and gold; raising, forging, etching, enameling, stone setting, and other processes. Prerequisite, art major or permission.
- 360, 361, 362 Life (3,3,3)** **Staff**
Drawing and painting from the model. Prerequisites, 256, 257, and 258.
- 369, 370, 371 Costume Design and Illustration (2,2,2)** **Rand**
Prerequisites, 107, 111, and 151.
- 375, 376, 377 Advanced Painting (3,3,3)** **Staff**
Prerequisites, 256, 257, and 258.
- 382, 383, 384 Eastern Art (3,3,3)** **Rogers**
Survey of Eastern art from its beginning to the present. Illustrated. (Offered alternate years; offered 1956-57.)
- 386 The Art of the Ancient Near East (2)** **Rogers**
(Offered alternate years; offered 1955-56.)
- 387 Islamic Art (2)** **Rogers**
(Offered alternate years; offered 1955-56.)
- 388 Medieval Art (2)** **Rogers**
(Offered alternate years; offered 1955-56.)
- 413 Oriental Ceramic Art (2)** **Rogers**
Chinese, Korean, and Japanese ceramics from neolithic times to the present. (Offered alternate years; offered 1955-56.) Prerequisites, 382, 383, 384.
- 423, 424, 425 Art History and Criticism (1,1,1)** **Rogers**
A critical discussion of significant art criticism and art history from the Renaissance through the most recent publications, with emphasis on the direct understanding of specific periods and works of art.
- 426 The Origins of Modern Art (2)** **Rogers**
(Offered alternate years; offered 1955-56.) Prerequisite, senior standing.
- 427 Art since Cezanne (2)** **Rogers**
(Offered alternate years; offered 1955-56.) Prerequisite, senior standing.
- 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 Giudico**
Market analysis and selected professional problems in industrial design. Consultation techniques; psychological, sociological, and economic factors involved in designing for consumer acceptance.
- 450 Illustration (5)** **Staff**
Prerequisites, 360, 361, and 362.
- 451, 452 Printmaking (5,5)** **Alps**
Lithography, etching, serigraph, linoleum block, wood-cut, and wood-engraving. Prerequisite, art major or permission.
- 453, 454, 455 Advanced Ceramic Art (3,3,3)** **Bonifas**
Plaster work; throwing, firing, decoration, and glazing. Prerequisite, 330.
- 463, 464, 465 Composition (3,3,3)** **Brazeau, Isaacs**
Development of individuality in painting through creative exercises. Prerequisite, 3 credits from 360, 361, or 362.
- 466, 467 Commercial Design (5,5)** **Staff**
Composition in advertising art; brief review of styles of advertising art; expression of ideas in terms of design. Practice in using a variety of mediums, with special consideration for methods by which the work is to be reproduced. Prerequisites, 255 and 305.
- 472, 473, 474 Advanced Interior Design (5,5,5)** **Foote**
Problems related to contemporary needs; research in period styles. For interior design students. Prerequisite, 312.
- 479, 480, 481 Advanced Costume Design and Illustration (2,2,2)** **Rand**
- 485, 486, 487 Advanced Ceramic Art (5,5,5)** **Bonifas**
Continued use of the processes with emphasis on design for industry. Prerequisites, 453, 454, and 455.
- 490 Art Education in the Schools (3)** **Staff**
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 (3-5, maximum 15)** **Staff**

COURSES FOR GRADUATES ONLY

507, 508, 509	Advanced Portrait Painting (3,3,3)	Staff
522, 523, 524	Advanced Sculpture (3 or 5, 3 or 5, 3 or 5)	Staff
550	Advanced Illustration (3 or 5)	Staff
551, 552	Advanced Printmaking (3 or 5, 3 or 5)	Staff
553, 554, 555	Advanced Ceramic Art (3 or 5, 3 or 5, 3 or 5)	Staff
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
	Thesis (*)	Staff

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

BASIC MEDICAL SCIENCE

Adviser: RICHARD C. SNYDER, 121 Miller Hall

The program in basic medical science is designed to provide the bachelor's degree for students who enter Medical or Dental School 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: 12 credits in general chemistry (or Chemistry 115 and 116); 10 credits in a complete sequence of organic chemistry; Zoology 111, 112, and 456; 12 credits in a complete sequence of physics; 5 credits in mathematics, including trigonometry and college algebra; 15 credits in one foreign language; 30 credits in upper-division courses, of which at least 15 must be in one of the major fields offered in the College of Arts and Sciences; and the required quarters of physical education activity and military training. In addition, students must fulfill the group requirements of the College.

For the fourth year requirements, credit in subjects taught in the first-year curriculum at the University of Washington Medical or Dental School may be applied toward the degree. Some upper-division courses in anatomy, physiology, microbiology, and biochemistry may be duplicated in first-year professional study, and in such cases, credit toward the degree is granted only for the course taken in the Medical or Dental School. Students should work closely with their advisers on this matter.

The following curriculum is suggested for premedical and pre dental students:

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 111 or 115 General	5	Chem. 112 or 116 General	5	Chem. 113 Elem. Qual.	
Engl. 101 Composition	3	Engl. 102 Composition	3	Anal.	5
Physics 101, 104, and 107, or 121 General	5	Physics 102, 105, and 108, or 122 General	5	Engl. 103 Composition	3
Phys. Educ. 110 or 175		Electives	2-3	Physics 103, 106, and 109, or 123 General	5
Health	2	Phys. Educ. activity	1	Electives	2-3
Phys. Educ. activity	1	ROTC	2-3	Phys. Educ. activity	1
ROTC	2-3		16-20	ROTC	2-3
	16-19				16-20

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 231 or 232 Organic	3	Chem. 232 or 336 Organic	3	Chem. 337 Organic	3
Chem. 241 or 345 Organic		Chem. 242 or 346 Organic		Zool. 456 Vert. Embryol	5
Lab.	2	Lab.	2	Electives	7-10
Zool. 111 General	5	Zool. 112 General	5	ROTC	2-3
Electives	5	Electives	5		15-21
ROTC	2-3	ROTC	2-3		
	15-18		15-18		

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

BIOLOGY

Courses in biology are administered jointly by the Departments of Botany and Zoology (below and page 203). 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 first teaching area in biology as well as a basic academic field in the elementary emphasis for students in the College of Education.

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 first teaching area in biology is offered for students in the College of Education, in addition to a second teaching area in botany.

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

All biology courses may be used for botany credit.

BACHELOR OF SCIENCE

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

ADVANCED DEGREES

Students who intend to work toward the degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. The Department of Botany requires that all candidates for advanced degrees have organic chemistry.

COURSES FOR UNDERGRADUATES

BIOLOGY

- 101J-102J General Biology (5-5)** **Staff**
Principles of biology applying to all living forms, illustrated by representatives of major plant and animal groups and introducing man's place in nature. Offered jointly with the Department of Zoology. Recommended for education students and for those not majoring in the biological sciences.
- 401 Cytology (3)** **Hsu**
Structure and function of the cell. Prerequisites, 451 and permission.
- 401L Cytology Laboratory (2)** **Hsu**
Must be accompanied by 401.
- 451 Genetics (3 or 5)** **Roman**
Prerequisite, 10 credits in biological science.
- 452 Cytogenetics (3 or 5)** **Roman**
Chromosomal behavior in relation to genetics. (Offered alternate years; offered 1955-56.) Prerequisites, 451 and permission.
- 453 Topics in Genetics (2, maximum 6)** **Roman**
Current problems and research methods. Prerequisites, 451, organic chemistry, and permission.
- 454 Evolutionary Mechanisms (3)** **Kruckeberg**
Mutation, isolation, and natural selection as determinants of evolutionary change; emphasis on plants. Prerequisites, 451 and permission. (Offered alternate years; offered 1955-56.)
- 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 of botany as applied to selection and cultivation of ornamental plants. Offered Summer Quarter only.
- 111 Elementary Botany (5)** **Meuse, Walker**
Structure, physiology, and reproduction of seed plants.
- 112 Elementary Botany (5)** **Blaser**
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**
Local flora. Training in identification and recognition of ferns and seed plants.
- 114, 115, 116 Forestry Botany (3,3,4)** **Blaser, Hitchcock, Walker**
114: structure of seed plants. 115: morphology of fungi and reproduction of seed plants. 116: physiology of seed plants. Prerequisites, 114 and Chemistry 112.
- 201, 202, 203 Plant Propagation (2,2,2)** **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.
- 331 Ornamental Plants (3)** **Kruckeberg**
Identification and use of trees and shrubs. Prerequisite, 113 or equivalent.

- 332 Taxonomy Field Trip (*, maximum 27)** **Staff**
(Offered alternate Summer Quarters; offered 1956.)
- 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. Open for only 3 credits to those who have had 116. Prerequisites, 111 and Chemistry 112, 116, or equivalent.
- 431, 432 Taxonomy (5,5)** **Hitchcock**
The flowering plants. (Offered alternate years; offered 1955-56.) Prerequisite, 113 or equivalent.
- 441, 442, 443 Morphology (5,5,5)** **Blaser**
441 and 442: vascular plants. 443: Algae and Bryophytes. (Offered alternate years; offered 1956-57.) Prerequisite for each course, 112 or equivalent.
- 444 Plant Anatomy (5)** **Blaser**
Tissues; origin and development of the stele. (Offered alternate years; offered 1955-56.) Prerequisite, 111.
- 445 Algology (6)** **Staff**
(Offered at Friday Harbor Summer Quarter only.) Prerequisites, 112 and staff permission.
- 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**
The soil and culture solution as nutrient media for the growth of plants. Prerequisites, 111 or 116, and 10 credits in chemistry.
- 472 Plant Physiology (5)** **Meeuse, Walker**
Recommended for biology majors. Not open to those who have taken 371. Prerequisites, 111 or 116, and Chemistry 232 and 242.
- 473 Plant Physiology (5)** **Meeuse**
Metabolism of organic compounds. (Offered alternate years; offered 1956-57.) Prerequisites, 472 or 371, Chemistry 232 and 242, and permission.
- 474 Plant Physiology (5)** **Walker**
Permeability, mineral nutrition, water relations, and growth. (Offered alternate years; offered 1955-56.) Prerequisites, 472 or 371, and Chemistry 232 and 242, and permission.
- 475 Problems in Algal Physiology (6)** **Meeuse**
Metabolic activity of the algae. (Offered at Friday Harbor Summer Quarter only.) Prerequisites, 472 or 371, Chemistry 232 and 242, and permission.
- 498 Special Problems in Botany (1-15)** **Staff**
Prerequisite, permission of instructor.

COURSES FOR GRADUATES ONLY

BIOLOGY

- 501 Advanced Cytology (5)** **Hsu**
(Offered alternate years; offered 1955-56.)
- 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.
- 551 Genetics of Microorganisms (3)** **Roman**
(Offered alternate years; offered 1956-57.) Prerequisite, 451 or permission.
- 573 Topics in Limnology (2)** **Edmondson**
May be repeated for credit.

BOTANY

- 520 Seminar (1)** **Staff**
- 521 Seminar in Plant Physiology (1, maximum 5)** **Meeuse, Walker**
Modern methods and trends in plant physiology. Prerequisite, 371 or 472.
- 600 Research (*)** **Staff**
Original investigations of special problems in genetics, morphology, mycology, taxonomy, or plant physiology.
- Thesis (*)** **Staff**

CHEMISTRY

Executive Officer: PAUL C. CROSS, 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 first and second teaching areas for students in the College of Education.

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

Requirements in the prescribed curriculum are: 65 credits in chemistry (including elected biochemistry courses); 15 in physics; mathematics through 253; 18 in science electives; 24 in humanities and social studies; and the balance in free electives. Students taking this curriculum do not have to meet the College group requirements. For graduation, the student must demonstrate a reading knowledge of German; obtain a grade-point average of at least 2.50 in his chemistry courses, with a C or better in each course; and obtain a total grade-point average of 2.50.

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

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

The third and fourth years should include the sequences Chemistry 358, 359, and 426, and 415, 425, and 445. Other upper-division courses may be elected to fulfill the general requirements and to provide advanced work in fields of greatest value to the individual. Students finishing their junior year with a grade-point average of 3.00 or better are encouraged to take Chemistry 499 (Undergraduate Research), during their senior year.

Deviations from the above schedule may be made according to the student's background. The exact schedule will be planned with the adviser, taking into account high school courses and grade point, the score on the mathematics placement test (taken at the Department of Mathematics during registration), and other information.

BIOCHEMISTRY OPTION. Students interested in biochemistry may elect Biochemistry 481, 482, 483, and 499 as part of the 65 required credits in chemistry.

BACHELOR OF ARTS

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

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

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School 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 Thursday and Friday 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 have been passed. The language requirement may be satisfied by passing examinations in German and in either Russian or French.

COURSES FOR UNDERGRADUATES

- 101 General Chemistry (5)** **Staff**
For students in home economics, nursing, and others preparing for 230. Periodic system, reactions, and principles.
- 103, 104 General Chemistry (5,5)** **Staff**
For engineering students only (except those in chemical, ceramic, and metallurgical engineering) who have taken no high school chemistry. 103: gases, liquids, solids, solutions, equilibria. 104: reaction rates, thermo- and electro-chemistry, acids and bases, oxidation and reduction.
- 105, 106 General Chemistry (3-3)** **Staff**
Similar to 103 and 104 but with a prerequisite of high school chemistry.
- 107 General Chemistry (3)** **Staff**
For engineering students. Structure, nuclear reactions, metals, organic and industrial processes. Prerequisite, 104, 106, or 112.
- 111 General Chemistry (5)** **Staff**
Open only to students without high school chemistry. Primarily for those who expect to continue through 113 or beyond. Periodic system; some families of elements; laws of chemical combination; gases; atomic, kinetic, and ionic theories; electrolysis.
- 112 General Chemistry (5)** **Staff**
Atomic and molecular structure, chemical bonding, oxidation-reduction, electro-chemistry, nonmetals, solutions, equilibria. Prerequisite, 111 or 115.
- 113 Elementary Qualitative Analysis (5)** **Staff**
Semi-micro qualitative analysis for common cations; metals, metallurgy, carbon compounds, nuclear reactions. Prerequisite, 112.
- 115 General Chemistry (5)** **Staff**
For students who have had high school chemistry. Primarily for those who expect to continue through 113 or 116. Chemistry advisers should be consulted as to whether this course should be followed by 112 or 116. Content similar to that of 111. No credit if 111 has been taken.
- 116 General Chemistry and Qualitative Analysis (5)** **Staff**
Content similar to 113. No credit if 113 has been taken. Prerequisites, 115 and permission.
- 130-131 Elementary Chemistry (3-3)** **Staff**
An introduction to general and organic chemistry. For nursing students only.
- 221 Quantitative Analysis (5)** **Staff**
Volumetric and gravimetric. No credit if 325 has been taken. Prerequisite, 113 or 116.
- 230 Organic Chemistry (5)** **Staff**
For home economics and nursing students. Fundamental reactions of simple organic compounds; carbohydrates, fats, proteins, and other compounds of biological importance. Prerequisite, 101 or 111.
- 231, 232 Organic Chemistry (3,3)** **Staff**
For students in premedicine and predentistry and others desiring two quarters of organic chemistry. Structure, nomenclature, reactions, and synthesis of the main types of organic compounds. Prerequisite, 104, 106, or 112.

- 237, 238, 239 Organic Pharmaceutical Chemistry (5,5,5)** **College of Pharmacy Staff**
For pharmacy students only.
- 241, 242 Organic Chemistry Laboratory (2,2)** **Staff**
241: preparation of representative compounds. Prerequisite, 231, which may be taken concurrently. 242: preparations and qualitative organic analysis. Prerequisites, 241 and 232, which may be taken concurrently.
- 321 Advanced Qualitative Analysis (3)** **Staff**
Anion and cation analysis, including some of the less common elements. Prerequisite, 113 or 116.
- 325 Quantitative Analysis (5)** **Staff**
For chemistry and chemical engineering majors and other qualified students. Volumetric and gravimetric analysis. No credit if 221 has been taken. Prerequisite, 113 or 116.
- 333 Intermediate Organic Chemistry (3)** **Staff**
Electronic mechanism of organic reactions; less common compounds and reactions. Prerequisite, 232.
- 335, 336, 337 Organic Chemistry (3,3,3)** **Staff**
For chemistry and chemical engineering majors and other qualified students. Structure, nomenclature, reactions, and synthesis of organic compounds. Theory and mechanism of organic reactions. Prerequisite, 113 or 116.
- 345, 346 Organic Chemistry Laboratory (2,2)** **Staff**
Organic synthesis. Prerequisite for 345, 335, which may be taken concurrently. Prerequisites for 346, 345 and 336, which may be taken concurrently.
- 351, 352 Elementary Physical Chemistry (3,3)** **Staff**
Structure of matter; theory of solids, liquids, and gases; solutions and their colligative properties. Prerequisites, 221 or 325, and college physics.
- 353 Chemical Thermodynamics (4)** **Staff**
Prerequisites, 352 and calculus.
- 354 Elementary Physical Chemistry Laboratory (2)** **Staff**
Prerequisite, 352.
- 355, 356, 357 Physical Chemistry (3,4,3)** **Staff**
For chemistry and chemical engineering majors and other qualified students. Atomic and molecular structure. Thermodynamics and chemical equilibrium, solutions, thermo- and electro-chemistry, kinetics, colloid and surface chemistry. States of matter and phase equilibria. Prerequisites, 113 or 116, calculus, and college physics, or permission.
- 358, 359 Physical Chemistry Laboratory (3,3)** **Staff**
Prerequisites, 325 and 357 or 355, 356, and 357, which may be taken concurrently as offered.
- 415, 416, 417 Advanced Inorganic Chemistry (3,3,3)** **Cady, Gregory, Ritter**
Systematic study based upon atomic, molecular, and crystal structure, the nature of chemical bonds, and the periodic table. Prerequisite, 357 or permission.
- 418 Radiochemistry (3)** **Fairhall**
Natural radioactivity, nuclear systematics, nuclear reactions, radioactive decay processes, decay laws, statistical considerations, applications of radioactivity. Prerequisite, 357 or permission.
- 419 Radiochemistry Laboratory (2)** **Fairhall**
Safe handling and quantitative measurement of radioactivity, radiochemical separations, preparation of radioactive tracers, nuclear fission. Prerequisite, 418, which may be taken concurrently, or permission.
- 425 Quantitative Analysis (3)** **Crittenden**
Special analytical methods. Prerequisites, 325, 337, and 357, or permission.
- 426 Instrumental Analysis (3)** **Crittenden**
Introduction to electrical and optical methods of analysis. Prerequisites, 325, 337, and 359, or permission.
- 427 Advanced Quantitative Theory (3)** **Crittenden**
Theoretical principles of analytical chemistry. Prerequisites, 325 and 337, or permission.
- 428 Chemical Microscopy (3)** **Robinson**
Theory of the polarizing microscope and its application to chemistry. Prerequisite, 426 or permission.
- 429 Microquantitative Analysis (3)** **Robinson**
Principles and techniques. Prerequisite, 426 or permission.
- 445 Qualitative Organic Analysis (3)** **Wiberg**
Identification and characterization of simple organic compounds. Prerequisite, 346 or permission.
- 446 Advanced Organic Preparations (3)** **Staff**
Preparation, isolation, and purification of organic compounds requiring advanced techniques and specialized apparatus. Critical consideration of alternative synthetic methods. Prerequisite, 445 or permission.
- 451 Advanced Physical Chemistry Laboratory (2 or 3)** **Staff**
Prerequisite, 359 or permission.
- 499 Undergraduate Research (*, maximum 9)** **Staff**
For qualified students in the prescribed curriculum, especially those planning graduate work. Prerequisite, permission.

COURSES IN BIOCHEMISTRY

The following courses, offered by the Department of Biochemistry, Division of Health Sciences, are open to undergraduate students in other natural science fields:

- 361 Biochemistry (3)** **Staff**
Lectures covering the basic principles of biochemistry, including the structure and metabolism of biologically important compounds. For dental students; recommended for home economics, forestry, and fisheries students. Prerequisite, Chemistry 230 or 232.
- 363 Biochemistry Laboratory (2)** **Staff**
Laboratory exercises in general biochemistry for home economics students and others. Prerequisite, 361, which may be taken concurrently.
- 481, 482 Biochemistry (3,3)** **Staff**
Structure, metabolism, and function of substances pertinent to animal and plant life. A basic course for graduate or advanced undergraduate students of chemistry, biochemistry,
- 530, 531, 532, 533, 534 Advanced Organic Chemistry (3,3,3,3,3)** **Staff**
and various biological sciences. Biochemistry 483 is recommended as a concurrent course. Prerequisites, Chemistry 337 for 481; 481 or permission for 482; introductory physical chemistry is recommended.
- 483 Biochemistry Laboratory (3)** **Staff**
Laboratory exercises and conferences. For students of biochemistry, chemistry, and various biological sciences. Prerequisite, 481, which may be taken concurrently.
- 499 Undergraduate Research (*)** **Staff**
Investigative work on enzymes, proteins, lipides, intermediary metabolism, physical biochemistry, and related fields. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 515 Topics in Inorganic Chemistry (3, maximum 18)** **Staff**
Open only to students accepted for doctoral work in chemistry.
- 520 Seminar (1-3, maximum 9)** **Staff**
- 526 Advanced Instrumental Analysis (3)** **Crittenden**
Absorption and emission spectroscopy, polarography, potentiometry, and dielectric properties as applied to problems in analytical chemistry. Prerequisite, 359 or permission.
- 527 Topics in Analytical Chemistry (3, maximum 18)** **Staff**
Open only to students accepted for doctoral work in chemistry.
- 528 Microqualitative Analysis (3)** **Robinson**
Identification of ions by means of optical properties of their crystals. Prerequisite, 428 or permission.
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.
- 537 Physical Organic Chemistry (3)** **Schubert**
Interpretation and application of data obtained by combined methods of organic and physical chemistry to the problems of structure of organic compounds and mechanisms of organic reactions. Prerequisites, 532 and 552, or permission.
- 538 Topics in Organic Chemistry (3, maximum 18)** **Staff**
Open only to students accepted for doctoral work in chemistry.
- 550, 551, 552 Advanced Physical Chemistry (3,3,3)** **Staff**
Elementary concepts of quantum chemistry, statistical mechanics, thermodynamics, kinetic theory, and chemical kinetics. Prerequisite, 357 or permission.
- 553 Solutions and Colloids (3)** **Gregory**
Thermodynamic considerations of solubility and theories of electrolytic solutions, electrochemical methods, electrokinetic phenomena, and surface chemistry. Prerequisite, 552 or permission.
- 554 Molecular Structure (3)** **Eggers**
Measurement and interpretation of molecular spectra (ultraviolet, visible, infrared, Raman), X-ray and electron diffraction, dipole moments, and magnetic susceptibilities. Prerequisite, 357 or permission.
- 555, 556, 557 Quantum Chemistry (3,3,3)** **Halsey, Simpson**
Quantum theory of valence, unsaturation, quantum statistics, molecular dynamics, and related topics. Prerequisite, permission.
- 558 Chemical Crystallography (3)** **Lingafelter**
Crystal structure of diffraction of X rays, electrons, neutrons; crystal chemistry; spectra of crystals; theory of metals. Prerequisite, 357 or permission.
- 559 Topics in Physical Chemistry (3, maximum 18)** **Staff**
Open only to students accepted for doctoral work in chemistry.
- 560 Chemical Kinetics (3)** **Rabinovitch**
Consideration of reaction rate theory and applications, including specialized aspects of topical interest. Prerequisite, 552 or permission.
- 591 Seminar in Inorganic Chemistry (1-5, maximum 18)** **Staff**
- 592 Seminar in Analytical Chemistry (1-5, maximum 18)** **Staff**

593 Seminar in Organic Chemistry (1-5, maximum 18)	Staff
595 Seminar in Physical Chemistry (1-5, maximum 18)	Staff
600 Research (*)	Staff
Thesis (*)	Staff

CLASSICS

Executive Officer: JOHN B. McDIARMID, 203 Denny Hall

The Department of Classics offers courses leading to the degrees of Bachelor of Arts and Master of Arts.

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

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

BACHELOR OF ARTS

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

GREEK MAJOR. The requirement is: 27 credits in upper-division Greek courses; and 9 credits chosen with the consent of the Department from among upper-division Latin courses, Greek courses, Classics 330 and 340, History 201-202 (Ancient History), History 403 (The Roman Republic), History 404 (The Roman Empire), and Philosophy 320 (History of Ancient and Medieval Philosophy).

LATIN MAJOR. The requirement is: 27 credits in upper-division Latin courses; and 9 credits chosen with the consent of the Department from among upper-division Latin courses, Greek courses, Classics 330 and 340, History 201-202 (Ancient History), History 403 (The Roman Republic), History 404 (The Roman Empire), and Philosophy 320 (History of Ancient and Medieval Philosophy).

MASTER OF ARTS

Students who intend to work toward the master's degree must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. The Department requires that applicants for candidacy have a reading knowledge of French or German. Latin and Greek courses to be applied toward this degree must be numbered 400 and above.

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

COURSES FOR UNDERGRADUATES

GREEK

101-102, 103 Elementary Greek (5-5,5)	Staff
Introduction to classical Greek with emphasis on rapid development of ability to read Attic prose.	
201-202 Socrates (3-3)	McDiarmid
A study based on readings from Plato, Xenophon, and Aristophanes.	
207, 208 Grammar and Composition (2,2)	McDiarmid
Systematic review of grammatical principles; exercises in prose composition. To be taken concurrently with 201-202.	
262 Homer (3)	McDiarmid
Introduction to Greek poetry through selections from the <i>Iliad</i> or the <i>Odyssey</i> . Prerequisite, -202.	
309 Advanced Grammar and Composition (1, maximum 4)	McDiarmid
Prerequisite, 208.	
N391 Sight Reading (0)	Staff
Prerequisite, -202 or permission.	

413 The Pre-Socratic Philosophers (3) (Offered alternate years; offered 1956-57.)	McDiarmid
414 Plato (3) One or more of the longer dialogues. (Offered alternate years; offered 1956-57.)	McDiarmid
415 Aristotle (3) Selections to illustrate the chief doctrines. (Offered alternate years; offered 1956-57.)	McDiarmid
422 Herodotus and the Persian Wars (3) (Offered alternate years; offered 1955-56.)	Staff
424 Thucydides and the Peloponnesian War (3) (Offered alternate years; offered 1955-56.)	Staff
430 Attic Orators (3) (Offered alternate years; offered 1955-56.)	Staff
442 Introduction to Greek Drama: Euripides (3) (Offered alternate years; offered 1955-56.)	McDiarmid
443 Sophocles (3) (Offered alternate years; offered 1955-56.)	McDiarmid
444 Aeschylus (3) (Offered alternate years; offered 1955-56.)	McDiarmid
451 Lyric Poetry (3) (Offered alternate years; offered 1956-57.)	Staff
453 Pindar: The Epinician Odes (Offered alternate years; offered 1956-57.)	Staff
455 Hellenistic Poetry (3) (Offered alternate years; offered 1956-57.)	Staff
490 Supervised Study (3-5, maximum 15) Special work in literary and philosophical texts for graduates and undergraduates.	Staff
499 Undergraduate Research (*, maximum 15)	Staff

LATIN

101-102, 103 Elementary Latin (5-5,5) Introduction to classical Latin with emphasis on the rapid development of reading ability.	Pascal
201 Roman Letters (3) Reading in the letters of Cicero and Pliny to illustrate important phases of Roman life. Prerequisite, two years of high school Latin or 103.	Grummel
202 Roman Elegy (3) Selected elegies of Catullus, Tibullus, Propertius, and Ovid. Prerequisite, 201 or permission.	Grummel
203 Vergil (3) Selections from the first six books of the <i>Aeneid</i> . Prerequisite, 202 or permission.	Read
207, 208 Grammar and Composition (2,2) Systematic review of grammatical principles; exercises in prose composition. Prerequisite, two years of high school Latin or 103.	Read
309 Advanced Grammar and Composition (1, maximum 4) Prerequisite, 208.	Grummel
N391 Sight Reading (0) Prerequisite, permission.	Staff
401 Medieval Latin (3) Prerequisite, permission.	Pascal
404 Comparative Grammar of Latin and Greek (3) Comparative and historical study of Latin and Greek as an introduction to Indo-European philology. Prerequisite, permission.	Grummel
412 Lucretius (3) (Offered alternate years; offered 1956-57.)	Grummel
413 Cicero's Philosophical Works (3) (Offered alternate years; offered 1956-57.)	Grummel
414 Seneca (3) (Offered alternate years; offered 1956-57.)	Grummel
422 Livy (3) (Offered alternate years; offered 1955-56.)	Pascal
424 Tacitus (3) (Offered alternate years; offered 1955-56.)	Pascal
426 Roman Biography (3) (Offered alternate years; offered 1955-56.)	Pascal
430 Latin Novel (3) (Offered alternate years; offered 1955-56.)	Grummel

442 Roman Drama (3)	Pascal
(Offered alternate years; offered 1956-57.)	
451 Roman Satire (3)	Grummel
(Offered alternate years; offered 1955-56.)	
455 Catullus (3)	Pascal
(Offered alternate years; offered 1956-57.)	
456 Horace (3)	Pascal
(Offered alternate years; offered 1956-57.)	
458 Roman Epic (3)	Grummel
(Offered alternate years; offered 1955-56.)	
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. Offered jointly with the College of Education. (Offered Summer Quarter only.)	
490 Supervised Study (3-5, maximum 15)	Staff
Special work in literary and philosophical texts for graduates and undergraduates.	
499 Undergraduate Research (*, maximum 15)	Staff

CLASSICAL COURSES IN ENGLISH

101, 102 Latin and Greek in Current Use (2,2)	Staff
Designed to increase English vocabulary through study of the principles of word building and of Greek and Latin derivatives, with emphasis on words in literary and scientific use. No knowledge of Latin or Greek required.	
210 Greek and Roman Classics in English (5)	Grummel
Masterpieces of Greek and Roman literature studied in translation, their meaning as works of art and their contribution to Western culture.	
322 Greek Historians and Philosophers in English (2)	Staff
326 Greek and Roman Epic in English (3)	Grummel
327 Greek and Roman Drama in English (3)	McDiarmid
330 Greek and Roman Mythology (3)	Grummel
A study of the principle myths found in classical and later literature.	
340 Greek and Roman Critics in English (3)	Grummel
The problems of literary criticism as considered by the major classical critics.	

COURSES FOR GRADUATES ONLY

GREEK

520 Seminar (3-5, maximum 15)	Staff
600 Research (3-5, maximum 15)	Staff
Thesis (*)	Staff

LATIN

520 Seminar (3-5, maximum 15)	Staff
600 Research (3-5, maximum 15)	Staff
Thesis (*)	Staff

COMMUNICATIONS

Director: HENRY LADD SMITH, 129 Communications Building

The School of Communications, through the Divisions of Journalism and Radio-Television, offers prescribed curricula devoted to professional training in writing, editing, advertising, and production in the field of mass media. The College of Arts and Sciences group requirements are included in these curricula.

Students planning to transfer to the School of Communications from other schools are urged to do so not later than the beginning of their last quarter as sophomores. This will enable them to satisfy lower-division requirements and enroll as regular upper-division majors the following fall. Potential journalism majors unable to transfer for the period indicated above will be asked to take lower-division requirements and senior electives in the junior year. Transfer

students are rarely permitted to enter the full professional program during their first quarter in the University.

Upon the recommendation of the Director, students without upper-division standing may be admitted to upper-division courses, if they are proficient in English, composition, and typing; have had sound training in the social sciences; and have had not less than one year's experience in newspaper work, radio or television stations, or equivalent training.

A student holding a bachelor's degree from a recognized college or university may, with the permission of the Director, take third-year journalism or upper-division Radio-TV. Customarily, this work can not be counted toward an advanced degree.

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

Journalism

The Division of Journalism offers a prescribed curriculum with a choice of either an editorial or an advertising and management sequence.

In addition, the Division offers first and second teaching areas 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 Journalism 100, 200, 201, 220, 303, and 404. Home economics students who wish to take a supporting field in journalism should elect Journalism 100, 200, 201, 220, 303, 404, and either 370 or Radio-TV 342 (Radio and Television Advertising). Students in the above areas are required to maintain a 2.50 grade-point average in the above listed group of journalism courses.

BACHELOR OF ARTS

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

All journalism students must complete a total of 9 credits in English literature at some time during their four years.

First and Second Years

CREDITS		CREDITS	
Journ. 100 Journalism Today	2	Classics 101, 102 Latin & Greek	
Journ. 200 News Writing	5	in Current Use	4
Journ. 201 Copy Editing	2	Speech 120 Intro. to Public Speak.	
Journ. 220 Intro. to Advertising	3	or 240 Oral Interpretation	5
Econ. 200 Introduction	5	Science Electives (Group III)	10
Engl. 101, 102 Composition	6	Electives	29
Hist. 241 Survey of U.S.	5	Phys. Educ. 110 or 175 Health	2
Pol. Sci. 201 Modern Government, or		Phys. Educ. activity	3
Pol. Sci. 202 American Government	5	ROTC	12-18
Psychol. 100 General	5		

91-109

To be admitted to one of the sequences in third-year journalism, the student must have completed 90 academic credits with an over-all grade-point average of at least 2.50 and an average of 3.00 in the four lower-division journalism courses.

No elective courses may be taken during the third year. A minimum grade-point average of 3.00 must be maintained, and students who fail to meet this requirement at the end of any quarter may be requested to change their major.

EDITORIAL SEQUENCE. Third-year requirements are: Journalism 300, 303, 306,

310, 326, 327, 328, 329, 333, 334, 347, and Radio-TV 320 (Radio News Writing). Fourth-year requirement is Journalism 400.

ADVERTISING AND MANAGEMENT SEQUENCE. Third-year requirements are: Journalism 300, 303, 306, 310, 326, 329, 347, 348, 350, 352, 355, and Radio-TV 342 (Radio and Television Advertising). Fourth-year requirements are: Journalism 400 and 452.

COURSES FOR UNDERGRADUATES

Only those courses in journalism 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.

- 100 **Journalism Today (2)** **Mansfield, McKenzie**
A survey of the field of communications: newspaper, magazine, radio and television, public relations, propaganda, photo journalism, and advertising. Objectives and responsibilities of the various areas of communications. Career opportunities in these fields outlined. Open to lower-division nonmajors.
- 200 **News Writing (5)** **Christian, Staff**
Structure of the news story, types of news leads, and feature stories. Open to nonmajors by permission. Not open to freshmen. Typing requirements must have been fulfilled.
- 201 **Copy Editing (2)** **Mansfield, Staff**
Editing news copy, writing cutlines and captions, headline writing, and newspaper make-up. Open to nonmajors. Prerequisite, 200 or permission.
- 220 **Introduction to Advertising (3)** **Sethre, Strehlau, Warner**
A survey of the economics of advertising, its organizational structure, and the elements of copy, production, media, and research. Open to nonmajors.
- 300 **Laboratory Work on University "Daily" (2-5, maximum 15)** **Astel, Staff**
Practical work on the editorial staff of the University of Washington *Daily*. Prerequisite, journalism major or permission.
- 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. Prerequisite, upper-division standing or permission. Open to nonmajors in Autumn Quarter only.
- 306 **Printing Processes (3)** **Murton**
Basic graphic arts principles: typography, copy-fitting, engraving, paper, and printing processes.
- 310 **Photographic Laboratory (1)** **Root**
Basic news photography; the photographic process; news camera technique; darkroom practices; planning news pictures.
- 326 **Contemporary Affairs (3, maximum 9)** **McKenzie**
Background and significance of international, national, and local newsworthy events. Primarily a discussion course.
- 327 **Reporting (5)** **Benson, Staff**
General reporting techniques; covering the courts for the press; legal terminology; legal forms; trial procedures.
- 328 **Reporting (5)** **Christian, Staff**
Covering the principal news beats for the press; operations of local government institutions. Supplemented by city assignments. Parallel experience in processing copy.
- 329 **Legal Aspects of Communications (5)** **Benson, Sethre**
Legal regulations governing editorial and advertising matter; libel; copyright; rights of access and publication; provisions governing trade marks; rulings of the Federal Trade Commission, Federal Communications Commission, United States Post Office, and other official agencies as applied to the media of communications.
- 333 **Editorial Writing, Policies, and Research (5)** **Benson**
Concepts of editorial responsibility; study of outstanding editorial pages; research for practice in preparing editorial page material, including analytical, interpretive, and persuasive writing.
- 334 **History of Journalism (3)** **Smith**
Growth and development of the press with emphasis on journalism in the United States, its social, political, and ethical responsibilities.
- 347 **Newspaper Management (3)** **Sethre**
Problems of the display, classified, circulation, and promotion departments of both large and small newspapers.
- 348 **Basic Advertising Copy (5)** **Warner**
Principles of copy and layout; practice in the preparation of copy and layout with emphasis on newspapers and direct mail.
- 350 **Advertising Production (2)** **Staff**
Student laboratory in the techniques, organization, and specification of advertising production. Correlated with 348.

- 352 Advertising Selling (3, maximum 6)** **Warner, Staff**
Supervised field assignments in the analysis of and the selling and servicing of advertising to specific businesses for the *University Daily* and other campus publications. Majors in advertising must take two quarters.
- 355 Special Copy Applications (5)** **Sethre, Strohlau, Warner**
Principles and techniques of national advertising copy and layout; specific problems in the preparation of trade, industrial, and consumer copy.
- 370 Advertising Procedures (5)** **Sethre**
Layout and copy writing; type-laboratory instruction in display advertising and campaign planning and production. Prerequisites, 220 or Marketing 391. Open to nonmajors.
- 375J Teachers' Course in Journalism (3)** **Brier**
For teachers in high schools and junior colleges and education students taking first or second teaching areas in journalism. Offered jointly with the College of Education. Prerequisites, 200 and 201.
- 390 Trade and Technical Press (2, maximum 12)** **Mansfield**
Writing and production problems of the trade, technical, and business press. Prerequisites, 200, upper-division standing, and permission.
- 400 Publication Management Problems (3)** **Smith, Staff**
Group discussion of interrelation of current editorial, circulation, and advertising problems.
- 404 Magazine Article Writing (3)** **Brier, Mansfield, Smith**
Professional nonfiction writing for national magazines, trade journals, and specialized publications. Open to nonmajors. Prerequisite, upper-division standing or permission.
- 410 Photographic Laboratory (2-4, maximum 8)** **Root**
Newspaper darkroom planning and procedures; editing and printing wet negatives; handling spot news pictures and assignments; covering the feature story; sports coverage, picture page layout; view finding; photos for engraving; photo staff methods. Prerequisite, 310 or permission.
- 435 Comparative Journalism (3)** **Mansfield**
Analysis of contemporary national and regional publication trends.
- 440 Advertising Campaigns (3)** **Warner**
Functions of the advertising department and agency; planning and execution of campaigns; research, basic theme, testing, media selection, trade promotion.
- 452 Advertising Selling Laboratory (3)** **Warner, Staff**
Experience in advertising office management and selling for the *University Daily* and other campus publications.
- 460 Problems in Public Relations (5)** **Christian**
Group application of public relations principles to field problems of local businesses or agencies; with reports and recommendations. Open to nonmajors. Prerequisites, 303 and permission.
- 473 Short Story Writing (5)** **Mansfield**
Professional fiction writing for national magazines. Open only to upper-division students. Limited to twenty students. Open to nonmajors.
- 476 Problems in Short Story Writing (3, maximum 18)** **Mansfield**
Seminar in advanced professional fiction writing for national publications. May be repeated for credit to a maximum of 18 credits at the discretion of the Division. Limited to ten students. Open to nonmajors. Prerequisite, permission.
- 480 Propaganda (5)** **McKenzie**
Propaganda as a social and political force; propaganda techniques and evaluation; psychological warfare operations; emphasis on post-1939 period and Communist propaganda. Open to nonmajors.
- 482 Undergraduate Seminar in Propaganda and Psychological Warfare (5)** **McKenzie**
Problems and suggested solutions of operational studies and reports in propaganda and psychological warfare. Prerequisites, 480 and permission.
- 498 Problems of Journalism (2-5, maximum 15)** **Staff**
Research and individual study. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 501 Journalism and History (2)** **Smith**
Seminar in aspects of the American press through a study of original source material.
- 580 Seminar in Propaganda (5)** **McKenzie**
The crystallization of public opinion and of propaganda techniques. Open to nonmajors. Prerequisites, 480 and permission.
- 600 Research (3-5)** **Staff**

Radio-Television

EDWIN H. ADAMS, 329 Communications Building

The Division of Radio-Television offers professional training in the field of broadcasting through a curriculum leading to the degree of Bachelor of Arts.

BACHELOR OF ARTS

In this elective curriculum, the following courses are required: Radio-Television 100, 270, 320, 342, 350 (minimum 5 credits), 480; Journalism 200 (News Writing), 220 (Introduction to Advertising), 303 (Public Relations); Speech 110 (Voice Improvement), 111 (Articulation Improvement), 260 (Radio Speech), 361 (Advanced Radio Speech), 462 (Radio Production Methods), and 463 (Radio Program Building).

Additional related courses include Journalism 329 (Legal Aspects of Communications) and 480 (Propaganda).

From the beginning of the junior year, majors must have a cumulative grade-point average of at least 2.50 and a grade-point average of at least 3.00 in major subjects.

COURSES FOR UNDERGRADUATES

- | | | |
|------------|---|-----------------------|
| 100 | Survey of Radio and Television (5) | Adams |
| | History of the media; organization and regulation of the industry; commercial aspects; educational use; elements of programming. Not open to students who have had 200 or 205. | |
| 270 | Elements of Radio Writing (3) | Staff |
| | Writing of radio announcements; script forms; principles of writing for listeners. Not open to students who have credit in Drama 444. | |
| 271 | Radio Continuity (3) | Staff |
| | Writing radio continuity; responsibilities of station continuity chief. Not open to students who have credit in Drama 445. Prerequisite, 270. | |
| 272 | Radio Dramatic Writing (3) | Staff |
| | Principles of writing radio drama and their application. Not open to students who have credit in Drama 446. Prerequisites, 271 and permission. | |
| 320 | Radio News Writing (3) | Cranston, Ryan |
| | Gathering, writing, and editing news for radio; building news programs. For majors only. Prerequisite, Journalism 200. | |
| 342 | 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, Journalism 220. | |
| 350 | Laboratory Work on KUOW (2-5, maximum 15) | Adams, Staff |
| | Practical work on the University radio station. Prerequisite, permission. | |
| 420 | Advanced Radio News (3, maximum 6) | Cranston |
| | Editing and writing news for radio under broadcast conditions. Prerequisites, 320 and permission. | |
| 450 | Television Programming (5) | Staff |
| | Planning, developing, and writing various types of programs, emphasizing visual treatment of ideas. Prerequisite, permission. | |
| 451 | Television Performance (2) | Staff |
| | Problems of the television performer: taking the cue, movement, techniques of demonstration, interviewing. Prerequisite, permission. | |
| 455 | Television Film Techniques (2 or 3) | Staff |
| | Film camera and editing techniques; film selection and procurement; video recording. Lectures, 2 credits; laboratory, 1 credit, optional with permission of instructor. Prerequisite, permission. | |
| 456 | Television Staging and Graphics (2) | Staff |
| | The art phases of television production; set building and decoration; preparation of visual aids. Prerequisite, permission. | |
| 461 | Television Production (3) | Ryan |
| | Familiarization with camera and control equipment and experience in program directing through production of various types of programs. Prerequisite, permission. | |
| 465 | Television Workshop (2-5, maximum 10) | Ryan |
| | Laboratory work in educational television station. Prerequisites, 461 and permission. | |
| 480 | Station Organization (3) | Adams, Staff |
| | Functions and interrelationship of departments of the broadcast station. For majors only. | |
| 498 | Problems of Radio and Television (2-5, maximum 15) | Adams, Staff |
| | Special projects and individual study. Prerequisite, permission. | |

DENTAL HYGIENE, PREPROFESSIONAL PROGRAM

Adviser, 121 Miller Hall

The two-year pre dental 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 (Composition); Biology 101J-102J (General); Chemistry 101, 230 (General and Organic); Physical Education 110 (Health Education); Physics 170 (Physics for Nurses) or 100 (Survey); Psychology 100 (General); and Speech 120 (Introduction to Public Speaking). Of the remaining 44 elective credits, a minimum of 10 credits must be taken in the humanities and a minimum of 20 credits in the social sciences, which must include Sociology 110 (Survey). The student should choose elective subjects which are of greatest interest and give the broadest educational background for dental hygiene.

The two-year General Education program may be used as preparation for dental hygiene. Students who take this program must have Chemistry 101 and 230 (General and Organic) and Speech 120 (Introduction to Public Speaking) in their curriculum.

The major in dental hygiene is described in the *Schools of Medicine and Dentistry Bulletin*.

DENTISTRY, PREPROFESSIONAL PROGRAM

Adviser: RICHARD C. SNYDER, 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), with a grade-point average of 2.00. 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 66.)

DRAMA

Director: GLENN HUGHES, 410 Denny Hall

The School of Drama offers courses leading to the degrees of Bachelor of Arts and Master of Arts. In addition, it offers first and second teaching areas and a basic academic field for students in the College of Education.

BACHELOR OF ARTS

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

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

MASTER OF ARTS

Candidates for this degree must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. Normally a major in drama is supported by a minor in English.

COURSES FOR UNDERGRADUATES

- 101, 102, 103 Introduction to the Theatre (2,2,2)** Hughes
Significant aspects of the modern theatre.
- 146, 147, 148 Theatre Speech (3,3,3)** Carr, Galstaun, Gray
Prerequisites, 146 for 147; 147 for 148.
- 251, 252, 253 Acting (3,3,3)** Carr, Gray, Harrington
Theory and practice of pantomime, improvisation, and characterization. Prerequisites, 148 for 251; 251 for 252; 252 for 253.
- 307, 308, 309 Puppetry (2,2,2)** Valentinetti
Practical work in constructing and manipulating simple hand and string puppets which may be used in nursery, elementary, or secondary teaching, therapy, recreation, play guidance, and creative dramatics. With permission, may be repeated for credit.
- 403 Scene Construction (3)** Lounsbury
Principles and actual construction of stage scenery and properties.
- 404 Scene Design (3)** Conway
Prerequisite, 403.
- 405 Historic Costume for the Stage (3)** Crider
Survey of historic costume in the Western world beginning with the Egyptians and continuing to the present period.
- 406 Make-up (3)** Davis
- 407 History of Theatrical Costume (2)** Crider
Historical survey of theatrical costume beginning with the Attic theatre to the modern. Includes drama, opera, and ballet.
- 408 Stage Costume Construction (2)** Hedges
Practical laboratory course in techniques of costume construction, including fundamentals of pattern making.
- 410 History of Wigs and Wig Making (2)** Crider
The role of wigs in historical dress and techniques of wig construction.
- 411, 412, 413 Playwriting (3,3,3)** Hughes
A professional course. Prerequisites, English 328, 329, and permission.
- 414 Stage Lighting (3)** Conway, Lounsbury
A nontechnical survey course.
- 415 Advanced Stage Lighting (3)** Staff
- 417, 418, 419 Advanced Theatre Workshop (2,2,2)** Staff
Prerequisite, either 403, 404, 405, 406, 414, or 415, or permission.
- 420 History of Masks and Mask Making (2)** Davis
The role of masks in Western and Oriental theatre. Techniques of mask construction.
- 421, 422, 423 Advanced Acting (3,3,3)** Harrington
Group acting. Styles in acting: tragedy, comedy, period, modern. Prerequisites, 251, 252, and 253. With permission, may be repeated for credit.
- 426 High School Play Production (3)** Gray, Harrington
A practical course for nonmajors.
- 427, 428, 429 History of the Theatre (2,2,2)** Conway
The Orient, Europe, and America. The physical playhouse, methods of production, great actors, stage machinery, scenery, lighting, costumes, and masks.
- 434, 435, 436 Children's Theatre (3,3,3)** Carr
Theory and methods. Participation in productions, with emphasis on directing. Prerequisite, 253.
- 437, 438, 439 Creative Dramatics with Children (3,3,3)** Haaga, Staff
Practical training for work with children's groups. Emphasis on development of the child intellectually, emotionally, physically, and socially, through story and impromptu dramatizations. Lectures, reading, laboratory, and field observation.
- 451, 452, 453 Representative Plays (3,3,3)** Hughes
Great playwrights of all important periods. Theories of the drama.
- 481, 482, 483 Directing (3,3,3)** Harrington
Prerequisites, 251, 252, 253, 421 or 423, and 422.
- 497 Theatre Organization and Management (2)** Hughes
Personnel, box-office methods, advertising, production costs, royalties, and executive policies.
- 499 Undergraduate Research (1-5, maximum 15)** Staff

COURSES FOR GRADUATES ONLY

509 Advanced Stage Costume Construction and Design (2) Prerequisites, 405 and 408.	Crider
515 Scenic Projection (3) Theories and experiments with various methods of scenic projection. Prerequisites, 414, 415, or permission.	Conway
517 Advanced Stage Design (3) Prerequisites, 404, 417, 418, 419, or permission.	Conway
518 Technical Direction (3, maximum 9)	Lounsbury
519 Lighting Research and Development (3, maximum 9)	Lounsbury
551-552-553 Teaching of Acting (2-2-2) Prerequisites, 422 and permission.	Harrington
581 Advanced Directing (3) Prerequisites, 483 and permission.	Harrington
601, 602, 603 Research (5,5,5) Prerequisite, permission.	Hughes
Thosis (*)	Staff

ECONOMICS

Executive Officer: J. RICHARD HUBER, 331 Savery Hall

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

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

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

In addition, the Department offers first and second teaching areas for students in the College of Education.

BACHELOR OF ARTS

GENERAL CURRICULUM. Requirements in the field of economics are: Economics 200, 201, 301, and 302 plus 25 additional credits. Of the 25 credits, 20 are to be taken in four fields other than theory, and the remaining five are to be taken either in one of the four fields so chosen or in the field of theory. Other requirements are: Accounting 150 (Fundamentals), 255 (Basic Accounting Analysis); and one of the following courses: Business Statistics 201 (Statistical Analysis), Mathematics 281 (Elements of Statistical Method), Psychology 301 (Statistical Methods), or Sociology 223 (Social Statistics). Students who specialize in international trade must take Foreign Trade 301 (Principles of Foreign Trade).

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

To remain in the curriculum, students must maintain a 3.00 grade-point average. During the first two years, they complete Economics 200, 201; Accounting 150, 151 (Fundamentals), 255 (Basic Accounting Analysis); History 241 (Survey of the History of the United States); Political Science 201 (Modern Government); Psychology 100 (General); Sociology 110 (Survey) or 310 (General); and Speech 120 (Introduction to Public Speaking).

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

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

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

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 an advanced degree in economics include work in some of these fields of specialization: economic theory; history of economic thought; money, banking, and cycles; government regulation, public utilities, and transportation (students may be permitted to concentrate their work in two of these three sub-fields); labor economics; public finance and taxation; economic history; international trade; and national economies.

MASTER OF ARTS. Candidates must complete a program in economic theory and two other fields, one of which must be in economics. Those who choose three fields in economics will be expected to complete a minimum of 15 credits in courses for graduate students only (9 in economic theory). Those who take a field in a related subject will be expected to take a minimum of 12 credits in economics in courses for graduate students only (9 in economic theory). All candidates must meet the Graduate School's general requirement of 27 credits in graduate-course work in addition to the thesis and language requirements.

DOCTOR OF PHILOSOPHY. Candidates must complete a program in five fields, four of which must be in economics including the field of economic theory. A candidate may offer a minor in another department related to his fields of major interest, or, with permission of his committee, he may offer a program of selected courses outside of economics as the fifth 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 fields offered will include three in economics (one of which must be economic theory), one joint economics and Far Eastern, and the Far Eastern minor. When this option is allowed, the candidate normally chooses a thesis subject related to his Far Eastern specialty, and the thesis is jointly supervised by the Institute and the Department.

Doctoral candidates offering a minor in economics must demonstrate competence in two fields, including economic theory. While normally 25 credits in courses approved for graduate credit will be required, candidates with an adequate background may offer less. In any case, a minimum of 12 credits in graduate courses, including 9 credits in economic theory, must be offered; in special cases a minimum of 6 credits in theory may be offered.

COURSES FOR UNDERGRADUATES

INTRODUCTORY COURSES

- | | |
|---|--|
| <p>160 American Economic History (5)</p> | <p style="text-align: right;">Morris, North</p> <p>American economic institutions, their European background and development; the impact of industrialization on the American economy from 1850 to the present.</p> |
| <p>200 Introduction to Economics (5)</p> | <p style="text-align: right;">Buechel, Morris, Worcester</p> <p>Organization, operation, and control of the American economy; consideration of problems</p> |

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)** **Staff**
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.
- 211 General Economics (3)** **Staff**
Condensation of 200. Primarily for engineering and forestry students; other students by permission.

ECONOMIC THEORY

- 301 National Income Analysis (5)** **Cartwright, Crutchfield, Gordon**
Analysis of the determinants of the aggregate level of employment, output, and income of an economy.
- 302 Intermediate Economics (5)** **Mund, Worcester**
The fundamental concepts and principles of economics. Markets, market price, and the determination of price under monopolistic conditions. The relations of price and cost; income and its functional distribution in capitalistic society. Prerequisite, 201.
- 304 Economics of Consumption (5)** **Staff**
(Not offered 1955-57.)
- 306 Development of Economic Thought (5)** **Gordon**
The development of economics 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 and later Marxism, and the transition to J. M. Keynes.
- 312 Current Economic Problems (5)** **Hald**
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.
- 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, 201.

MONEY, BANKING, AND CYCLES

- 320 Money and Banking (5)** **Crutchfield, Hald**
Nature and functions of money; the banking system, other credit-granting institutions, and the relationship of money and bank deposits to the economy.
- 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, 301 and 320.
- 422 Economic Cycles (5)** **Hald**
The characteristics of prosperity-depression cycles. Analysis of leading cycle explanations and proposed cycle remedies; discussion of current problems. Prerequisites, 301 and 320.

GOVERNMENT REGULATION, PUBLIC UTILITIES, AND TRANSPORTATION

- 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 systems. The policy of preserving competition as a means of regulating private business. Prerequisite, 200.
- 336 Economics of Transportation I (5)** **Sheldon**
Domestic and international transport: economic principles and development; public policy and special problems. Prerequisite, 200.
- 432, 433 Economics of Public Utilities (5,5)** **Hall**
432: economic, legislative, and administrative problems in the regulation of public utility rates and service standards. The holding company and its control. Prerequisite, 200.
433: public utility costs, pricing policies, rates, plant utilization, and competition. Prerequisite, 201.
- 437 Economics of Transportation II (5)** **Sheldon**
Economic problems and trends in domestic and international transport, including effects on regional development. Prerequisites, 201 and 336 or Transportation 301.

LABOR ECONOMICS

- 340 Labor in the Economy (5)** **Buechel, Gillingham, Lampman, McCaffree**
Employment, unemployment, wages, working conditions, trade-unionism, collective bargaining, labor-management relations, and public policy. 200 or 211 recommended.
- 345 Social Security (5)** **Lampman**
Problems arising from economic hazards confronting individuals, including old age, unemployment, illness, and disability. Study of social institutions designed to meet these problems, with emphasis on their economic effects.

- 441 Union-Management Relations (5)** **Gillingham, Hopkins**
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.
- 443 Advanced Labor Economics (5)** **McCaffree**
Analysis of factors which determine wage rates and employment levels in the firm, industry, and economy. Special emphasis upon the union in the labor market. Prerequisite, 201; 301, 302, 340 recommended.
- 446 Labor Problems Abroad (5)** **Morris**
History and analysis of labor problems in foreign countries. Prerequisite, 340.

PUBLIC FINANCE AND TAXATION

- 350 Public Finance and Taxation I (5)** **Hall, Lampman**
Principles of taxation, tax forms and practices, public expenditure, public credit, and public budgetary policy.
- 451 Public Finance and Taxation II (5)** **Hall, Lampman**
Fiscal policy, tax systems, incidence and effects of taxation, and management of the public credit.

ECONOMIC HISTORY

- 461 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.
- 462 Development of American Commercial Capitalism (5)** **North**
Analysis of the origins and significance of the American economic structure before the Civil War.
- 463 Development of American Industrial Capitalism (5)** **North**
Structural changes and trends in the American economy since the Civil War.

INTERNATIONAL TRADE

- 370 Economic Principles of Foreign Trade (5)** **Sheldon**
Role of trade in world economic development, standards of living, and stability. Principles of trade and foreign exchange. Analysis of tariffs and other commercial policies. International organizations dealing with trade, foreign exchange, and foreign investment. Prerequisite, 200.
- 373 Foreign Trade of Latin America (5)** **Staff**
(Not offered 1955-57.)
- 471 International Economics (5)** **Holzman**
Income and price theory applied to international trade. Balance of payments, disequilibrium, and adjustment. Capital movements and industrialization of underdeveloped areas. Current international monetary policies, especially United States and Europe. Prerequisite, 370.
- 472 International Economic Problems (5)** **Huber**
Analysis of international problems related to foreign aid programs, foreign investments, underdeveloped areas, currency blocs, exchange control, international trade and monetary organizations, cartels, commodity agreements, and state trading. Prerequisite, 370.

NATIONAL ECONOMIES

- 390 Comparative Economic Systems (5)** **Worcester**
The modern development and operation of the American, English and Russian economies as a response to fundamental economic and political problems. Some attention is paid to Marxian doctrine and the general problems of economic planning.
- 492 Economic Problems of the Far East (5)** **Sheldon**
Analysis of economic development in the Asian area, contrasting the successful industrialization of Japan with the economic problems and objectives of other Asian regions—India, China, and Southeast Asia. Difficulties associated with raising living standards, and the methods by which this task can be approached. Impact of Asian economic development on world economic relations.
- 493 Economic Problems of China (5)** **Staff**
Transformation of the traditional economic organization of China in the nineteenth and twentieth centuries under the impact of Western influences. Economic problems of twentieth-century China, with special emphasis on the economic objectives and problems of the Communist regime. Discussion of the character of the economic plans, with attention paid to size and distribution of the national product, resources, and the structure of economic organization.
- 495 The Economy of Soviet Russia (5)** **Holzman**
Analytical survey of the operating principles, organization, and performance of the Soviet economy with attention to historical and ideological backgrounds, industry, agriculture, labor, resources, trade, transportation, finance, and problems in planning and rapid industrialization. Prerequisite, permission.

GENERAL

499 Undergraduate Research (3, maximum 6)

Does not carry graduate credit. Prerequisite, permission.

Staff

COURSES FOR GRADUATES ONLY

ECONOMIC THEORY

503 Economics of the Firm (3)

Worcester

Analysis of the operation of the economy as affected by the decisions of individual firms and consumers under conditions of pure competition, imperfect competition, oligopoly, and monopoly.

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.

506 Income and Employment Theory (3)

Cartwright

Theories of employment, output, and income of the Keynesian and neo-Keynesian groups. Prerequisite, 301 or permission.

507 Neo-Classical Economics and Its Critics (3)

Gordon

Prerequisite, permission.

510 Contemporary Developments in Income and Employment Theory (3)

Cartwright

Review of current literature on income theory with primary emphasis on dynamic income theory. Prerequisite, 506.

511 Introduction to the Use of Mathematics in Economic Theory (3)

Gordon

Elementary mathematical analysis used in economics. The course is 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.

512 Advanced Theory of the Firm (3)

Worcester

Current literature and research in market structure and business motivation. Prerequisite, 503.

513 Capital and Distribution Theory (3)

Mund

(Offered 1955-56 and alternate years.)

515 History of Economic Thought (3)

Gordon, North

MONEY, BANKING, AND CYCLES

521 Monetary Theory (3)

Crutchfield

Recent developments in monetary theory. Prerequisite, permission.

522 Cycle Theory (3)

Hald

Leading theories of economic cycles, with emphasis upon recent developments. Prerequisite, permission.

GOVERNMENT REGULATION, PUBLIC UTILITIES, AND TRANSPORTATION

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.

536 Transportation (3)

Sheldon

Economic aspects of current transportation problems. Prerequisite, permission.

LABOR ECONOMICS

541 Theory of Trade-Unionism (3)

Gillingham

Prerequisite, permission.

542 Labor Economics (3)

Hopkins

Prerequisite, permission.

543 Labor Law (3)

Lampman

Selected problems of governmental regulation of the labor-management relationship. Prerequisite, permission.

PUBLIC FINANCE AND TAXATION

550 Public Finance (3)

Hall

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

- 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

- 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 Policies (3)** **Huber**
Problems of foreign trade and exchange controls, and international monetary policies. Prerequisite, permission.

NATIONAL ECONOMIES

- 595 Soviet Economics (3)** **Holzman**
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.
- Thesis (*)** **Staff**

EDUCATION, PREPROFESSIONAL PROGRAM

Adviser, 121 Miller Hall

Freshman students who expect to teach, and who either have not met all the requirements for admission to the College of Education or have not decided which subjects they intend to teach, may register as pre-education students in the College of Arts and Sciences. Students in this category should check with an adviser in the College of Education in order to follow the regular course of that college. In the advisory conferences, students are advised on procedures for gaining admission to the College of Education and are given help in selecting courses and suitable combinations of teaching subjects. Detailed requirements of the College of Education are given in the *College of Education Bulletin*.

ENGLISH

Executive Officer: ROBERT B. HEILMAN, 115 Parrington Hall

The Department of English offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. It also offers the same degrees in General and Comparative Literature, see page 105. General literature courses in the Department of English may be taken for credit toward degrees in English.

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

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

BACHELOR OF ARTS

CURRICULUM IN ADVANCED WRITING. At least 50 credits in English are required. Courses must include: English 258; 264 or 370; 377 or 374; 448 or 449; one course from 404, 406, 413, 414, 415, and 466; 6 credits from 251, 252, 253, 261, 262, 263, 277, 278, 328, and 329; and 15 credits in advanced writing courses numbered above 300, 10 of these in consecutive courses. The remaining credits may be obtained in courses in advanced writing, literature, and related fields.

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

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. Candidates for advanced degrees in English must have the equivalent of an undergraduate major in English.

MASTER OF ARTS. Candidates must complete a program of 45 credits, including 10 credits in one period or type of literature and a maximum of 10 credits for thesis. Not more than 10 credits may be in English literature 400 courses. Those who wish to take a minor may include in the total credit requirements a maximum of 10 credits in a related field, which, with the permission of the Department, may be in 300 courses. Courses required for a major in literary history are: English 505, 507, and either 509 or 547; in literary criticism: English 505, 507, 508, and 509; in rhetoric: English 505, 509, 547, and 530 or equivalent; in language: English 505, 530, and 10 credits in Old or Middle English; in advanced writing: English 505 or 507, 509, and 10 credits in advanced writing. Candidates majoring in advanced writing may present an original work in imaginative or factual writing in lieu of a thesis. An alternate program without thesis may also be elected in the fields of literary history and language and, with permission, in the field of rhetoric. Nonthesis programs must be indicated in the student's registration *not later than* the beginning of the *second quarter* of his work.

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.

DOCTOR OF PHILOSOPHY. Candidates must show a reading knowledge of two foreign languages (usually French and German, though upon approval of the Graduate Studies Committee and the Graduate School a substitute for either may be offered). One language requirement must be met before the completion of 45 credits; no student who has completed 60 credits may proceed faster than 5 credits per quarter if both language requirements have not been fulfilled.

A minimum of 90 credits must be completed before the general examination. Not more than 10 credits may be in English literature 400 courses. A maximum of 20 credits may be taken in courses given by other departments. Courses required for a major in literary history are: English 505, 507, either 508 or 509, 530, and 531; in literary criticism: English 505, 507, 508, 509, 530, and 531; in rhetoric: English 505, 507, 509, 530, 547, and 553; in language: English 505, 530, 531, 532, 10 credits in one field of language study, and 10 credits in linguistics in one language other than English. Advanced writing may not be used as a major subject, but candidates are allowed 10 credits in advanced writing and with permission may petition for 10 additional credits.

The general examination includes an oral examination and three days (six to eight hours each) of written examinations on (1) Chaucer, Shakespeare, and

Milton; (2) one literary genre; and (3) twelve major figures from three of the following fields (four from each of three fields): (a) English literature to 1550, (b) 1550-1660, (c) 1660-1800, (d) 1800-present, (e) American literature.

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

The candidate should not rely entirely on formal course work in preparation for this general examination but should do a considerable amount of preparation in private study. At least six months before the beginning of the quarter in which he will take the examination, the candidate must announce in writing to the Graduate Studies Committee his intention of taking the examination. Candidates are expected to present themselves for the examination within three regular quarters after the completion of their course work, unless they have been excused from so doing by the Graduate Studies Committee. The subject of the dissertation must be approved by the Graduate Studies Committee of the Department before the candidate begins work on it.

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 earned in residence.

Courses leading to the degrees of Master of Arts and Doctor of Philosophy with specialization in general and comparative literature are offered through the General and Comparative Literature program (see page 105).

COURSES FOR UNDERGRADUATES

- | | |
|---|-------------------------------|
| 50 Elementary Composition (0) | Leggett |
| For students who fail in entrance tests for 101. | |
| 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. | |
| 150 English for Foreign Students (3) | Marquardt |
| 251, 252, 253 Factual Writing (3,3,3) | Staff |
| 251: biographical and informational writing; 252: opinion writing; 253: term papers and reports. Prerequisites, 101, 102, and 103, or equivalent. | |
| 257 Introduction to Poetry (5) | Zillman |
| Poetry as an art; its relationship to other arts and to the creative mind. No verse writing required. | |
| 258 Introduction to Fiction (5) | Staff |
| Analysis of short stories and novels. | |
| 261, 262, 263 Verse Writing (5,5,5) | Roethke |
| Prerequisites, 101, 102, and 103. | |
| 264, 265, 266 Literary Backgrounds (5,5,5) | Staff |
| 264, 265: content, literary forms, and historical relations of important English classics; 266: backgrounds of the twentieth century. | |
| 267, 269 Survey of American Literature (3,3) | Davis, Hilen, Phillips |
| 267: ideas in American literature; 269: American fiction. | |
| 272, 273 Introduction to Modern Literature (3,3) | Hall |
| Essays, poetry, novels, and plays. No credit to students who have taken 404, 406, or 466. | |
| 277, 278 Narrative Writing (3,3) | Staff |
| Prerequisites, 101, 102, and 103, or equivalent. | |
| 301 The Bible as Literature (5) | Fowler |
| 303 Advanced English for Foreign Students (3) | Marquardt |
| 320 Modern Poetry (5) | Zillman |
| Backgrounds and tendencies of the period 1900 to 1920. | |

- 328, 329 Dramatic Composition (3,3)** **Redford**
Experimental creative work. Prerequisites, 101, 102, and 103, or equivalent.
- 344, 345 Eighteenth-Century English (5,5)** **Cornu, Hoover**
344: Swift, Pope, Defoe, Addison, and Steele; 345: Doctor Johnson and his circle; the preromantics.
- 350, 351, 352 Old and Middle English Literature (5,5,5)** **Ethel, Fowler, Kaufman, Person**
350: Old English literature in translation; 351: Chaucer and his contemporaries; 352: romances and folk literature.
- 353, 354 English Literature: 1476-1642 (5,5)** **Adams**
353: the Renaissance; 354: non-Shakespearean Elizabethan drama. (Offered alternate years; offered 1956-57.)
- 361, 362, 363 American Literature (5,5,5)** **Blankenship, H. Burns, Davis, Harrison, Hilen, Phillips**
361: Colonial literature and the early Romantics; 362: Emerson, Thoreau, Hawthorne, Melville, and Whitman; 363: Twain, Howells, and James.
- 367, 368, 369 Seventeenth-Century Literature (5,5,5)** **Ethel, Leggett, Stein**
367: the metaphysical poets (chiefly Donne, Herbert, Marvell); Bacon, Browne, Burton; 368: Milton, the major poems, selected prose; 369: Dryden; other Restoration poetry, drama, prose.
- 370, 371, 372 Shakespeare (5,5,5)** **Adams, Hamilton, Kaufman, Pollegrini, Stirling**
370: introduction; 371: comedies and histories; 372: tragedies and romances. Prerequisite, 370 for 371 and/or 372.
- 374, 375, 376 Late Nineteenth-Century Literature (5,5,5)** **Brown, W. Burns, Winther**
374, 375: poetry; 376: prose.
- 377, 378, 379 Early Nineteenth-Century Literature (5,5,5)** **Bostetter, Zillman**
- 380, 381, 382 Old English Language (5,5,5)** **Staff**
- 387 English Grammar (3)** **Emery**
- 388 Current English Usage (3)** **Perrin**
Principles for deciding what constitutes good English in an individual's speech and writing.
- 390, 391, 392 Major Conference (3,3,3)** **Staff**
- 401 The Popular Ballad (5)** **Fowler**
Extensive reading of the English and Scottish popular ballads. Study of the origin, transmission, main themes, and music of the ballad form.
- 404 Modern European Literature (5)** **Hall, Harrison**
- 406 Modern English Literature (5)** **Hall, Harrison**
- 410, 411, 412 Advanced Verse Writing (5,5,5)** **Roethke**
- 413, 414, 415 Types of Contemporary Poetry (5,5,5)** **Roethke**
- 417 History of the English Language (5)** **Person**
Growth and development of the English language from Anglo-Saxon times to the present. Open to sophomores.
- 424, 425 Types of Dramatic Literature (5,5)** **Heilman**
Analysis of dramatic structures. Tragedy and comedy. (Offered alternate years; offered 1955-56.)
- 431, 432 Advanced Factual Writing (5,5)** **Harris**
Work in nonfictional forms, including short biography, historical narrative, and opinion writing. Prerequisite, permission.
- 437, 438 Advanced Short Story Writing (5,5)** **Harris, Redford**
Prerequisites, 277, 278, or permission.
- 440, 441 Social Ideals in Literature (5,5)** **Adams**
Model commonwealths; literature and society. (Offered alternate years; offered 1955-56.)
- 447, 448, 449 The English Novel (5,5,5)** **W. Burns, Heilman, Winther**
- 456, 457, 458 Novel Writing (5,5,5)** **Staff**
Prerequisites, 277, 278, or permission.
- 466 Modern American Literature (5)** **Blankenship, Davis, Hall, Harrison, Phillips**
The beginning of realism; tendencies from 1900 to 1915; contemporary fiction and poetry.
- 484, 485 Advanced Writing Conference (3-5,3-5)** **Harris, Redford**
Revision of manuscripts. Preliminary work on writing projects should be completed before entrance. Prerequisite, permission.
- 489 English Prose Style (5)** **Perrin**
Analysis of the traits of language that contribute to the effect of writings in prose.

COURSES FOR GRADUATES ONLY

- 505 Graduate English Studies (5)** **Davis, Stirling**
- 507, 508 Literary Criticism (5,5)** **Brown, H. Burns, Winther**

509 Methods of Contemporary Criticism (5)	Bostetter, Mathews, 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, Stirling
517: comedies; 518: tragedies; 519: histories.	
521, 522, 523 Seventeenth-Century Literature (5,5,5)	Stein
524, 525, 526 American Literature (5,5,5)	Blankenship, Davis, Eby, Harrison, Hilen
527, 528 Studies in Medieval Literature (5,5)	Fowler
527: poetry; 528: Arthurian romance.	
530 The English Language (5)	Reed
A 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 (5,5,5)	Brown, W. Burns, Winther
544, 545, 546 Eighteenth-Century Literature (5,5,5)	Cornu, Hoover
547 Rhetoric (5)	Perrin
548 Twentieth-Century Literature (5)	Hall
553 Current Rhetorical Theory (5)	Perrin
586 Graduate Writing Conference (5)	Harris, Redford
599 Special Studies in Literature (5)	Staff
600 Research (*)	Staff
Thesis (*)	Staff

FAR EASTERN AND RUSSIAN INSTITUTE

Director: GEORGE E. TAYLOR, 406 Thomson Hall

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

The Institute offers courses in the field of the social sciences. For undergraduate students specializing in Far Eastern and Russian studies, these courses are a part of the degree program offered through the Department of Far Eastern and Slavic Languages and Literature (see page 95). Graduate degree programs in Far Eastern and Russian studies are also available in that department, and 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, History, Political Science, and others. In the programs leading to these degrees, graduate students receive an education in the methodology and main aspects of their studies, combined with a study of the countries of the Far East and the application of their studies to the Far East. Joint degrees are described in the curricula announcements of the respective departments.

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

In each of these projects, faculty members from various disciplines work together in cooperative programs of research. A number of graduate students have the

opportunity to participate in the research through special studies of their own and to profit from the advice and criticism of faculty members working on the projects. The Far Eastern and Russian Institute has a limited number of research fellowships which are given to especially qualified graduate students.

COURSES FOR UNDERGRADUATES

- 110 Survey, Problems of the Pacific (5)** **Maki, Michael, Taylor, Williston**
Social, economic, and political problems of China, Japan, Korea, the Philippines, Indonesia, and Southeast Asia. Includes the development of Russia as an Asiatic power as well as the role of the Western powers in the Far East. For freshmen and sophomores; juniors and seniors should take 310 rather than 110 if possible.
- 240 Chinese Civilization (5)** **Shih**
China's material civilization, including fine arts, literature, religion, and thought in relation to the general development of Chinese society.
- 242 Korean Civilization (3)** **Williston**
Korea's material civilization, including fine arts, literature, religion, and thought in relation to the general development of Korean society.
- 243 Russian Civilization (5)** **Spector**
Russia's material civilization, including fine arts, literature, religion, and thought in relation to the general development of Russian society.
- 290 History of China (5)** **Williston**
Chinese history from earliest times to the present, with emphasis on the development of Chinese society.
- 292 History of Korea (5)** **Williston**
Korean history from earliest times to the present, with emphasis on the modern period.
- 296J History of Japanese Civilization (5)** **Jansen, Staff**
A survey of political, economic, social, intellectual, literary, and artistic developments in Japan from earliest times to the present. Offered jointly with the Department of History. Not open to students who have taken 241 or 291.
- 310 Problems of the Pacific (5)** **Maki, Michael, Taylor, Williston**
Social, economic, and political problems of China, Japan, Korea, the Philippines, Indonesia, and Southeast Asia. Includes the development of Russia as an Asiatic power as well as the role of the Western powers in the Far East. Juniors and seniors should take this course in place of 110 if possible. Credit cannot be received for both 310 and 110.
- 323 Survey of the Soviet Union (5)** **Treadgold**
A survey of the social, economic, and political problems, past and present, of the U.S.S.R. Primarily for nonspecialists.
- 329 Russia and the Moslem World (5)** **Spector**
The land and peoples, religion, culture, customs, and historical background, with special emphasis on the Near East and on Russian relations with the Near East from 1453 to the present.
- 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 Department of Political Science. Prerequisite, Political Science 201, 202, or permission.
- 345J Japanese Government (3)** **Maki**
Premodern Japanese government; characteristics of Japanese government from 1868 to 1945; governmental changes since 1945. Offered jointly with the Department of Political Science. Prerequisite, Political Science 201, 202, or permission.
- 422J Early Russian History (5)** **Treadgold**
Survey of the development of Russia from the earliest times to the reign of Nicholas II (1894-1917). Offered jointly with the Department of History.
- 423J Recent Russian History (5)** **Treadgold**
Survey of Russia and the U.S.S.R. from the reign of Nicholas II (1894-1917) to the present. Offered jointly with the Department of History.
- 424J Russian Revolutionary Movement (3)** **Treadgold**
Intellectual and political aspects of Russian opposition to tsarism from 1825 to 1917. Offered jointly with the Department of History.
- 430 Survey of Mongol Culture (3)** **Poppe**
Mongolian nomadic culture and tribal organization in ancient times; present state and cultural life of Mongolia.
- 443 Chinese Social Institutions (5)** **Hsiao**
- 444 Chinese History: Earliest Times to 221 B.C. (5)** **Wilhelm**
History of pre-imperial China. (Offered alternate years; offered 1956-57.) Prerequisite, 290 or upper-division standing.
- 445 Chinese History: 221 B.C. to 906 A.D. (5)** **Wilhelm**
History of the development of the imperial Chinese state. (Offered alternate years; offered 1956-57.) Prerequisite, 290, 444, or upper-division standing.

- 446 Chinese History: 906 A.D. to 1840 A.D. (5)** **Wilhelm**
History of the Wu Tai, Sung, Yuan, Ming, and early Ch'ing periods. (Offered alternate years; offered 1956-57.) Prerequisite, 290, 444, or upper-division standing.
- 447 Modern Chinese History (5)** **Taylor**
Modern Chinese society from 1840 to the present. Prerequisite, 110 or 310.
- 451J History of Chinese-Japanese Relations (3)** **Janson**
Cultural, political, economic influence in the nineteenth and twentieth centuries. Offered jointly with the Department of History.
- 452J Early Japanese History (5)** **Janson**
Dominant trends in the development of Japan from the earliest times to 1600 A.D. Offered jointly with the Department of History.
- 453J Tokugawa Period (5)** **Janson**
Political system, economic problems, and intellectual currents in Japan from 1600 to 1868. Offered jointly with the Department of History.
- 454J Modern Japanese History (5)** **Janson**
The development of Japan from feudal to modern state; effects of war and occupation. Offered jointly with the Department of History.
- 478 Russia in Asia (3)** **Ballis**
Relations of tsarist Russia and the Soviet Union with eastern Asia.
- 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)** **Staff**
For Far Eastern majors. Prerequisite, permission.

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

- Art 382, 383, 384 Eastern Art (3,3,3)**
- Art 413 Oriental Ceramic Art (2)**
- Economics 492 Economic Problems of the Far East (5)**
- Economics 493 Economic Problems of China (5)**
- Economics 495 The Economy of Soviet Russia (5)**
- Foreign Trade 450 Far East Foreign Trade Problems (5)**
- Geography 303 Asia (5)**
- Geography 433 The Soviet Union (3)**
- Geography 435 Southeast Asia (5)**
- Geography 436 China (3)**
- Geography 437 Japan (3)**
- Philosophy 428 Chinese Philosophy (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

- 510 Methodology in Far Eastern Studies (3)** **Maki**
Required of all graduate students taking degrees or writing theses in Far Eastern subjects other than languages.
- 519J Seminar on Asia (3)** **Wilhelm**
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 1955-56.)
- 521, 522, 523 Seminar on Eastern Asia (4,4,4)** **Maki, Taylor**
- 525, 526 Seminar on Far Eastern Diplomacy (3,3)** **Williston**
- 530, 531, 532 Seminar on China (3,3,3)** **Wilhelm**
Chinese historiography. Prerequisite, permission.
- 533 Seminar on Chinese Society (4)** **Wittfogel, Staff**
Comparative institutional analysis of representative periods and key aspects of Chinese society. (Offered when demand is sufficient.)
- 534J Modern European History: Russia (5)** **Treadgold**
Offered jointly with the Department of History.

- 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.
- 540J Seminar on the Soviet Union: Government and Diplomacy (4, maximum 8)** **Ballis**
Offered jointly with the Department of Political Science. Prerequisite, permission.
- 545J Seminar on Japanese Government and Diplomacy (3, maximum 6)** **Maki**
Offered jointly with the Department of Political Science.
- 551J Japanese History (3, maximum 6)** **Jansen**
Offered jointly with the Department of History. Prerequisite, permission.
- 553J Analysis of Linguistic Structures (3)** **Jacobs, Li**
Offered jointly with the Department of Anthropology.
- 580, 581, 582 Colloquium on Russia in Asia (5,5,5)** **Ballis, Erlich, Treadgold**
Research problems in the impact of tsarist Russia and the Soviet Union on Asia.
- 598 Inner Asia Research Colloquium (5, maximum 15)** **Carrasco, K. Chang, Li, Poppe, Staff**
- 599 Colloquium on Chinese History Research (5, maximum 15)** **C. L. Chang, Hsiao, Michael, Shih, Wilhelm**
Research seminar on the Modern Chinese History project dealing with various aspects of Chinese society of the nineteenth and twentieth centuries. Prerequisite, permission.
- 600 Research (*)** **Staff**
Prerequisite, permission.
- Thesis (*)** **Staff**

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

- Anthropology 542 Personality Patterns in Japanese Culture (3)**
Economics 595 Soviet Economics (5)
Geography 503 Seminar: Southeast Asia (3, maximum 6)

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 and the two course programs are supplementary. Courses given by the Department carry credit in the humanities; those given by the Institute carry credit in the social sciences.

The Department offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. For undergraduate students, the Department offers three elective curricula: a general curriculum, sponsored by the Institute, for students interested in a survey of Far Eastern and Slavic subjects; an area curriculum for students who want to specialize in a particular geographical area and language; and a language curriculum for students who are interested in a particular Far Eastern or Slavic language or who plan to enter professional language work or to continue their linguistic studies as graduate students.

In addition, the Department offers a second teaching area for students in the College of Education.

BACHELOR OF ARTS

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

AREA CURRICULUM. The requirements are: Far Eastern 110 or 310; 30 credits in either Chinese, Japanese, Korean, or Russian; 15 credits in other Far Eastern subjects, exclusive of languages; and at least 20 credits in one of the social sciences or humanities.

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

ADVANCED DEGREES

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

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

DOCTOR OF PHILOSOPHY. The Department offers courses leading to a Doctor of Philosophy degree in the following fields:

CHINESE LANGUAGES AND LITERATURE. Candidates for this degree must be able to read and translate literary Chinese and must know the history, phonology, and structural features of the written and spoken language. Familiarity with the history and types of Chinese literature is required; candidates must specialize in two of the following: a period of Chinese literature; a school; an author; the phonology of any period or text; the grammatical features of any period or text; historical or comparative studies; and epigraphy. All candidates must acquire a knowledge of general Chinese history and philosophy. Adequate knowledge of another Far Eastern language and at least one European language is required.

SLAVIC LANGUAGES AND LITERATURE. Candidates for this degree must be familiar with Russian literature, history, and political and social institutions, in addition to having a thorough knowledge of the Russian language. The candidate may emphasize linguistics or literature. In either case, he will be required to do advanced work in the following: Russian literature; Russian linguistics, descriptive and historical; and comparative Slavic philology (phonetic and morphological structure of Slavic languages). All candidates must acquire a basic knowledge of a Slavic language and literature other than Russian, preferably Polish. Adequate knowledge of at least one other European language is required.

A candidate for the Ph.D. degree in the field of Slavic studies also will be expected to satisfy certain minimum requirements in one of the following cognate areas: comparative literature, general linguistics, and Russian area studies.

COURSES FOR UNDERGRADUATES

CHINESE

- 101 Chinese Language, Intensive A (10)** K. Chang, Li
Introduction to the sounds and structure of modern Chinese (Mandarin) by inductive method. After a certain familiarity with the language is acquired the students are introduced to the Chinese writing.
- 206 Chinese Language, Intensive B (10)** K. Chang, Li
Continuation of 101. Prerequisite, 101.
- 301 Chinese Language, Intensive C (10)** K. Chang, Li
Continuation of 206. Rapid learning of Chinese characters and reading of texts. Students should learn about fifteen hundred characters by the end of the year. Prerequisite, 206.
- 402, 403, 404 Advanced Modern Chinese (5,5,5)** Yang
402: simple Chinese stories, selections from modern authors. 403: newspaper Chinese. 404: modern essays, editorials, etc. To be taken in sequence only. Prerequisite, 301.
- 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, 301 or equivalent.
- 408 Chinese Reference Works and Bibliography (3)** Wilhelm
Introduction to the methodology of Sinology. (Offered alternate years; offered 1956-57.) Prerequisite, 301 or equivalent.
- 455, 456, 457 Chinese Literature (5,5,5)** Wilhelm
455: lectures on Chinese literature from the 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 1955-56.) Prerequisite, 301 or equivalent.

- 499 Undergraduate Research (3-5, maximum 15)**
For Far Eastern majors. Prerequisite, permission.

Staff

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.
- 151, 152, 153 First-Year Reading Japanese (5,5,5)** **McKinnon**
Reading and translation of modern Japanese. Prerequisites, 101-102 or permission for 151, or this series may be taken concurrently with 101-102, 103; 151 for 152; 152 for 153.
- 201, 202, 203 Intermediate Japanese (5,5,5)** **Tatsumi**
Advanced conversation, grammar, and composition; introduction to literary and epistolary styles; introduction to calligraphy. Not open to students who have taken 402, 403, and 404.
- 351, 352, 353 Reading in Japanese (5,5,5)** **McKinnon**
Reading and translation of primary and secondary source materials in Japanese. Not open to students who have taken 405, 406, and 407. Prerequisites, 153 or equivalent for 351; 351 for 352; 352 for 353.
- 499 Undergraduate Research (3-5, maximum 15)** **Staff**
For Far Eastern majors. Prerequisite, permission.

KOREAN

- 302-303 Elementary Spoken Korean Language (5-5)** **Lee**
- 304 Intermediate Korean (5)** **Lee**
Prerequisite, -303 or equivalent.
- 402, 403, 404 Advanced Korean (5,5,5)** **Lee**
(Offered when demand is sufficient.)
- 405 Korean Grammar (5)** **Lee**
Prerequisite, 304 or equivalent.
- 406, 407 Advanced Korean Reading (5,5)** **Lee**
Korean composition, literature, and advanced reading. Prerequisite, permission.
- 499 Undergraduate Research (3-5, maximum 15)** **Lee**
For Far Eastern majors. Prerequisite, permission.

MONGOLIAN

- 302 Introduction to Mongolian (5)** **Poppe**
- 303 Classical Mongolian (5)** **Poppe**
Grammar, syntax, and styles of the Mongolian written language of the seventeenth to twentieth centuries. Prerequisite, 302.
- 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.
- 406 Comparative Grammar of Mongolian Languages (5)** **Poppe**
History of sounds and grammatical forms of written Mongolian and colloquial language. Prerequisite, 304.
- 499 Undergraduate Research (3-5, maximum 15)** **Poppe**
For Far Eastern majors. Prerequisite, permission.

POLISH

- 401, 402 Phonetics, Grammar, and Vocabulary (5,5)** **Micklesen**
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)** **Micklesen**
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

- 101 Russian Language, Intensive A (10)** **Gershevsky, Pahn**
Elementary Russian. Introduction to pronunciation, spelling, graded reading, essentials of grammar, conversation, exercises and drills. Six hundred word vocabulary.
- 102-103 Elementary Russian Language (5-5)** **Novikow**
Introduction to pronunciation, spelling, graded reading, essentials of grammar, exercises. Six hundred word vocabulary.
- 104, 105 Russian for Social Scientists (5,5)** **Staff**
Introduction to written Russian as a research tool for social science majors who will need to use Russian sources. Closed to Russian majors.
- 106 Russian for Science Students (3)** **Staff**
Introduction to written Russian as a research tool for science students. Readings in chemistry and physics, etc. Closed to Russian majors.

- 204 First-Year Elementary Russian (5)** **Novikow**
Continuation of 101 or -103. Reading, exercises, grammar. One thousand word vocabulary. Prerequisite, 101 or -103.
- 206 Russian Language, Intensive B (10)** **Pahn**
Intermediate Russian. Reading, composition, conversation. Sequel to 101, aimed at increased vocabulary, fluency in conversation and translation. Prerequisite, 101 or -103 or permission.
- 301 Russian Language, Intensive C (10)** **Pahn**
Advanced Russian. Twenty-five hundred word vocabulary. Conversation, composition, readings in Russian Area Studies. Prerequisite, 206 or permission.
- 302 Russian Grammar and Composition (5)** **Micklesen**
An intensive review and supplementation of students' knowledge of Russian phonetics, intonation, morphology, and syntax. Prerequisite, 301 or permission.
- 303 Advanced Conversation and Composition (5)** **Gershevsky**
Daily topical conversations and composition, aimed at improving the ability to speak, write, and understand. Prerequisite, 301 or permission.
- 304 Advanced Russian Language (5, maximum 10)** **Gershevsky**
Scientific Russian. Reading and translation of Russian scientific articles, mainly in the fields of chemistry and physics. Prerequisite, 301 or permission.
- 407, 408, 409 Advanced Russian Reading (5,5,5)** **Shaw**
Grammatical and stylistic analysis of representative samples of Russian imaginative literature and journalism, from the early nineteenth century to the present. Prerequisite, 302 or permission.
- 410, 411 Advanced Russian Grammar and Composition (5,5)** **Erllich, Micklesen**
Structural description of the Russian noun and verb. Prerequisites, 302 and 303.
- 455 Modern Russian Poetry (3)** **Erllich**
A study of Russian poetry in its renaissance, from 1890 to 1925. (Offered alternate years; offered 1955-56.) Prerequisite, 409 or equivalent.
- 458 Contemporary Russian Literary Criticism (3)** **Erllich**
Survey of the recent trends in the Russian study of literature. (Offered alternate years; offered 1955-56.)
- 475 Soviet Press Translations (5)** **Staff**
Designed to give intensive training in translating articles from current Soviet publications, with emphasis on political and industrial terminology. Prerequisite, 410, 411, or permission.
- 485 History of Russian Standard Language (5)** **Micklesen**
An outline of the phonological, morphological, and lexical developments of the Russian literary language from the earliest literary documents to the present time. Prerequisite, 410.
- 499 Undergraduate Research (3-5, maximum 15)** **Staff**
For Far Eastern majors only. Prerequisite, permission.

SLAVIC

- 491 Introduction to Slavic Philology (3)** **Micklesen**
Slavic languages and their geographical and dialectal distribution; Slavic civilization throughout the prehistoric and early historic periods; the principal phonological and morphological features of the Slavic languages as Indo-European languages. Prerequisite, Russian 410.

TIBETAN

- 402 Introduction to Literary Tibetan (5)** **K. Chang**
Accurate interpretation of Tibetan texts and rapid development of reading ability are emphasized. The reading of an easy popular Tibetan text is accompanied by textual criticism and discussion of grammatical problems. Indic influence on Tibetan language is also discussed.
- 403 Reading in Tibetan Literature (5)** **K. Chang**
Reading of Buddhist Tibetan translations and historical documents. Students should have some knowledge of Chinese and Sanskrit. Prerequisite, 402.
- 404 Tibetan Historical Works (5)** **K. Chang, Li**
Treaties, edicts, annals, and selections from other historical compositions will be read and analyzed. Prerequisite, 403.

TURKISH

- 101, 102, 103 Elementary Turkish (5,5,5)** **Posch**
Elementary Turkish as spoken and written in modern Turkey. One of the subjects recommended to students of Mongolian and/or Russian.
- 201, 202, 203 Intermediate Turkish (5,5,5)** **Posch**
201: emphasis on grammar and phonology and comparison with related Turkic languages. 202: advanced syntax and reading of intermediate texts. 203: reading of difficult texts. Prerequisite, 103 or equivalent. To be taken in sequence only.

LITERATURE COURSES IN ENGLISH

- Chinese 320 Chinese Literature in English (5)** **Shih**
A general survey of Chinese literature in English translation 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.

- Japanese 320 Japanese Literature in English (5)** McKinnon
Introductory survey of Japanese literature from antiquity to the modern period.
- Mongolian 320 Mongolian Literature in English (5)** Poppe
(Offered alternate years; offered 1956-57.)
- Russian 320 Russian Literature in English (5)** 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.
- Russian 321 Contemporary Russian Literature in English (5)** Spector
From Gorky to Sholokov.
- Russian 322 Russian Plays in English (5)** Spector
Plays from 1782 to 1948.
- Russian 323 The Russian Novel in English (5)** Erlich
Discussion of the major works of the nineteenth-century Russian novel in translation.
- Russian 424 The Russian Symbolists in English (3)** Erlich
Russian poetry and criticism from 1890 to 1910. Open only to majors in a language or literature. (Offered alternate years; offered 1956-57.)
- Russian 425 Dostoevski in English (4)** Spector
Open only to majors in a language or literature.
- Slavic 320 Polish Literature in English (5)** Erlich
Historical outline of Polish literature from the Middle Ages to our time, in English translation.

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)** Shih
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 1955-56.)
- 529 Chinese Phonology (3)** Li
- 531 Studies in Chinese Poetry (5)** Shih, Wilhelm
(Offered alternate years; offered 1956-57.)
- 532 Studies in Chinese Drama and Novel (5)** Shih
(Offered alternate years; offered 1956-57.)
- 535 Chinese Epigraphy (3, maximum 6)** Reifler
Introduction to texts in ancient character forms; selected readings of inscriptions on bronzes and oracle bones.
- 550 Seminar on Chinese Literature (4, maximum 8)** Shih, Wilhelm
- 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.
- Thesis (*)** Staff

JAPANESE

- 510 Morphology and Syntax of the Japanese Language (5)** Tatsumi
- 521 Japanese Reference Works and Bibliography (3)** Staff
- 522, 523, 524 Readings in Documentary Japanese (5,5,5)** McKinnon
(Offered when demand is sufficient.) Prerequisite, permission.
- 525, 526 Advanced Composition in Documentary Japanese (5,5)** Tatsumi
- Thesis (*)** Staff

MONGOLIAN

- 521 Ancient Mongol: hPhagspa Script (3)** Poppe
Script and grammar of hPhagspa texts; reading and translation. Prerequisite, 304.
- 522 Mongol Ancient Texts (3)** Poppe
Grammar and reading of Mongol texts of the fourteenth to seventeenth centuries. Historical texts are emphasized.
- 580 Comparative Mongol and Turkic Languages (3)** Poppe
Comparative phonology and morphology of Mongol and Turkic and other related languages.

RUSSIAN

- 521 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 1955-56.)
- 526 Pushkin (4)** **Erlich**
Analysis of the works of Alexander Pushkin. (Offered alternate years; offered 1956-57.)
- 527 Studies in Russian Prose (4)** **Erlich**
Close analysis of representative works of the nineteenth-century Russian prose fiction in original texts. (Offered alternate years; offered 1955-56.)
- 557 Seminar in Russian Language (3)** **Erlich, Gershevsky**
Examination and discussion of Russian masterpieces.
- 559 Russian Oral Epic Tradition (3)** **Erlich**
Introduction to Russian folklore. (Offered every three years; offered 1956-57.)
- 560 Studies in Early Russian Literature (3)** **Staff**
(Offered alternate years; offered 1955-56.)
- Thesis (*)** **Staff**

SLAVIC

- 522 Phonetic Structure of Slavic Languages (3)** **Poppe**
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 1955-56.)
- 523 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 1955-56.)
- 531 Old Church Slavonic (3)** **Micklesen**
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 1956-57.)
- 532 Readings in Old Church Slavonic (3)** **Micklesen**
Reading and grammatical interpretation of a selected group of Old Church Slavonic texts. (Offered alternate years; offered 1956-57.)

TIBETAN

- 502, 503, 504 Comparative Study of Chinese, Mongolian, Tibetan, and Sanskrit Texts (5,5,5)** **K. Chang, Li, Poppe**

FISHERIES

Director: RICHARD VAN CLEVE, Fisheries Center

The School of Fisheries offers courses leading to the degrees of Bachelor of Science in Fisheries, Bachelor of Science, Master of Science, and Doctor of Philosophy. For undergraduate students, the School offers both a prescribed and an elective curriculum. Students with a grade-point average of 2.50 may receive their bachelor's degree in either curriculum; those whose grade-point average is below 2.50 are eligible only for the elective curriculum. Students in both curricula choose options in (A) commercial fishery management, (B) fresh-water fishery management, or (C) fisheries technology.

Most fisheries courses are presented in sequence beginning in Autumn Quarter. Students planning to enter a fisheries curriculum at any other time should communicate with the Director of the School to have their schedules prepared.

OPTIONS A AND B

FIRST YEAR		SECOND QUARTER		THIRD QUARTER	
FIRST QUARTER	CREDITS		CREDITS		CREDITS
Fish. 108 Gen. Survey ...	1	Fish. 109 Gen. Survey ...	1	Fish. 110 Gen. Survey ...	1
Chem. 111 or 115 General ...	5	Chem. 112 General ...	5	Chem. 113 Qual. Analysis ...	5
Engl. 101 Composition ...	3	Engl. 102 Composition ...	3	Engl. 103 Composition ...	3
Zool. 111 General ...	5	Zool. 112 General ...	5	Electives ...	7
Phys. Educ. 110 or 175		Electives ...	2	Phys. Educ. activity ...	1
Health ...	2	Phys. Educ. activity ...	1	ROTC ...	2-3
Phys. Educ. activity ...	1	ROTC ...	2-3		
ROTC ...	2-3				
	17-20		17-20		17-20

During the second year, students continue to take background courses that prepare them for upper-division specialization. Electives vary according to the option chosen. Options A and B differ in the second year in that A calls for Chemistry 221 (Quantitative Analysis) and 10 credits of electives, while B requires Chemistry 231, 232, 241, and 242 (Organic) and Biochemistry 361 (Biochemistry).

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 221 Quantitative, or 231, 241 Organic	5-3-2	Foreign language	5	Math. 281 Stat. Method . .	5
Foreign language	5	Math. 105 College Algebra	5	Zool. 456 Vert. Embryol. . .	5
Math. 104 Plane Trig.	3	Elective or Chem. 232, 242 Organic	3-2	Elective or Biochem. 361 Biochem.	5-3
ROTC	2-3	ROTC	2-3	ROTC	2-3
	13-16		13-15		15-16

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

A. COMMERCIAL FISHERY MANAGEMENT OPTION. Fisheries 425, 426, 427, Mathematics 104 (Plane Trigonometry), 105 (College Algebra), 153, 251, 252, 253 (Analytic Geometry and Calculus), Mathematics 281 (Elements of Statistical Method), 382, 383 (Statistical Inference in Applied Research); and Zoology 456 (Vertebrate Embryology).

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

OPTION C

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Fish. 108 Gen. Survey	1	Fish. 109 Gen. Survey	1	Fish. 110 Gen. Survey	1
Chem. 111 or 115 General	5	Chem. 112 General	5	Chem. 113 Qual. Analysis . .	5
Engl. 101 Composition	3	Engl. 102 Composition	3	Engl. 103 Composition	3
Zool. 111 General	5	Zool. 112 General	5	Math. 104 Plane Trig.	3
Phys. Educ. 175	2	Electives	2	Electives	4
Phys. Educ. activity	1	Phys. Educ. activity	1	Phys. Educ. activity	1
ROTC	2-3	ROTC	2-3	ROTC	2-3
	17-20		17-20		17-20

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 221 Quantitative	5	Chem. 231 Organic	3	Chem. 232 Organic	3
Math. 105 College Algebra	5	Chem. 241 Lab.	2	Chem. 242 Lab.	2
Physics 101 or 104 & 107 General	5	Math. 153 Anal. Geom. and Calc.	5	Math. 281 Stat. Method	5
ROTC	2-3	Physics 102 or 105 & 108 General	5	Physics 103 or 106 & 109 General	5
	15-18	ROTC	2-3	ROTC	2-3
			15-18		15-18

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Fish. 401 Comp. Anat. & Phys.	5	Fish. 481 Intro. Com. Fish.	4	Fish. 483 Anal. Fish. Prod.	2
Fish. 405 Mollusca	5	Micro. 301 General	5	Biochem. 361 Biochem	3
Fish. 480 Com. Fish. Ind.	4	Math. 382 Stat. Inference . . .	5	Biochem. 363 Lab.	2
Fish. 482 Anal. Fish Prod. . . .	4	Mech. Engr. 328 Elem. Thermodynamics	3	Math. 383 Stat. Inference . .	5
Electives	2-3	Electives	2-3	Mech. Engr. 329 Refrigeration	3
	18-19		19-20	Electives	2-3
					17-18

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Fish. 484 Fish. Prod.		Fish. 485 Fish. By-Prod.	5	Fish. 486 Prob. Fish.	
Proc.	5	Fish. 495 Fish. Lit.	2	Tech.	5
Fish. 495 Fish. Lit.	2	Fish. 498 Thesis	2	Fish. 495 Fish. Lit.	2
Fish. 498 Thesis	2	Chem. 352 Elem. Physical	3	Fish. 498 Thesis	2
Chem. 351 Elem. Physical	3	Electives	3-5	Chem. 354 Physical Lab	2
Electives	3-5		15-17	Home Ec. 300 Nutrition	2
	15-17			Electives	3-5
					16-18

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

BACHELOR OF SCIENCE IN FISHERIES

In the prescribed curriculum, all options require a cumulative grade-point average of 2.50.

For options A and B other requirements are: 42 credits in fisheries, including Fisheries 108, 109, 110, 401, 405 or 406, and 6 credits (three quarters) in 495; 10 credits in a foreign language (in addition to the foreign language required for admission to the College of Arts and Sciences), preferably German or French; and 10 credits in the social sciences. No more than 102 credits may be taken in any two departments.

BACHELOR OF SCIENCE

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

ADVANCED DEGREES

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

COURSES FOR UNDERGRADUATES

- 108, 109, 110 General Survey of Fisheries Work (1,1,1)** **Staff**
Vocational orientation lectures by eminent speakers from game and fish agencies, commercial fisheries agencies, and the commercial fishing industry.
- 401 Comparative Anatomy and Physiology of Fishes (5)** **Wolander**
Survey of the morphology and bodily functions of fishes. Prerequisite, Zoology 112.
- 402 Phylogeny of Fishes (5)** **Wolander**
Survey of the system of fish classification; distribution of fishes. Prerequisite, 401.
- 403 Identification of Fishes (5)** **Wolander**
Introduction to research methods and techniques of ichthyological systematics. Prerequisite, 402.
- 405 Economically Important Mollusca (5)** **Lynch**
Classification, life histories, distribution, methods of cultivation, and economic importance of oysters, clams, scallops, abalones, cephalopods, and other mollusca. Prerequisite, Zoology 112.
- 406 Economically Important Crustacea (5)** **Lynch**
Classification, life histories, distribution, methods of capture, and economic importance of crabs, shrimps, lobsters, crayfish, and the smaller crustacea, which are fished commercially or are important as food for fishes and other vertebrates. Prerequisite, Zoology 112.
- 407 Aquatic Invertebrates of Minor Economic Importance (5)** **Lynch**
Classification, life histories, occurrence, and utilization of sponges, corals, annelid worms, echinoderms, and other aquatic invertebrates fished or cultivated on a commercial scale. Prerequisite, Zoology 112.
- 425 Migrations and Races of Fishes (5)** **De Lacy**
Marking and other methods of determining migrations of fishes and homogeneity of fish populations; implications of these factors in the management of both fresh-water and marine fisheries. Prerequisite, 402.

- 426 Early Life History of Marine Fishes (5)** **De Lacý**
Reproduction and larval and post-larval life of economically important marine fishes; dispersion and survival rates; implications of these factors in the management of food fisheries; research methods in this field. Prerequisite, 402.
- 427 Ecology of Marine Fishes (5)** **De Lacý**
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 Chemistry 112.
- 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 Chemistry 112.
- 453 Fresh-Water 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 Chemistry 112.
- 454 Communicable Diseases of Fishes (5)** **Lynch**
Organisms causing diseases in fishes; prevention and known treatments of fish diseases. Prerequisites, 402 and Microbiology 301.
- 460 Water Management and Fish Resources (5)** **M. C. Bell**
Stream flows and mechanics of fresh-water 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)** **Staff**
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, 481 Introduction to Commercial Fishing Industry (4,4)** **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.
- 482, 483 Analysis of Fisheries Products (2,2)** **Stern**
Analysis of fishery products by chemical, colorimetric, spectrophotometric, and microbiological techniques. Prerequisites, Chemistry 232 and 242.
- 484 Processing of Edible Fisheries Products (5)** **Stern**
Principles, methods, and practices in canning, freezing, drying, and curing edible fisheries products. Prerequisite, 483.
- 485 Fish By-Products and Spoilage (5)** **Stern**
Utilization of fish waste in preparation of industrial oils, meals, pharmaceutical, and miscellaneous products; study of the microbiological, enzymatic, and chemical spoilage of fish and fishery products. Prerequisite, 484.
- 486 Research Problems in Fisheries Technology (5)** **Stern**
Group and individual problems in the development of new processes and products; plant design and layout; packaging; sanitation. Prerequisite, 485.
- 495 Introduction to Fisheries Literature (2, maximum 6)** **Staff**
Directed training in searching bibliographic sources. Prerequisite, 15 credits in fisheries.
- 498 Undergraduate Thesis (2, maximum 6)** **Staff**
Prerequisite, permission.
- 499 Undergraduate Research (3, maximum 9)** **Staff**
Individual research within the School of Fisheries or on-the-job training in governmental or industrial fisheries organizations. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 501 On-the-Job Training (3, maximum 9)** **Staff**
Guided on-the-job training in governmental or industrial fisheries organizations. Prerequisite, permission.
- 520 Graduate Seminar (2, maximum 6)** **Van Cleave**
Training in methods of searching fisheries literature.
- 556 Age and Growth of Fishes (5)** **Van Cleave**
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
Thesis (*)	Staff

FOOD TECHNOLOGY

Chairman: HOWARD C. DOUGLAS, H309 Health Sciences Building

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

BACHELOR OF SCIENCE IN FOOD TECHNOLOGY

A grade-point average of 2.50 in microbiology, chemistry, and home economics courses, and the same average in all other subjects, is required for graduation.

Students interested in laboratory work concerned with food production should elect the following courses: Chemical Engineering 481 (Inorganic Chemical Processes), 482 (Organic Chemical Processes), 483 (Chemical Engineering Process Design); Home Economics 415 (Experimental Cookery); and 10 credits in mathematics chosen from 104 (Plane Trigonometry), 105 (College Algebra), and 153 (Analytic Geometry and Calculus).

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

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

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 111 or 115 General.	5	Chem. 112 or 116 General.	5	Chem. 113 Qual. Analysis.	5
Engl. 101 Composition.	3	Engl. 102 Composition.	3	Engl. 103 Composition.	3
Physics 101 & 107 General 5		Physics 102 & 108 General 5		Electives	2
Phys. Educ. 110 or 175		Electives	2	Physics 103 & 109 General 5	
Health Ed.	2	Phys. Educ. activity.	1	Phys. Educ. activity.	1
Phys. Educ. activity.	1	ROTC	2-3	ROTC	2-3
ROTC	2-3				
	16-19		16-19		16-19

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 231 Organic	3	Chem. 232 Organic	3	Chem. 325 Quant. Analysis	5
Chem. 241 Organic Lab.	2	Chem. 242 Organic Lab.	2	Math. 153 Anal. Geom. and Calculus	5
Zool. 111 General or Bot. 111 Elementary	5	Zool. 112 General or Bot. 112 Elementary	5	Electives	5
Math. 104 Plane Trig.	3	Math. 105 College Algebra 5		ROTC	2-3
Electives	2	ROTC	2-3		
ROTC	2-3				
	15-18		15-18		15-18

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Biochem. 481 Biochem.	3	Biochem. 482 Biochem.	3	Chem. 353 Elem. Physical. . . .	3
Chem. 351 Elem. Physical	3	Chem. 352 Elem. Physical. . . .	3	Electives	12
Electives	6	Electives	9		15
	15		15		

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Micro. 300 Fund. of		Micro. 430 Industrial	5	Micro. 499 Research	5
Bacteriol.	6	Bot. 461 Yeasts & Molds. . . .	5	Electives	10
Biochem. 483 Biochem. Lab. . . .	3	Electives	5		15
Electives	6		15		
	15				

GENERAL AND COMPARATIVE LITERATURE

Chairman: 119A Parrington Hall

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

BACHELOR OF ARTS

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 in this program must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*.

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

DOCTOR OF PHILOSOPHY. This degree is offered with a major in comparative literature. Candidates are usually concerned with problems common to English or American literature and one or more foreign literatures. They must have a reading knowledge of at least two foreign languages, ancient or modern, and must take graduate courses in at least one of these. Other requirements are: General Literature 510, 511; 40 credits in English, including English 505, 507, and 509; and 40 credits in other fields. No more than 10 credits are allowed in English courses numbered below 500.

The general examination consists of three days of written examinations, each lasting six to eight hours, and an oral examination. The written examinations are: (1) on two of three major English writers, Chaucer, Shakespeare, and Milton, and one major figure of foreign literature; (2) on a comparative problem in the field of the candidate's concentration; (3) examination by the department of the candidate's major foreign language.

The oral examination is the same as the examination for the doctorate in English (see page 89).

COURSES FOR UNDERGRADUATES

- 300, 301, 302 Masterpieces of European Literature (5,5,5)** **Staff**
 Reading of great works from Homer to the present in several genres, mainly the long poem, the drama, and the novel.
- 350, 351 Romanticism and the Nineteenth Century in Europe (5,5)** **Staff**
- 400 European Literary Criticism since 1900 (5)** **Staff**
- 450 The Art of Translation (5)** **Staff**
- 480, 481 The Symbolist Movement (5,5)** **Staff**
 French literature from Baudelaire to Proust and Valéry; and manifestations of the movement outside France, both in Europe and America.

COURSES FOR GRADUATES ONLY

- 510, 511 Studies in General and Comparative Literature (5,5)** **Staff**

LITERATURE COURSES IN OTHER DEPARTMENTS**CLASSICS**

- 210 Greek and Roman Classics in English (5)**
- 326 Greek and Roman Epic in English (3)**
- 327 Greek and Roman Drama in English (3)**
- 340 Greek and Roman Critics in English (3)**

FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE

- Chinese 320 Chinese Literature in English (5)**
- Japanese 320 Japanese Literature in English (5)**
- Mongolian 320 Mongolian Literature in English (5)**
- Russian 320 Russian Literature in English (5)**
- Russian 321 Contemporary Russian Literature in English (5)**
- Russian 322 Russian Plays in English (5)**
- Russian 323 The Russian Novel in English (5)**
- Russian 424 The Russian Symbolists in English (3)**
- Russian 425 Dostoevski in English (4)**
- 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 318, 319, 320 French Literature in English (2,2,2)**
- Italian 218 Italian Literature in English (5)**
- Italian 384 Renaissance Literature of Italy in English (2)**
- Italian 481, 482 Dante in English (2,2)**
- Romance 360 The Literature of the Renaissance in English (5)**
- Spanish 218 Spanish Literature in English (5)**
- Spanish 315 Spanish-American Authors in English (5)**

SCANDINAVIAN LANGUAGES AND LITERATURE

- 240 Scandinavian Literature, 1850-1950, in English (5)**
- 309, 310, 311 The Scandinavian Novel in English (2,2,2)**
- 380 Ibsen and His Major Plays in English (2)**
- 381 Strindberg and His Major Plays in English (2)**
- 382 Twentieth-Century Scandinavian Drama 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 to be studied integrally. They are therefore given in such a way as to present these concepts whole, rather than to study in highly technical detail any of their specialized aspects. The courses are taught by regular members of the faculties of the departments involved.

This two-year integrated program does not in itself lead to a degree but provides the basic minimum of a general education. Any student may take all of it, or any part of it; it is especially recommended for premajors and for students in elective curricula who wish to fulfill their group requirements with General Education courses. Several of the courses are given in two or three quarters each year; the logical sequences of the courses in this program, however, are as follows:

First Year

<i>Humanities</i>	<i>Social Sciences</i>	<i>Natural Sciences</i>	<i>Expression and Methodology</i>
1. Hum. 101 Literature	Soc. Sci. 101 Hist. of Civilization	Phys. Sci. 101 The Universe	Engl. Comp. 101
2. Hum. 102 The Arts	Soc. Sci. 102 Hist. of Civilization	Phys. Sci. 102 The Universe	Engl. Comp. 102
3. Hum. 103 Philos.	Soc. Sci. 103 Hist. of Civilization	Science elective	Engl. Comp. 103

Second Year

1. Hum. 201 Literature	Soc. Sci. 201 Modern Society	Biol. 101J-102J Gen. Biology	Math. 120 Intro. to Mathematical Thinking
2. Hum. 202 Masterpieces of Art	Soc. Sci. 202 Modern Society		Math. 121 Basic Ideas of Algebra
3. Hum. 203 Philos.	Soc. Sci. 203 Modern Society		

Some General Education courses, but not all of them, may be applied toward specific majors. Students who plan to offer these courses in partial fulfillment of the requirements for departmental majors should obtain permission to do so from the departments involved.

THE CORE GROUP. In the interest of providing a carefully integrated liberal education for those who desire it, the General Education Committee has formed a special group of students who take the entire General Education program. All the studies of the students in this group are integrated. Students in the core group are placed in special sections and follow the complete two-year curriculum.

Students who take the whole General Education program and then choose a major are not required to meet the College group requirements for graduation. Instead, they must meet their major requirements in one of the three subject groups and have 15 credits in each of the other two groups.

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Hum. 101 Literature.....	5	Hum. 102 The Arts.....	5	Hum. 103 Philosophy.....	5
Soc. Sci. 101 Hist. Civ. . .	5	Soc. Sci. 102 Hist. Civ. . .	5	Soc. Sci. 103 Hist. Civ. . .	5
Phys. Sci. 101 Universe..	5	Phys. Sci. 102 Universe..	5	Math. 120 Math. Thinking	2
Engl. 101 Composition....	3	Engl. 102 Composition....	3	Engl. 103 Composition....	3
Phys. Educ. activity.....	1	Phys. Educ. activity.....	1	Phys. Educ. 110 or 175	
ROTC	2-3	ROTC	2-3	Health	2
	19-22		19-22	Phys. Educ. activity.....	1
				ROTC	2-3
					18-21

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Hum. 201 Literature.....	5	Hum. elective.....	5	Hum. 203 Philosophy.....	5
Soc. Sci. 201 Mod. Soc.	5	Soc. Sci. 202 Mod. Soc. ...	5	Soc. Sci. 203 Mod. Soc. ...	5
Biol. 101J. Gen. Biol.	5	Biol. 102J Gen. Biol.	5	Math. 121 Basic Algebra... 3	
ROTC	2-3	ROTC	2-3	ROTC	2-3
	15-18		15-18		13-16

COURSES FOR UNDERGRADUATES

English 101, 102, 103 English Composition (3,3,3)

Staff

Students in the General Education program enter special sections of English 101, 102, and 103. In these sections, their work consists of analysis and critical evaluation of readings selected for their relevance to the aims of a liberal education and to other courses in the program; training in effective organization and expression in various kinds of writing, including the investigative paper and the critical essay, with emphasis on well-built paragraphs and clear, effective sentences; study of words and their importance in the communication of thought and emotion.

HUMANITIES

- 101 Literature (5)** **Adams, Brown, Hilen, Phillips, Winther, Woodcock**
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)** **Moseley, Verrall, Staff**
Painting, sculpture, music, architecture, the dance, and drama studied through example, discussion, and criticism.
- 103 Philosophy (5)** **Miller, Rader, Smullyan, Staff**
Methods of reflective thinking and the use of them in considering such essential questions as the existence and nature of God, the meaning of a good life and a good social order, the nature and limits of human knowledge, the relationship between mind and body, and the nature of the universe. This course may be offered in partial fulfillment of the requirements for a major in philosophy.
- 201 Literature (5)** **Woodcock**
Reading and critical discussion of some of the greatest works in world literature.
- 202 Masterpieces of Art (5)** **Moseley, Verrall, Staff**
- 203 Philosophy (5)** **Miller**
Reading and critical discussion of some of the world's greatest philosophical systems. This course may be offered in partial fulfillment of the requirements for a major in philosophy.

SOCIAL SCIENCE

- 101 History of Civilization: The Great Cultural Traditions (5)** **Jansen, Katz, Roberts, Savello**
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)** **Jansen, Katz, Roberts, Savello**
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)** **Jansen, Katz, Roberts, Savello**
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.
- 201, 202, 203 Modern Society (5,5,5)** **Staff**
Part I: the various forms of society in the world today; the so-called "primitive" societies; the patterns of culture; the historical beginnings of industrial society in the West. Part II: the major social, economic, and political "regions" of the contemporary world; the Far East; the industrial West; the impact of western industrialism upon the East. Part III: economic, social, and political interrelationships of the modern regions and states; theories of society; the United Nations.

PHYSICAL SCIENCE

- 101, 102 The Physical Universe (5,5)** **Clark, Sivertz**
Part I: the universe as a unit; the stars; the solar system; the earth; the basic process; the atom. Part II: the nature of matter; the structure and behavior of the atom; relations between atoms; the elements; combinations of inorganic and organic elements.

MATHEMATICS

- 120 Introduction to Mathematical Thinking (2)** **Staff**
Mathematical logic and the number system. Background material for other freshman mathematics courses. (Formerly Mathematics 100.) Prerequisites, one year of high school algebra and one year of plane geometry.
- 121 Basic Ideas of Algebra (3)** **Staff**
Groups and fields; foundations of elementary algebra; simultaneous linear equations; quadratic equations; Boolean algebra. Prerequisite, 120.

BIOLOGICAL SCIENCE

- Biology 101J-102J General Biology (5-5)** **Fernald, Illg**
This course is offered jointly by the Departments of Botany and Zoology and is described in the course announcements of both departments.

GENERAL STUDIES

Director: W. GLEN LUTEY, 213 Denny Hall

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. It is also open to those who can spend only a limited time in the University and need guidance in making up a program of work from this or other colleges adapted to their special needs. To be admitted to the Division the student must have maintained at least a 2.00 average in his previous educational experience, and must complete his transfer not later than the third quarter before graduation.

In addition to the flexible programs made out to supply the needs of individual students and the curricula developed as preparation for the School of Librarianship and the Graduate School of Social Work, there are several organized curricula in General Studies. A nonprofessional major program in home relations focuses both on the physical home and its operation and on an understanding of family relations within the home. For students interested in personnel work with social, religious, or other groups, a program is provided in which the characteristics of both individuals and groups are studied. The music for radio curriculum emphasizes courses in the Schools of Music and Communications.

Students who plan to instruct in a nursery school or to establish such a school of their own or who are interested in working with children of the preschool age in any other capacity will find that the general studies major in nursery school and child study is adapted to their needs. Information on this curriculum may be obtained at the General Studies Office.

Several area studies are offered. The literature and society program, for example, brings together the study of the literature of a country or period and courses in the social sciences and humanities which create a wider understanding of the societal implications of that literature. The French area study curriculum integrates the study of the language and literature with courses in the geography, history, economics, political science, and arts of France. The Latin American studies program combines the study of the Spanish and Portuguese languages and their literature with courses related to the Latin American area in the fields of anthropology, history, geography, political science, economics, and sociology. Inquiries concerning the Latin American studies program may be addressed to either the Division of General Studies or 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; comple-

tion 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)** **Staff**
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 the Modern Cultural Crisis (2-6)** **Interdepartmental Staff**
Individual reading assigned by members of the interdepartmental staff. May be repeated in various fields. Prerequisite, permission.
- 455-456 Analysis of the Modern Cultural Crisis (3-3)** **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)** **Staff**
For majors only. Prerequisites, permission of supervisor of study and General Studies Office.

GEOGRAPHY

Executive Officer: G. DONALD HUDSON, 406 Smith Hall

The Department of Geography offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. In addition, the Department offers first and second teaching areas and a basic academic field for students in the College of Education.

BACHELOR OF ARTS

Students electing to major in geography are required to complete 50 credits in the Department. Programs of study should be developed in consultation with the departmental adviser. These programs must meet the following requirements: (1) Geography 100, 102, 207, 358, and 426; (2) 30 credits drawn from upper-division courses in geography; (3) emphasis on a field of specialization in geography; and (4) the inclusion of appropriate supporting courses offered in other departments.

Fields of specialization in the Department include Anglo-America, the Far East, economic geography, and cartography. Fields from which appropriate courses should be drawn include anthropology, economics, geology, history, mathematics, meteorology, political science, and sociology.

It is recommended that students complete either an introductory course in geography or in one of the other social sciences before registering for upper-division courses in geography.

ADVANCED DEGREES

Students who intend to work toward the degree of Master of Arts or Doctor of Philosophy in geography must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*.

The Department cooperates with other departments and schools in a program leading to the degree of Master of Arts in Urban Planning (see the *Graduate School Bulletin*.)

COURSES FOR UNDERGRADUATES

INTRODUCTORY COURSES

- 100 Introductory Human Geography (5)** **Earle, Eyre, Jackson, Murphoy**
Principles of human geography and their application to the analysis of selected problems and world regions.
- 102 Introductory Physical Geography (5)** **Staff**
Survey of the character and location of the different types of land forms, climates, soils, vegetation, minerals, and water resources; their significance to human occupancy.
- 115 Mountain Geography (2)** **Marts**
Agricultural, industrial, and recreational features characteristic of highland areas.

170 Geography in World Affairs (5)**Martin**

An introduction to world geography, with emphasis on the major political areas of the world, including their regions, resources, and economic activities.

SYSTEMATIC GEOGRAPHY**207 Introductory Economic Geography (5)****Garrison, Martin, Marts, Ullman**

A world survey of classes of economic activities: their distribution, resources used, and commodities produced.

277 Cities of the United States (3)**Martin**

The major cities of the United States with an analysis of their location, settlement, growth, and present function.

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.

370 Conservation of Natural Resources (5)**Sherman**

Principles and practices in the effective utilization of resources; public policies relating to conservation.

374 The Extractive Industries (5)**Garrison**

Geographic principles related to the distribution, resources, and products of agriculture, mining, and lumbering.

441 Industrial Geography (3 or 5)**Marts**

Geographic principles related to the development, distribution, and problems of manufacturing industries; case studies of industrial regions. Lectures (3 credits); field work (2 credits) optional with permission of instructor.

442 Commercial Geography (3 or 5)**Garrison**

Geographic principles related to the localization of world, national, and city commercial areas; case studies including extra- and inter-city commercial patterns. Lectures (3 credits); field work (2 credits) optional with permission of instructor.

444 Water Resources in the Pacific Northwest (3 or 5)**Marts**

An analysis and appraisal of water resources in land and industrial developments; problems and policies of river basin planning with emphasis on the Pacific Northwest. Two Saturday field trips are required.

445, 446, 447 Problems in Physical Geography (5,5,5)**Staff**

Problems in the analysis and description of man's habitat—the composite of the elements of the natural environment.

448 Geography of Transportation (5)**Ullman**

An analysis of the nature and distribution of rail, highway, water, and air transport facilities and their role in area development.

475 Political Geography (3)**Jackson**

A study of the principles of political geography based on the analysis of selected case studies of local, national, and world political organizations.

477 Urban Geography (3 or 5)**Ullman**

A geographic analysis of urban settlements in terms of their nature, distribution, principal functions, supporting areas, and internal structure.

REGIONAL GEOGRAPHY**202 Anglo-America (3)****Hudson**

A survey of the natural resources, their utilization, and the regional structure of Alaska, Canada, and the United States.

210 The Pacific Northwest (3)**Marts**

A regional survey emphasizing natural resources, their use and role in rural and urban developments.

300 Advanced Regional Geography (5)**Hudson**

An analysis of the principles and concepts of regional geography.

303 Asia (5)**Earle, Eyre, Murphey**

The pattern and development of human settlement and activities, primarily in Monsoon Asia. Regional frameworks; resources; problems of urban and agrarian development, industrialization, and economic growth.

304 Europe (5)**Martin**

The distribution of urban and rural settlement, chiefly in terms of natural assets and liabilities of the continent; industrial power, agricultural production, international trade; regional differentiation; strength and weakness of greater and lesser powers; military geography.

305 South America (5)**Massey**

South American nations of today, emphasizing their historical backgrounds, natural resources, economic activities and patterns, other regional differences, and international relations.

309 Caribbean America (3)**Massey**

The present and future development and problems of Mexico, Central America, and the Caribbean Islands in terms of their natural resources, economic exploitation, and ethnic and settlement patterns.

- 402 United States (5)** **Martin**
An analysis of the resources of the United States with particular reference to population patterns, economic activities, and regional structures.
- 404 Problems in the Geography of Europe (3 or 5)** **Martin**
Investigation of the geographic aspects of selected current issues. Prerequisite, 304 or permission.
- 407 Australia and New Zealand (5)** **Earle**
Pastoral and agricultural development; industrial potential; urbanization; immigration and trade policies; external economic and political relations.
- 408 Canada and Alaska (3)** **Staff**
An analysis of present and potential developments chiefly in terms of resource occupancy and interregional and international relations.
- 432 Islands of the Pacific (3)** **Earle**
An analysis of major Pacific islands and island groups with respect to their resources, settlement, population composition; role in modern transportation and communications; current political status.
- 433 The Soviet Union (3)** **Jackson**
Natural resources with particular reference to current and potential developments in the extractive and manufacturing industries and trade; status and problems of transportation; trends in the distribution of population.
- 435 Southeast Asia (5)** **Earle**
An analysis of regional and political structures; resources, economic activities, and problems of development; overseas and internal relationships.
- 436 China (3)** **Murphey**
China as a geographic problem. Development of Chinese civilization and its areal spread. Regional entities and interrelations. Physical base and resources. Problems of agriculture, population, settlement distribution, industrialization, urbanization, transportation, and contemporary development.
- 437 Japan (3)** **Eyre**
Resources and population problems, economic activities, and overseas relationship of contemporary Japan.

GEOGRAPHIC TECHNIQUES

- 358 Maps and Map Reading (2)** **Heath, Sherman**
Categories of maps and aerial photographs and their special uses; map reading and interpretation.
- 360 Introductory Cartography (5)** **Heath, Sherman**
Theory and principles of map scales, grid systems, symbolism, color, lettering, and map reproduction. Practical laboratory experience in using drafting instruments and cartographic materials.
- 363 Aerial Photograph Interpretation (2)** **Marts**
A study of the techniques of identifying and interpreting features of the land and land use from aerial photographs.
- 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 approved equivalent.
- 426 Statistical Measurement and Inference (5)** **Garrison**
Measurements of geographic distributions including ratios and index numbers; sources of geographic data; estimates from area samples and correlation; principles of inference and tests of geographic hypotheses. Prerequisites, 360 or 425J, and an introductory course in statistics or permission.
- 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. Prerequisite, 360.
- 461 Intermediate Cartography (5)** **Sherman**
Construction and analysis of map projections, relief representation, and field mapping. Prerequisite, 360.
- 462 Advanced Cartography (5)** **Sherman**
Problems in cartographic design. Prerequisite, 461.
- 464 Map Reproduction (3)** **Sherman**
Reproduction processes and methods of photographic projection as applied to cartography.
- 499 Field Research (12)** **Staff**
The development and application of skills essential to geographic field investigations: (1) training in the use of basic and special field techniques and base materials; (2) evaluation of these techniques and materials in a variety of research situations; (3) analysis and interpretation of field data; and (4) presentation of the results of field investigations. (Offered Summer Quarter only.)

COURSES FOR GRADUATES ONLY

N500 Seminar: Geography as a Professional Field (0)	Staff
501 Seminar: Source Materials in Geographic Research (3)	Earle
502 Seminar: Writing and Critique (3)	Martin
503 Seminar: Southeast Asia (3, maximum 6)	Earle
504 Seminar: Japan and Northeast Asia (3, maximum 6)	Eyre
505 Seminar: China and Northeast Asia (3, maximum 6)	Murphey
506 Seminar: Anglo-America (3, maximum 6)	Hudson, Marts
507 Seminar: Europe (3, maximum 6)	Jackson, Martin
510 Seminar: Settlement and Urban Geography (3, maximum 9)	Ullman
537 Seminar: Quantitative Measurement in Economic Geography (3, maximum 6)	Garrison
538 Seminar: Geography of Transportation (3, maximum 6)	Ullman
539 Seminar: Utilization of Water Resources (3, maximum 6)	Marts
551 Seminar: Recent Trends in Geographic Research (3, maximum 9)	Staff
555 Seminar: History and Theory of Geography (*, maximum 6)	Staff
600 Research (*)	Staff
Thesis (*)	Staff

GEOLOGY

Executive Officer: HOWARD A. COOMBS, 42 Johnson Hall

The Department of Geology offers courses leading to the degrees of Bachelor of Science, Bachelor of Science in Geology, Master of Science, and Doctor of Philosophy. In addition, the Department offers first and second teaching areas for students in the College of Education.

For undergraduate students, the Department offers two curricula leading to bachelor's degrees. Both provide a study of geology and related sciences in preparation for graduate study or for a professional career. The prescribed curriculum sets a definite sequence for all courses; the elective curriculum is more flexible.

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. In addition, students majoring in geology are required each quarter to read two books of outstanding merit from a list prepared by the Department.

BACHELOR OF SCIENCE

In the elective curriculum, students must complete the background courses in mathematics, chemistry, physics, and general engineering that are listed in the prescribed curriculum below in addition to Geology 205, 206, 207, 221, 308, 323, 324, 330, 344, 361, 412, 443, and 480.

For students interested in paleontology, stratigraphy, or oil geology, Geology 426 and 436 are recommended. Those interested in ore deposits should take Mining Engineering 321 (Drilling, Blasting, and Tunnelling); Metallurgical Engineering 301 (Fire Assaying); and Geology 425, 427, and 429.

BACHELOR OF SCIENCE IN GEOLOGY

In the prescribed curriculum, a summer field course (Geology 400) is required. Students who adhere to the prescribed program, and who take the field course between their junior and senior years, may graduate at the end of Winter Quarter in the fourth year. Those who plan to do graduate work should take their social science and humanities electives in summer school, to allow time for additional professional geology courses.

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 one of the undergraduate curricula. Examinations for both the master's and the doctor's degree will include subjects from the whole field of geology. All candidates must have an approved summer field course such as Geology 400 or other field experience which is approved by the Department. In addition, all candidates for advanced degrees must have Geology 481.

MASTER OF SCIENCE. The language requirement for this degree must be met with either French or German.

DOCTOR OF PHILOSOPHY. Candidates must present French and German for the language requirement. All Ph.D. candidates must have either a M.S. or M.A. degree.

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 111 or 115 General	5	Chem. 112 or 116 General	5	Chem. 113 Qual. Analysis	
Engl. 101 Composition	3	Engl. 102 Composition	3	or elective	5
Gen. Engr. 101 Engr.		Math. 105 College Algebra	5	Gen. Engr. 103 Descriptive Geom.	3
Drawing	3	Phys. Educ. 110 or 175		Math. 153 Anal. Geom.	
Math. 104 Plane Trig.	3	Health	2	& Calc.	5
Phys. Educ. activity	1	Phys. Educ. activity	1	Electives	2
ROTC	2-3	ROTC	2-3	Phys. Educ. activity	1
	15-18		16-19	ROTC	2-3
					16-19

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Geol. 205 Rocks & Min.	5	Geol. 206 Elem. Physiog.	5	Geol. 207 Historical	5
Physics 101 and 107		Engl. 103 Composition	3	Geol. 221 Mineralogy	3-5
General	5	Gen. Engr. 121 Plane		Physics 103 and 109	
Electives	5	Surveying	3	General	5
ROTC	2-3	Physics 102 and 108		ROTC	2-3
	15-18	General	5		13-18
		ROTC	2-3		
			16-19		

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Geol. 308 Structural	5	Geol. 324 Petrography &		Geol. 344 Field Methods	5
Geol. 323 Optical Min.	5	Petrology	5	Geol. 480 History of Geol.	3
Electives	5	Geol. 330 Gen. Paleon.	5	Social science electives	5
	15	Humanities electives	5		13
			15		

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Geol. 361 Stratigraphy	5	Geol. 427 Ore Deposits	5	Geol. 414 Map Interpret.	
Geol. 412 U.S. Physiog.	5	Geol. 443 Adv. Structural	5	or electives	5
Foreign language	5	Foreign language	5	Foreign language	5
	15		15	Social science electives	5
					15

COURSES FOR UNDERGRADUATES

- | | |
|---|-----------------------------------|
| 101 Survey of Geology (5) | Barksdale, Coombs, Mallory |
| 102 Geology in World Affairs (5) | Barksdale |
| Geological occurrence, world distribution, and production of coal, petroleum, and the important industrial materials. Prerequisite, 101 or 205. | |
| 103 Earth History (5) | Wheeler |
| Geology from a chronological standpoint, including the elements of stratigraphy and paleontology. Prerequisite, 101 or 205. | |

- 205 Rocks and Minerals (5)** **Goodspeed**
Prerequisite, high school chemistry.
- 206 Elements of Physiography (5)** **Mackin**
Processes and agencies affecting the earth's surface; relationship of topography to structure, etc. Prerequisite, 101 or 205.
- 207 Historical Geology (5)** **Wheeler**
Origin and evolution of the earth, with emphasis on the general geological history of North America. Prerequisites, 205 and 206, or permission.
- 221 Mineralogy (3 or 5)** **Staff**
Determinative crystallography and blowpipe analysis. Prerequisites, high school chemistry and 205. Only 3 credits can be obtained in extension; 5 in residence.
- 308 Structural Geology (5)** **Barksdale**
Interpretation of rock structures and their genesis. Prerequisites, 205, 206, 207, and General Engineering 101, 103.
- 310 Engineering Geology (5)** **Staff**
Elements of geology for civil engineers. Prerequisite, civil engineering major or permission.
- 323 Optical Mineralogy (5)** **Coombs, Staff**
Petrographic microscope and recognition of common minerals in thin section. Prerequisites, 205 and 221.
- 324 Petrography and Petrology (5)** **Coombs**
Systematic study of rocks with the petrographic microscope. Prerequisite, 323.
- 330 General Paleontology (5)** **Mallory**
Systematic study of fossils. Prerequisite, 207 or permission.
- 344 Field Methods (5)** **Barksdale**
Geologic and topographic surveying and recording. Prerequisites, 308 and General Engineering 121.
- 361 Stratigraphy (5)** **Wheeler**
Sedimentation and facies; rock and time units; evaluation of boundaries; principles of correlation. Prerequisites, 205, 206, and 207; suggested, 330 and 432.
- 400 Advanced or Field Work in General Geology (*)** **Staff**
An approved summer field course or approved field experience. (Offered Summer Quarter only.)
- 412 Physiography of the United States (5)** **Mackin**
Prerequisites, 205, 206, and 207.
- 414 Map Interpretation (5)** **Mackin**
Prerequisites, 205, 206, and 207.
- 425 Petrography and Petrology (5)** **Misch**
Metamorphic rocks, petrogenesis. Prerequisite, 324.
- 426 Sedimentary Petrography (5)** **Staff**
Prerequisite, 425.
- 427 Ore Deposits (5)** **Goodspeed**
Form, structure, mineralogy, petrology, and mode of origin. Prerequisites, 221 and 324.
- 429 Advanced Ore Deposits (3)** **Goodspeed**
Prerequisite, 427.
- 432 Advanced Paleontology (5)** **Mallory**
Principles of biostratigraphy; invertebrate faunas in space and time. Prerequisites, 207, 330 or permission.
- 436 Micropaleontology (5)** **Mallory**
Prerequisite, 330.
- 443 Advanced Structural Geology (5)** **Misch**
Prerequisite, 308.
- 450 Elements of Seismology (5)** **Neumann**
- 480 History of Geology (3)** **Barksdale**
Prerequisite, 15 credits in geology.
- 481 Preparation of Geologic Reports and Publications (3)** **Coombs**
- 498 Undergraduate Thesis (5)** **Staff**
The thesis must be submitted at least one month before graduation.

COURSES FOR GRADUATES ONLY

- 501 Advanced Petrography and Petrology of Igneous Rocks (*)** **Goodspeed**
- 503 Advanced Petrography and Petrology of Sedimentary Rocks (*)** **Coombs**
- 510 Advanced Work in Physiography (*, maximum 10)** **Mackin**
- 516 Glacial Geology (5)** **Mackin**
- 520 Seminar (*)** **Staff**

521 Metamorphic Minerals (5)	Misch
522 Regional Metamorphism and Granitization (5)	Misch
523 Static Granitization (5)	Goodspeed
530 Advanced Work in Paleontology (*)	Mallory, Wheeler
532 Stratigraphic Paleontology (3)	Wheeler
540 Advanced Studies in Structural Geology (*)	Barksdale, Misch
545 Structure of Eurasia (5)	Misch
546 Structure of the Pacific Rim (5)	Misch
550 Advanced Studies in Geophysics (*, maximum 9)	Neumann
560 Advanced Studies in Stratigraphy (*)	Mallory, Wheeler
565 Paleozoic Stratigraphy (3)	Wheeler
568 Mesozoic Stratigraphy (3)	Wheeler
570 Advanced Studies in Mineralogy, Petrography, and Petrology (*)	Coombs, Goodspeed, Misch
580 Advanced Studies in Economic Geology (*)	Coombs, Goodspeed
600 Research (*)	Staff
Thesis (*)	Staff

GERMANIC LANGUAGES AND LITERATURE

Executive Officer: CURTIS C. D. VAIL, 111 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 first and second teaching areas for students in the College of Education.

Students majoring in mathematics and the applied sciences should take German 110-111, 112, 204 (or 205, 206), 260, and upper-division courses in scientific German. Those majoring in history and the social sciences should take German 210, 310, and 311.

BACHELOR OF ARTS

In this elective curriculum, 40 credits in German are required for graduation. Courses must include: German 207, 230, 300, 301, 302, 303, 310, 311, 401, 402, and 403. Scientific German, courses in English translation, and first-year German are not counted toward the major.

Students majoring in German as a preparation for library work or other careers that do not require knowledge of the spoken language may substitute courses in German literature (but not courses in English translation) in lieu of German 207, 300, 301, 302, 303, 401, 402, and 403.

Qualified students may fulfill the requirements of the junior year through study abroad in a university of recognized standing. Summer study abroad is encouraged, and the Department offers a summer session in Germany in conjunction with the University of Munich.

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*. To register for any graduate course in German, students must receive permission from the Executive Officer of the Department. All candidates for advanced degrees must take German 410, 411, 412, 415, 416, 417, 500, 501, 502, 503, 552, 556, and 557 (or equivalents) as they are offered. German 518 and 519 must be taken if twentieth-century literature is used as a major field.

MASTER OF ARTS. Two programs leading to the Master of Arts degree with a major in Germanics are available.

THESIS PROGRAM. For the M.A. degree, the student must, in addition to fulfilling general requirements of the Graduate School, take a minimum of 30 credits in Germanics. If the student minors in some other department, he may elect the 30 credits in literary or in philological courses or a combination of the two. If his entire program lies within the field of Germanics, he must elect 30 credits in literary courses and 15 credits in philological courses or vice versa. In addition, the candidate 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.

NONTHESIS PROGRAM. Students who wish to proceed directly toward the doctorate may elect to take a nonthesis program for the M.A. degree. In this case, the M.A. will be awarded after a minimum of two years of graduate residence, of which one year must be at the University of Washington, and after the student has satisfactorily passed his general examinations for the Ph.D. Students who elect this program should, on completion of the requirements stated above, notify the Department and the Graduate School of their intention.

A minor in Germanics for the M.A. degree must consist of a minimum of 15 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.

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 a contribution to the sum total of knowledge. 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 grasp of the entire field of which his subject constitutes a part. The main burden of the examination will, of course, concern itself with the fields of Germanic philology and literature. The student may, at his option, major in Germanic literature and minor in Germanic philology or vice versa; or he may major in either of these two fields or a combination of them and minor in a different field.

For a minor in Germanics, a minimum of 15 credits in the field of Germanic literature or Germanic philology or a combination of the two 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 under the thesis program.

COURSES FOR UNDERGRADUATES

- | | |
|--|--------------|
| 101-102, 103 First-Year Speaking German (5-5,5) | Staff |
| Recommended for prospective majors and minors and those who wish to work toward a speaking knowledge. The methods and objectives are primarily oral-aural. | |
| 110-111 First-Year German (5-5) | Staff |
| A beginning course devoted primarily to the reading objective. Not open to those who have taken 101-102. | |
| 112 First-Year Reading (5) | Staff |
| Continuation of 110-111. Prerequisite, 110-111 or one year of high school German. Not open to those who have taken 103. | |
| 121, 122 First-Year Reading German (5,5) | Staff |
| A special course devoted exclusively to the reading objective. Primarily for upper-division and graduate students. | |
| 204 Second-Year Reading (5) | Staff |
| Prerequisite, 103, 112, or two years of high school German. | |
| 205, 206 Second-Year Reading (3,2) | Staff |
| Prerequisite, as for 204; not open to those who have taken 204. | |
| 207 Second-Year Grammar Review (3) | Staff |
| Prerequisite, 103, 112, or two years of high school German. | |
| 210 Advanced Second-Year Reading (3) | Staff |
| Prerequisite, 204, 205, or 206. | |
| 230 Conversation (3) | Staff |
| For students interested primarily in acquiring a speaking knowledge. Prerequisite, 204, 205, 206, or 207. | |

- 260 Lower-Division Scientific German (3)** **Staff**
Prerequisite, 204, 205, or 206.
- 300 Phonetics (2)** **Reed**
Speech sounds, stage pronunciation, and phonetic transcription. (Offered 1956-57.)
- 301, 302, 303 Grammar and Conversation (2,2,2)** **Kahn, Roy**
The materials used aim not merely at an increase in ability to speak, write, and understand German, but also to broaden the student's understanding of the culture of the German-speaking countries. Primarily for majors and minors. Prerequisite, 8 credits in second-year German, including 207; recommended, 230.
- 310, 311 Introduction to the Classical Period (3,3)** **Sauerlander**
Lessing, Goethe, and Schiller. Prerequisite, 8 credits in second-year German or equivalent.
- 312 Introduction to the German Novelle (3)** **Sauerlander**
Representative writers, such as Keller, Meyer, and Storm; theory of the *Novelle*. Prerequisite, as for 310.
- 320, 321, 322 Upper-Division Scientific German (2-3,2-3,2-3)** **Meyer**
Prerequisite, 260 or equivalent.
- 325 Upper-Division Scientific German for Premedics (3)** **Staff**
Prerequisite, 260 or equivalent.
- 401, 402, 403 Grammar and Composition (2,2,2)** **Meyer, Roy, Vail**
Primarily for majors and minors. Prerequisites, 301, 302, and 303.
- 404 History of the German Language (5)** **Meyer**
From early Germanic to the present day. Open to junior majors. (Offered 1955-56.)
- 410, 411, 412 History of German Literature (3,3,3)** **Buck, Kahn, Wilkie**
From the beginnings to the Classical period. (Offered 1956-57.)
- 415, 416, 417 Nineteenth-Century Literature (3,3,3)** **Roy, Sauerlander, Sommerfeld**
(Offered 1955-56.)
- 418, 419 Naturalism, Expressionism, and Twentieth-Century Realism (3,3)** **Roy**
(Offered 1955-56.)
- 422 Analysis of German Poetry (3)** **Sommerfeld**
(Offered 1956-57.)
- 431 Lessing's Life and Dramatic Works (3)** **Vail**
(Offered 1956-57.)
- 433 Goethe: The Early Years (3)** **Vail**
(Offered 1957-58.)
- 434 Goethe: Life and Works, 1775-88 (3)** **Buck**
(Offered 1957-58.)
- 436 Goethe's Faust I (3)** **Sommerfeld**
(Offered 1956-57.)
- 437 Goethe's Faust II (3)** **Vail**
(Offered 1956-57.)
- 438 Schiller's Historical Dramas (3)** **Vail**
(Offered 1955-56.)
- 450J Introduction to General Linguistics (5)** **Jacobs, Reed**
Descriptive and historical techniques in the analysis of languages. Offered jointly with the Department of Anthropology.
- 497 Studies in German Literature (1-5)** **Staff**
Prerequisite, 310 or equivalent.
- 498 Studies in the German Language (1-5)** **Staff**
Prerequisite, 310 or equivalent.

COURSES IN ENGLISH

- 350 Masterpieces of German Literature in English (3)** **Sommerfeld**
- 351 Contemporary German Literature in English (3)** **Roy**
Trends in German thought and letters in the twentieth century; social and economic backgrounds.
- 462 Goethe in English (3)** **Sauerlander**
- 464 Thomas Mann in English (3)** **Roy**

DUTCH

- 101-102, 103 Spoken Dutch (5-5,5)** **Staff**

COURSES FOR GRADUATES ONLY

LITERATURE COURSES

- 500 Bibliography and Methodology (2)** **Sommerfeld**
(Offered 1955-56.)

510 Literature of the Middle Ages (5) (Offered 1956-57.)	Buck
511 Reformation and Renaissance (3) (Offered 1956-57.)	Wilkie
512 Baroque (3) (Offered 1956-57.)	Wilkie
513 Eighteenth-Century Movements (3) (Offered 1956-57.)	Kahn
515 The Romantic Movement (4) (Offered 1955-56.)	Sommerfeld
516 The Drama of the Nineteenth Century (4) (Offered 1955-56.)	Sauerlander
517 The Literature of the Later Nineteenth Century (4) (Offered 1955-56.)	Rey
518, 519 The Literature of the Twentieth Century (3,3) (Offered 1955-56.)	Rey
531 Lessing (3) (Offered 1956-57.)	Vail
534 Goethe: Life and Works, 1775-88 (4) (Offered 1957-58.)	Buck
535 Goethe: Life and Works, 1788-1832 (4) (Offered 1957-58.)	Sommerfeld
538 Schiller (4) (Offered 1955-56.)	Vail
590, 591, 592 Seminar in Literary History (1-5,1-5,1-5)	Staff
600 Research (*)	Staff
Thesis (*)	Staff

PHILOLOGY COURSES

501, 502, 503 Advanced Syntax and Synonymy (2,2,2)	Staff
505 Introduction to Linguistics (3) (Offered 1956-57.)	Reed
550 Gothic (5) (Offered 1955-56.)	Meyer
552 Old High German (5) (Offered 1955-56.)	Reed
555 Old Saxon (5) (Offered 1956-57.)	Reed
556 Middle High German (5) (Offered 1956-57.)	Meyer
557 Middle High German Literature in the Original (5) (Offered 1956-57.)	Reed
560 Modern Dialects (3) (Offered 1957-58.)	Reed
570 Sanskrit (3-5) (Offered 1955-56.)	Reed
595, 596, 597 Seminar in Germanic Philology (1-5,1-5,1-5)	Staff
600 Research (*)	Staff
Thesis (*)	Staff

HISTORY

Executive Officer: SOLOMON KATZ, 308 Smith Hall

The Department of History offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. In addition, it offers first and second teaching areas for students in the College of Education.

BACHELOR OF ARTS

Students majoring in history should plan their program in consultation with a faculty adviser designated by the History Department. History is a discipline

which requires the study of human affairs at many different periods of time and in various parts of the world. The student's plan of study should therefore give attention to ancient, medieval, and modern times and should take account of significant developments in Europe, Asia, and the Americas. One purpose of his program should be to insure a comprehensive coverage of a number of different fields of history. Beyond this, he is encouraged to focus and concentrate his effort on certain areas in history that are of especial interest to him: such as the period of classical antiquity, the history of modern Europe, England, or the United States. The chosen area of concentration should be studied as intensively as time will permit.

In this curriculum 50 credits in history are required. Courses must include: (1) either History 101 and 102 or the General Education sequence, Social Science 101, 102, and 103 (History of World Civilization); for History 102, History 305 and 306 may be substituted; (2) either History 241 or History 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 enrich the major field. Thus a program in history should include courses in philosophy, literature, or the arts, and economics or political science. They should be chosen as part of the total plan of study with the counsel and advice of the major adviser and should meet the student's individual needs and interests. Related electives totaling 20-25 credits should be included in a program leading to the Bachelor of Arts degree.

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, English history, and British Empire history; the subject within the third division is American history; subjects within a fourth division, Far Eastern history, may be selected by arrangement with the Department of History.

MASTER OF ARTS. At least 40 credits in history are required. The candidate must complete History 501 and 502, one seminar, and graduate courses in three fields selected for special study. The candidate should select one field from a subject in each of three divisions of history.

Students majoring in Far Eastern history must meet the same requirements, except that they may take either 501 or 502, and are examined in only two fields of special study within the first three divisions named above. The rest of the program is arranged in cooperation with the Far Eastern and Russian Institute.

The prerequisite for a minor in history for the master's degree is an undergraduate program in history, or such preparation as the Department deems satisfactory. For this minor 15 credits in history are required, of which 10 must be in one historical subject and 5 in History 501 or 502.

DOCTOR OF PHILOSOPHY. Candidates must complete History 501, 502, and at least two years of seminar work, participate in the work of the advanced seminar, and take at least one graduate course in each of four fields selected for special study. In addition, they are expected to complete a minor in another department.

Students majoring in Far Eastern history are expected to take History 501 and 502, to complete one year of seminar work, and to prepare for examinations in two

fields of special study within the first three divisions named above. A Far Eastern language or Russian may be substituted for either French or German. The remainder of the program is arranged in cooperation with the Far Eastern and Russian Institute.

A history minor for the doctor's degree requires History 501, 502, and either a seminar or three fields selected from subjects in at least two of the first three divisions of history named above.

COURSES FOR UNDERGRADUATES

Social Science 101, 102, 103 History of Civilization (5,5,5)

Jansen, Katz, Lytle,
Roberts, Savelle

See the General Education program for description.

101 Medieval European History (5)

Dobie, 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)

Dobie, Emerson, Lytle, Treadgold

Political, social, economic, and cultural history of Europe from 1500 to the present, including the evolution of nationalism, democracy, and imperialism and their interrelationship with the Industrial Revolution. 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.

291, 292 Latin American History (5,5)

Massey

The Spanish and Portuguese empires in the New World; independence and the subsequent political, social, and economic development of Latin America.

296J History of Japanese Civilization (5)

Jansen

A survey of political, economic, social, intellectual, literary, and artistic developments in Japan from earliest times to the present. Offered jointly with the Far Eastern and Russian Institute.

305 Early Modern European History (5)

Emerson, Lytle, Treadgold

Political, social, economic, and cultural history of Europe from 1450 to the French Revolution (1789). Not open to students who have taken 102.

306 Europe Since the French Revolution (5)

Emerson, Lytle, Treadgold

Political, social, economic, and cultural history of Europe from the French Revolution (1789) to the present day. Not open to students who have taken 102.

341 Foundations of American Civilization (5)

Saville

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)

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.

371 Constitutional History of Modern England (5)

Roberts

The development of legal and governmental institutions of the English people from the Tudors to the present time. (Offered 1956-57.)

381 History of India, 1607 to the Present (5)

Dobie

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.

401 Greece in the Age of Pericles (3)

Katz

(Not offered 1955-57.)

402 Alexander the Great and the Hellenistic Age (5)

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 every four years; offered 1955-56.)

- 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. (Offered every four years; offered 1956-57.)
- 404 The Roman Empire (3)** **Katz**
(Not offered 1955-57.)
- 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.
- 411 Medieval Civilization (5)** **Lucas**
Economic aspects of the Middle Ages from the decline of Rome to the Renaissance. (Offered every three years; offered 1956-57.)
- 412 Medieval Civilization (5)** **Lucas**
(Offered every three years; offered 1957-58.)
- 413 Medieval Civilization (5)** **Lucas**
Arts, letters, religion, science, and thought in Europe outside Italy from 1200 to 1500. (Offered every three years; offered 1955-56.)
- 414 Culture of the Renaissance (5)** **Lucas**
Art, literature, politics, philosophy, science, and religion in Italy from 1300 to the death of Michelangelo.
- 415 The Reformation (5)** **Lucas**
Political and religious crisis; Lutheranism, Zwinglianism, Anglicanism, Anabaptism, Calvinism, Catholic reform; beginnings of Baroque art.
- 422J Early Russian History (5)** **Treadgold**
Survey of the development of Russia from the earliest times to the reign of Nicholas II (1894-1917). Offered jointly with the Far Eastern and Russian Institute.
- 423J Recent Russian History (5)** **Treadgold**
Survey of Russia and the U.S.S.R. from the reign of Nicholas II (1894-1917) to the present. Offered jointly with the Far Eastern and Russian Institute.
- 424J Russian Revolutionary Movement (3)** **Treadgold**
Intellectual and political aspects of Russian opposition to tsarism from 1825 to 1917. Offered jointly with the Far Eastern and Russian Institute.
- 429 France from the Reformation to the French Revolution (5)** **Lytle**
(Offered alternate years; offered 1956-57.)
- 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**
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**
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.
- 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 1956-57.)
- 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 1955-56.)
- 441 American Revolution and Confederation (5)** **Savalle**
The causes of the separation of the United States from the British Empire; the political theory of the Revolution; its military history; the diplomacy of the Revolution; the Revolution as a social movement; intellectual aspects; readjustment after independence; the formation of the American union; the Constitution. (Offered every four years; offered 1956-57.)
- 442 The Colonial Mind (5)** **Savalle**
(Offered every four years; offered 1958-59.)
- 443 The Intellectual History of the United States (5)** **Savalle**
(Offered every four years; offered 1957-58.)
- 447 History of the Civil War and Reconstruction (5)** **Pressly**
Sectional conflict and the struggle between rival nationalisms in mid-nineteenth-century America.
- 450 Twentieth Century America (5)** **Pressly**
Political, social, economic, and intellectual developments in the United States from 1900 to the present. Not open to students who have taken 343.
- 451J History of Chinese-Japanese Relations (3)** **Jansen**
Cultural, political, and economic influence in the nineteenth and twentieth centuries. Offered jointly with the Far Eastern and Russian Institute.

- 452J Early Japanese History (5)** Janson
Dominant trends in the development of Japan from the earliest times to 1600 A.D. Offered jointly with the Far Eastern and Russian Institute.
- 453J Tokugawa Period (5)** Janson
Political system, economic problems, and intellectual currents in Japan from 1600 to 1868. Offered jointly with the Far Eastern and Russian Institute.
- 454J Modern Japanese History (5)** Janson
The development of Japan from feudal to modern state; effects of war and occupation. Offered jointly with the Far Eastern and Russian Institute.
- 457 The Diplomatic History of North America, 1492-1763 (5)** Savello
European diplomacy with regard to America, from the time of Columbus to the Peace of Paris, in 1763; America and the European balance of power; relations between colonies and rival colonial empires; colonial origins of later United States international policies. (Offered every four years; offered 1955-56.)
- 458 The United States in World Affairs, 1776-1865 (5)** Holt
The history of the United States in world politics and the balance of power; background of the major episodes in American foreign relations.
- 459 The United States in World Affairs, 1865 to the Present (5)** 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)** Pressly
Comparative study of the aims and accomplishments of four major reform movements in the United States: Jeffersonian democracy, Jacksonian democracy, Progressivism, and the New Deal.
- 463 The Westward Movement (5)** 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)** Gates
Exploration and settlement; economic development; growth of government and social institutions; statehood.
- 470 England in the Seventeenth Century (5)** Roberts
Political, constitutional, social and cultural development in the Age of the Stuarts.
- 471 England in the Eighteenth Century (5)** Costigan
Political, social, and cultural developments in England from the reign of Queen Anne to the American Revolution. (Not offered 1955-56.)
- 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. (Offered 1955-56.)
- 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. (Offered 1955-56.)
- 474 Modern Irish History (5)** Costigan
Growth of Irish national feeling in the nineteenth century, through the Home Rule and Sinn Féin movements, to the establishment of the Irish Free State and later the Republic of Eire; background of the Irish literary renaissance; establishment of Northern Ireland. (Offered 1955-56.)
- 475 History of Canada (5)** Dobie
The struggle for unity and nationhood as determined by geographical conditions, by religious antagonism, by the impact of modern commercial and industrial society upon an old-world culture, and by pulls toward Europe and the United States.
- 480 History of the British Empire since 1783 (5)** Dobie
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. (Offered alternate years; offered 1955-56.)
- 481 History of the Commonwealth of Nations (5)** Dobie
The advancement of dependencies of Great Britain to the status of independent nations associated with Great Britain. (Offered alternate years; offered 1956-57.)
- 499 Undergraduate Research (1-5)** Staff

COURSES FOR GRADUATES ONLY

- 501 Historiography: Ancient, Medieval, and Early Modern European (5)** Katz, Staff
- 502 Historiography: Modern European and American (5)** Holt, Staff
- 600 Research (*)** Staff
- Thesis (*)** Staff

COURSES IN FIELDS OF SPECIALIZATION

These courses are introductions to advanced study. They are designed to show how important historical conclusions have been reached, to suggest further research, and particularly to give bibliographical guidance to students in their preparation for the examination in the fields selected.

510	Greek and Roman History (5)	Katz
514	Medieval and Renaissance History (5)	Lucas
532	Modern European History: Germany (5)	Emerson
533	Modern European History: France (5)	Lytle
534J	Modern European History: Russia (5)	Treadgold
	Offered jointly with the Far Eastern and Russian Institute.	
541	American History (5)	Saville
542	American History (5)	Gates
543	American History (5)	Holt
544	American History (5)	Pressly
575	English History (5)	Costigan
576	British Empire History (5)	Dobie
SEMINARS		
503-504	Philosophy of History (5-5)	Costigan
	(Offered alternate years; offered 1956-57.)	
517-518-519	Ancient or Medieval History (5-5-5)	Lucas
521-522-523	Modern European History (5-5-5)	Emerson, Lytle
551J	Japanese History (3, maximum 6)	Jansen
	Offered jointly with the Far Eastern and Russian Institute. Prerequisite, permission.	
553-554-555	American History (5-5-5)	Gates, Saville
590-591-592	Seminar in History (5-5-5)	Staff
593-594-595	Advanced Seminar (5-5-5)	Holt

HOME ECONOMICS

Director: JENNIE I. ROWNTREE, 201 Raitt Hall

The School of Home Economics offers many types of 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 seven curricula, five of which lead to professional degrees, two to nonprofessional degrees.

Of the professional curricula, two lead to the degree of Bachelor of Science in Home Economics and are planned for those who wish to become dietitians, or to become home economists in business, journalism, or social work. Those who anticipate teaching may take either a Bachelor of Science in Home Economics or a Bachelor of Science in Home Economics Education. Students who specialize in textiles, clothing, and art receive a Bachelor of Arts in Home Economics. Those who select apparel manufacture follow a curriculum arranged jointly with the College of Business Administration and the School of Art and receive a Bachelor of Arts.

The two nonprofessional curricula are for students who wish to major in home economics but not to prepare for positions in the field. The nonprofessional curriculum in clothing and art leads to the Bachelor of Arts degree, the general nonprofessional curriculum to the Bachelor of Science.

A basic academic field and a second teaching area are offered for students in the College of Education. 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 to 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-making in Washington high schools follow this prescribed curriculum, which meets the course requirements (a total of 60 credits in home economics) for the temporary vocational certificate, as well as the course requirements for the provisional general certificate, which is issued through the College of Education (see the *College of Education Bulletin* for other requirements for the provisional general certificate). Students who plan to teach outside the state of Washington may omit Education 373 (Washington State Manual), 370E (Elementary School Methods), 372E (Professional Laboratory Experiences), and 374 (Fundamentals of Reading Instruction); History 464 (History of Washington and the Pacific Northwest); music appreciation; and Public Health 461 (School and Community Health Programs).

Since this curriculum permits only 9 elective credits, interested students should enter the program early to be sure of completing the curriculum in four years.

First Year	CREDITS	Second Year	CREDITS
Home Ec. 101 Introduction	1	Home Ec. 215 Meal Planning	3
Home Ec. 115 Food Preparation	3	Home Ec. 234 Costume Design	3
Home Ec. 125 Textiles	3	Home Ec. 248 The House	3
Home Ec. 134 Clothing Construction	5	Econ. 200 Introduction	5
Art 109 Design	3	Educ. 209 Educ. Psychol. and Educ. 370	
Chem. 101 General, 230 Organic	10	Intro to Teaching Procedures	
Engl. 101, 102, 103 Composition	9	(taken concurrently)	8
Speech 100 Basic Improvement	5	Music Appreciation	2-5
Electives	4	Nursing 100 Home Nursing	3
Phys. Educ. 110 Health	2	Psychol. 100 General	5
Phys. Educ. activity	3	Sociol. 110 Survey	5
	48	Zool. 208 or 118 Physiology	5
			42-45

Third Year	CREDITS	Fourth Year	CREDITS
Home Ec. 307 Nutrition	5	Home Ec. 338 Family Clothing	3
Home Ec. 315 Advanced Food Selection	5	Home Ec. 348 Home-Management House	3
Home Ec. 347 Home Furnishing	5	Home Ec. 407 Adv. Nutrition or	
Home Ec. 354 Family Economics	5	434 Costume Design or 447 Adv.	
Home Ec. 356 Family Relationships	3	Home Furnishing or 495 Special	
Educ. 332 Teachers' Course in Home Ec.	3	Problems	3
Educ. 370E Elementary School Methods	5	Home Ec. 457 Child Nutrition	3
Educ. 373 State Manual	2	Educ. 360 Principles	3
Educ. 390 Evaluation	3	Educ. 371S Directed Teaching	8
Micro. 301 General	5	Educ. 372E Professional Lab.	
Electives	5	Experiences	3
	46	Educ. 374 Fund. of Reading Instruct.	5
		Hist. 464 Wash. and Pac. N.W.	5
		Psychol. 320 Obs. of Child Behavior	
		in Nurs. School	2
		Pub. Health 461 School & Comm. Health	5
		Electives	3
			46

CURRICULUM IN INSTITUTION ADMINISTRATION. This prescribed curriculum is for students who plan careers as dietitians in food service. Those who intend to become members of the American Dietetic Association must take a year's internship in an approved administrative or hospital dietetics course after completing this program.

First Year		Second Year	
	CREDITS		CREDITS
Home Ec. 101 Introduction	1	Home Ec. 134 Clothing Construction or 231 Clothing Selection	5-2
Home Ec. 115 Food Preparation	3	Home Ec. 215 Meal Planning	3
Home Ec. 125 Textiles	3	Home Ec. 248 The House	3
Art 109 Design	3	Econ. 200 Introduction	5
Chem. 101 General, 230 Organic	10	Chem. 112 General	5
Engl. 101, 102, 103 Composition	9	Physics 170 For Nurses	5
Psychol. 100 General	5	Sociol. 110 Survey	5
Electives	9	Zool. 208 Physiology	5
Phys. Educ. 110 Health	2	Electives	9-12
Phys. Educ. activity	3		45
	48		
Third Year		Fourth Year	
	CREDITS		CREDITS
Home Ec. 307 Nutrition, 407 Adv. Nutrition	8	Home Ec. 372 Institution Food Prep., 472 Institution Food Purch., 473, 474 Institution Mgmt.	16
Home Ec. 315 Adv. Food Selection	5	Home Ec. 408 Diet Therapy	3
Home Ec. 347 Home Furnishing	5	Home Ec. 457 Child Nutrition	3
Home Ec. 348 Home-Management House	2	Biochem. 361 Biochemistry	3
Home Ec. 354 Family Economics	5	Biochem. 363 Lab.	2
Home Ec. 356 Family Relationships	3	Educ. 333 Teaching Institution Admin.	5
Micro. 301 General	5	Electives	13
Psychol. 320 Obs. Child Behavior in Nurs. School	2		45
Electives	10		
	45		

CURRICULUM IN BUSINESS, JOURNALISM, AND PUBLIC HEALTH. Those anticipating sales promotion work in food, equipment, or utility companies or planning to combine home economics with journalism, social work, or public health follow the institution administration curriculum for the first three years and during their fourth year take one of these sequences:

Fourth Year		Fourth Year	
HOME ECONOMICS AND BUSINESS		HOME ECONOMICS AND JOURNALISM	
	CREDITS		CREDITS
Home Ec. 316 Demonstr. Cookery	3	Home Ec. 457 Child Nutrition	3
Home Ec. 408 Diet Therapy, and 415 Exper. Cook., or Biochem. 361 Biochem.	6-3	Journ. 100 Journalism Today	2
Home Ec. 457 Child Nutrition	3	Journ. 200 News Writing	5
Journ. 100 Journalism Today	2	Journ. 201 Copy Editing	2
Journ. 200 News Writing	5	Journ. 220 Advertising	3
Speech 120 Public Speaking	5	Journ. 303 Public Relations	3
Electives	21-24	Journ. 404 Mag. Article Writing	3
	45	Radio-TV 342 Radio and Television Advertising	5
		Electives	21
			47

HOME ECONOMICS AND SOCIAL OR PUBLIC HEALTH WORK

	CREDITS
Home Ec. 408 Diet Therapy	3
Home Ec. 457 Child Nutrition	3
Pub. Health 301 or 402 Commun. Disease	3
Pub. Health 412 Organizations and Services	3
Pub. Health 463 Comm. Organization	3
Pub. Health 464 Comm. Educ.	3
Pub. Health 470 Statistics	2
10 credits from Soc. Work 300, 301, 302, 304, 305, with Biochem. 361 and 363 advised	10
Electives	15
	45

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**

Home Ec. 101 Introduction.....	1
Home Ec. 125 Textiles.....	3
Home Ec. 134 Clothing Construction.....	5
Art 105 Drawing.....	3
Art 109, 110 Design.....	6
Chem. 101 General, 230 Organic.....	10
Engl. 101, 102, 103 Composition.....	9
Phys. Educ. 110 Health.....	2
Electives.....	6
Phys. Educ. activity.....	3
	<hr/>
	48

Second Year**CREDITS**

Home Ec. 110 Food & Nutrition or 115	
Food Prep. or 300 Nutrition.....	2-5
Home Ec. 234 Costume Design.....	3
Art 106 Drawing.....	3
Art 111 Design.....	3
Econ. 200 Introduction.....	5
Hist. 101, 102 Medieval, Modern Europe.....	10
Psychol. 100 General.....	5
Sociol. 110 Survey.....	5
Electives.....	5-9
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	45

Third Year**CREDITS**

Home Ec. 334, 434 Costume Design.....	6
Home Ec. 347 Home Furnishing.....	5
Home Ec. 354 Family Economics.....	5
Home Ec. 356 Family Relationships.....	3
Art 369, 370, 371 Costume Design	
& Illust.....	6
Philos. 100 Introduction.....	5
Electives.....	15
	<hr/>
	45

Fourth Year**CREDITS**

Home Ec. 425 Advanced Textiles.....	3
Home Ec. 426 Hist. Textiles.....	3
Home Ec. 433 Hist. Costume.....	5
Home Ec. 435, 436 Adv. Costume Design.....	10
Art Electives.....	8
Electives.....	16
	<hr/>
	45

BACHELOR OF ARTS

CURRICULUM IN DESIGN FOR APPAREL MANUFACTURING. This prescribed curriculum correlates work in the Schools of Home Economics and Art and the College of Business Administration. Its purpose is to equip qualified students with the knowledge and skills essential in designing for apparel manufacturing. Practical experience in factories is required, and is provided by registration in Production 380 (Field Work). 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.....	5
Home Ec. 356 Family Relationships.....	3
Acct. 150 Fundamentals.....	4
Art 329 Appreciation.....	2
Art 369, 370 Costume Design & Illust.....	4
Gen. Bus. 101 Introduction.....	5
Mktg. 301 Principles.....	5
Social Science and Humanities electives.....	6
	<hr/>
	45

Fourth Year**CREDITS**

Home Ec. 425 Adv. Textiles.....	3
Home Ec. 426 Hist. Textiles.....	3
Home Ec. 433 Hist. Costume.....	5
Home Ec. 435, 436 Adv. Costume Design.....	10
Business Administration electives.....	10-15
Chosen from:	
Personnel 310 Pers. Mgmt. (5) or	
other approved courses	
Marketing 381 Retailing (5)	
Production 301 Principles (5)	
Production 380 Field Work.....	6
Electives.....	3-8
	<hr/>
	45

NONPROFESSIONAL CURRICULUM IN CLOTHING AND ART. This elective curriculum is for those students who are interested in a career in ready-to-wear. Suggested electives are: Home Economics 110 or 115; 248; 300 or 307; 457 or Psychology 320 (Observation of Child Behavior in the Nursery School); Architecture 105 (The House); and courses in the General Education program. The first two years are identical with the professional textiles, clothing, and art curriculum.

Third Year		Fourth Year	
	CREDITS		CREDITS
Home Ec. 334, 434 Costume Design.....	6	Home Ec. 425 Adv. Textiles.....	3
Home Ec. 347 Home Furnishing.....	5	Home Ec. 433 Hist. Costume.....	5
Home Ec. 354 Family Economics.....	5	5 credits from Home Ec. 321 Needle-	
Home Ec. 356 Family Relationships.....	3	craft (2), 322 Needlecraft (2), 329	
Art 369, 370 Costume Design & Illust. .	4	Hand Weaving (2), and 426 Hist.	
Philos. 100 Introduction.....	5	Textiles (3).....	5
Electives.....	17	Art or upper-division business electives.....	10
	45	Electives.....	22
			45

BACHELOR OF SCIENCE

NONPROFESSIONAL GENERAL CURRICULUM. This elective curriculum is for students who want a broad home economics background without specialization. Suggested electives are: Architecture 105 (The House); Microbiology 301 (General); Physics 170 (Physics for Nurses); Sociology 353 (Social Factors in Marriage); and courses in education, journalism, nursery school, and in the General Education program.

First Year		Second Year	
	CREDITS		CREDITS
Home Ec. 101 Introduction.....	1	Home Ec. 215 Meal Planning.....	3
Home Ec. 115 Food Preparation.....	3	Home Ec. 234 Costume Design.....	3
Home Ec. 125 Textiles.....	3	Home Ec. 248 The House.....	3
Home Ec. 134 Clothing Construction.....	5	Econ. 200 Introduction.....	5
Art 109 Design.....	3	Psychol. 100 General.....	5
Chem. 101 General, 230 Organic.....	10	Sociol. 110 Survey.....	5
Engl. 101, 102, 103 Composition.....	9	Zool. 208 Physiology.....	5
Electives.....	9	Electives.....	16
Phys. Educ. 110 Health.....	2		45
Phys. Educ. activity.....	3		
	48		

Third Year		Fourth Year	
	CREDITS		CREDITS
Home Ec. 307 Nutrition.....	5	Home Ec. 457 Child Nutrition.....	3
Home Ec. 347 Home Furnishing.....	5	Electives.....	42
Home Ec. 348 Home-Management House	2		45
Home Ec. 354 Family Economics.....	5		
Home Ec. 356 Family Relationships.....	3		
Psychol. 320 Obs. Child Behavior			
in Nurs. School.....	2		
Electives.....	23		
	45		

COURSES AND PROGRAMS FOR STUDENTS IN OTHER FIELDS

GENERAL COLLEGE STUDENTS. Those interested in homemaking will find value in the following courses: Home Economics 110, 125, 134, 215, 231, 240 (or 347), 248, 300 (or 307), 321, 322, 329, 350 (or 354), 356, and 457, and Education 332 (Teachers' Course in Home Economics).

COLLEGE OF BUSINESS ADMINISTRATION STUDENTS. For those interested in institution management the following sequence is recommended: Home Economics 115, 125, 215, 240, 307, 372, 472, 473, and 474; Chemistry 101 (General) and 230 (Organic); and Microbiology 301 (General).

JOURNALISM STUDENTS. For those wishing a general background in home economics the following are recommended: Home Economics 115, 125, 231, 240, 300, 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 basic academic field or second area of concentration in home economics.

For a basic academic field (primarily for elementary teachers), the requirements are: 45 credits, including Home Economics 101, 115, 125, 134, 215, 234, 248, 307, 347, 354, 356, and 457; plus recommended courses to complete the field.

For a second area of concentration, students may select one of four sequences. *General*: Home Economics 110 or 115, 125, 134, 248, 300; *Textiles, Clothing, and Art*: Home Economics 125, 134, 234, 347; *Food, Nutrition, and Health*: Home Economics 110 or 115, 215, 300, 350, 457; or *Family Relationships and Child Welfare*: Home Economics 110, 350, 356, 457, Psychology 320 (Directed Observation of Child Behavior in Nursery School).

ADVANCED DEGREES AND GRADUATE WORK

Graduates in institution administration who wish to become hospital dietitians select a hospital training course, which is a dietetic internship, for their fifth year of study. Those who wish to become dietitians in lunch rooms, restaurants, or dormitories select an administration internship, such as the one offered by the School of Home Economics. Some of these internships carry graduate credit, and completion of all approved courses makes students eligible for membership in the American Dietetic Association.

Students who intend to work toward a master's degree must meet the requirements of the Graduate School 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 12 credits in related fields, such as art, economics, education, or the biological, physical, or social sciences. Candidates must present acceptable undergraduate preparation in home economics and basic fields.

COURSES FOR UNDERGRADUATES

- | | |
|--|-----------------------------------|
| 101 Introduction to Home Economics (1) | Rowntree |
| Orientation to college; women's educational needs and opportunities in the professional fields. | |
| 110 Food and Nutrition (5) | Morrison |
| Food selection and preparation, and family meal planning and service, with emphasis on nutritive and economic values. For nonmajors interested in homemaking. | |
| 115 Food Preparation (3) | Dresslar, Rose |
| Cookery techniques presented in lecture-demonstration, followed by laboratory experience. Food selection, basic cookery, simple meal planning service, and cost calculation. No credit to those who have taken 110 or 119. | |
| 119 Nutrition and Food Preparation (3) | Morrison, Rose |
| Demonstrations in preparing food, planning and serving meals; nutritive needs of different age groups and types. For student nurses. | |
| 125 Textiles (3) | Brockway |
| Relationship of raw materials, construction, and finish to quality and cost; identification of fibers, yarns, and fabrics; microscopic and chemical tests; economic development of textile industry. | |
| 134 Clothing Construction and Selection (5) | Hultgren, Shigaya, Wybourn |
| Analysis and selection of clothing and accessories. Wardrobe inventory. Planning and construction of cotton or linen dresses. | |
| 215 Meal Planning and Preparation (3) | Rose |
| Factors in food purchasing. Preparation and service of nutritious and attractive meals for families on different economic levels. Prerequisite, 115 or permission. | |
| 231 Clothing Selection (2) | Payne |
| Choice of clothing, emphasizing appropriateness to personality and occasion as well as quality and cost. | |
| 234 Costume Design and Construction (3) | Hultgren, Payne, Wybourn |
| Flat-pattern designing and wool techniques, including the design of a muslin pattern and the use of it in making a wool dress; study of clothing for children. Prerequisites, 134 and Art 109. | |

- 240 Home Furnishing (3)** **Hosmer**
Color and design; selection and arrangement of furniture and furnishings. Fabrics, floor coverings, wall and window treatment, and accessories. For nonmajors. Not open to students who have taken 347.
- 248 The House, Its Equipment, and Management (3)** **Turnbull**
Management of time, energy, and equipment in the home as a factor in successful family living.
- 300 Nutrition (2)** **Johnson**
Importance of food to the maintenance of health; nutritive values and human needs; ways of meeting human requirements at different cost levels. For nonmajors.
- 305 Diet in Health and Disease (3)** **Goers, Johnson**
Practical applications of nutrition principles to feeding problems and to dietary modifications necessitated by disease. For student nurses. Prerequisite, 119.
- 307 Nutrition (3 or 5)** **Johnson, Rowntree**
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 physiology.
- 315 Advanced Food Selection and Preparation (2 or 5)** **Dresslar**
Relationship of science to cookery. Food preservation. Simple experimental cookery. Meal preparation and service; food budgeting and purchasing. Students who pass a qualified diagnostic examination may take lectures only and receive 2 credits. Prerequisites, 215 and general chemistry.
- 316 Demonstration Cookery (3)** **Dresslar**
Techniques and methods adapted to teaching and business. Prerequisite, 215 or permission.
- 321 Needlecraft (2)** **Payne**
Italian embroidery and its application to table and other household linens. History of lace. Prerequisites, 134 and Art 109.
- 322 Needlecraft (2)** **Payne**
National and historic embroideries with application to modern use in the home and in costume. Prerequisites, 134 and Art 109.
- 329 Hand Weaving (2)** **Brockway**
Mechanism of looms, warping techniques, designing and weaving with various yarns; contemporary designers. Prerequisite, permission.
- 334 Costume Design and Construction (3)** **Payne, Wybourn**
Design by draping. Study of clothing production at all price levels. Silk and rayon technique. Prerequisite, 234.
- 338 Clothing for the Family (3)** **Wybourn**
A study of family clothing considering income, social, and psychological factors, ready-to-wear, and mass production. Construction of children's garments and renovation of adult's. Prerequisite, 234.
- 347 Home Furnishing (5)** **Hosmer**
Selection and arrangement of house furnishings to contribute to family living: wall treatment, floor coverings, fabrics, furniture, accessories, furnishings, and budgets. Field trips and special laboratory projects. Not open to students who have taken 240. Prerequisites, 125 and Art 109.
- 348 Home-Management House (2-3)** **Morrison**
Residence in the School's Home-Management House, with opportunity to apply principles of homemaking in money management; keeping of records; care of house; group relationships; and food buying, preparation and service. *Advance reservation required.* Home economics education students receive 3 credits; others, 2.
- 350 Managing Family Finances (3)** **Turnbull**
Planning the use of financial and other resources to further the goals of the family. The connection between outside social and economic conditions and personal financial problems. For nonmajors.
- 354 Family Economics and Finances (5)** **Turnbull**
Economic and social conditions affecting the consumer, such as credit and marketing practices; managing family finances in relation to these conditions. Prerequisite, Economics 200.
- 356 Family Relationships (3)** **Rowntree**
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, 215.
- 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)** **Johnson**
Nutrition as a curative and preventive factor in disease. Primarily journal readings. Prerequisite, 407.
- 415 Experimental Cookery (3)** **Dresslar**
Food experiments illustrating science applications. Subjective and objective testing of food. Prerequisite, 315 or permission.

- 425 Advanced Textiles (3)** **Brockway**
Tests for textile strength, sun fading, washing, weight, thread count, water repellency, quantitative analysis, and microanalysis. Developments in synthetics and finishes, distributive education, technical and trade organizations, legislation, and standardization. Prerequisites, 125, Economics 200, and general chemistry.
- 426 Historic Textiles (3)** **Brockway, Hosmer**
Relationships of textiles of each historic period to the life, homes, techniques, and materials of the times. Historic collections of the School and contemporary textiles from the current market are studied. Prerequisites, 347 and Art 111 or other equivalents.
- 433 History of Costume (5)** **Payne**
Relationship of the fashions of each historic period to their esthetic and social backgrounds. A collection of national and historic costumes is studied as source material for professional designing. Prerequisites, 234 and Art 369, or permission.
- 434 Costume Design and Construction (3)** **Payne, Wybourn**
Basic principles of coat and suit construction; comparative costs of ready-to-wear. Prerequisites, 334 or 338 and junior standing.
- 435 Advanced Costume Design and Construction (5)** **Payne**
Flat-pattern drafting, grading, and designing. Prerequisites, 434 and Art 369.
- 436 Advanced Costume Design and Construction (5)** **Payne**
Advanced designing by draping; custom work. Prerequisite, 435.
- 447 Advanced Home Furnishing (3)** **Hosmer**
Selection of fabrics, floor coverings, wall coverings, and furniture. Furniture finishing. Techniques of making draperies, slip covers, and cushions. Individual projects relating to high school home projects.
- 454 Advanced Family Economics and Finances (2)** **Turnbull**
Family adjustment to differing social and economic conditions. Legislation that affects consumers. Interaction of production, distribution, and consumption of consumer goods. Prerequisite, 350 or 354.
- 457 Child Nutrition and Care (3)** **Deisher, Rowntree**
Physical, mental, and emotional health of children. Experience with parents and children in the Child Nutrition Service. 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 for those who plan to do institution buying. Prerequisite, 315.
- 473 Institution Management (3)** **Terrell**
Principles of organization, executive qualifications, characteristic responsibilities of an institution manager. Types of institutions, personnel administration, management controls, planning of work and equipment layout, budget analysis. Professional organizations and ethics presented from the standpoint of managers of food service institutions. For institution administration students; others by permission.
- 474 Institution Management (5)** **Parks**
Food and food service accounting problems. Recording financial transactions; cost controls; profit and loss statements. Prerequisite, 215.
- 475 Institution Equipment (3)** **Terrell**
Institution kitchens and serving units; routing of work; equipment selection, operation, and care; repair and depreciation records. Prerequisite, permission.
- 495 Special Problems in Home Economics (*, maximum 10)** **Staff**
Individual study and research in fields of special interest. In registration, field should be indicated by 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, Rowntree**
Library research. Prerequisite, 407 or equivalent.
- 515 Readings in Food Selection and Preparation (*)** **Dresslar**
Professional literature on recent developments. Prerequisite, 315 or equivalent.
- 554 Social and Economic Problems of the Consumer (3-5)** **Turnbull**
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, 579, Supervised Field Work (4,4,4,4)** **Terrell**
Twelve months 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 (*)**Staff**

In registration, field of interest should be indicated by letter. Prerequisite, permission.

A. Costume design	Payne
B. Institution administration	Terrell
C. Nutrition	Johnson
D. Textiles	Brockway
E. Family economics	Turnbull
F. Foods	Dresslar
G. Home economics education	McAdams

Thesis (*)**Staff****JOURNALISM**

(See Communications, page 76.)

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) taking three years of undergraduate work (135 credits) 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 Law School.

Students who take the three-year course leading to a bachelor's degree after one year in the Law School choose one of three curricula. The College of Business Administration provides a business-law curriculum (see the *College of Business Administration Bulletin*) and the College of Arts and Sciences provides both an arts-law and a science-law curriculum. In all these curricula, the three-year program must include 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 Law School. The grade point of 2.50 does not include the physical education activity and lower-division military training grades.

These three-year curricula are open to students from other institutions who enter the University with advanced standing, provided that they earn at least 45 approved credits in the University before entering the Law School. This privilege is not extended to normal-school graduates attempting to graduate in two years nor to transfer students who enter the University with the rank of senior.

ARTS-LAW CURRICULUM. The requirements are: English 101, 102, 103 (Composition); Physical Education 110 or 175 (Health); 3 quarters of physical education activity; 12 or 18 credits in ROTC courses; 25 credits in a special field; 20 credits in a related field; and 82 credits in electives, arranged to fulfill group requirements and to provide 28 credits in upper-division courses. No correspondence courses may be included in any of the three-year programs.

The following courses are especially recommended by the University of Washington Law School: General Business 101 (Introduction to Business); Economics 200 (Introduction to Economics); History 271-272 (English Political and Social History); Philosophy 100 (Introduction to Philosophy), 120 (Introduction to Logic); and Political Science 201 (Modern Government) or 202 (American Government and Politics); 362 (Introduction to Public Law), and at least one course in accounting (Accounting 150). If a student takes all these basic courses, he may choose his special and related fields from any department in the College. If not, his special and related fields must be selected from economics, history, philosophy, and political science.

SCIENCE-LAW CURRICULUM. The requirements for this curriculum are the same as those for the arts-law curriculum except that a major in a physical or biological science may be substituted for the special and related field requirements.

LIBERAL ARTS

Assistant Professor: W. GLEN LUTEY, 213 Denny Hall

There is no curriculum leading to a degree in Liberal Arts. The following courses are given as general interest courses for students in all fields.

COURSES FOR UNDERGRADUATES

- 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
 The appreciation of masterpieces of architecture, painting, sculpture, and music; the problems common to them; the philosophy of art; the relations of beauty, truth, and morality.

LIBRARIANSHIP, PREPROFESSIONAL PROGRAM

Director: 112 Library

Students planning to apply for admission to the School of Librarianship should consult the Director of the School, in person or by correspondence, for guidance in their undergraduate studies. In general, it is recommended that a student establish a major in a subject of special interest to him and supplement his comprehensive knowledge of that field with a broad cultural course which includes literature, the political and social sciences, some aspect of the physical sciences, and psychology. A study of at least one modern foreign language is essential.

An undergraduate curriculum in the Division of General Studies (see page 109) 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 (The Use of Books and Libraries), given by the School of Librarianship. This course is open to all students, particularly new and lower-division students, and it helps to orient those interested in librarianship as a career. The School offers certain other undergraduate courses which, although primarily designed to prepare students to meet certification requirements for teacher-librarians, may serve also as introductory work for those who plan to enter the School after graduation (see the *Graduate School Bulletin* for a complete statement of admission requirements).

COURSES FOR UNDERGRADUATES

- 100 The Use of Books and Libraries (2)** Staff
 Lectures and discussions illustrating the use of libraries, general reference materials and aids, and reference books in various subject fields. Open to any student but designed primarily for freshmen, sophomores, and new students.
- 451 Children's Books (3)** Groves, Peterson
 Introduction to the field of children's books, with special emphasis on their selection and application to the school curriculum and to the child's recreational reading interests.
- 452 Storytelling (3)** Groves
 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 undergraduates and nonlibrary school students Autumn Quarter only; for School of Librarianship students Spring Quarter.
- 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; care and circulation of materials.
- 461 School Library Materials (3)** Turner
 Study of reference materials and basic books in subject fields, with special attention to their use in correlation with the school curriculum. Primarily for teacher-librarians.
- 462 Reading of Young People (3)** 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)** Turner
 Simple cataloging techniques suitable for the school or small library.

464 Elements of Technical Processes (3)**Turner**

Techniques of acquisition, processing, and circulation of library materials; practice in cataloging. Prerequisite, 463.

470 History of the Book (3)**Bevis**

History of the written and printed book from earliest times to the present, including a survey of modern presses and publishing.

MATHEMATICS

Executive Officer: C. B. ALLENDOERFER, 243 Physics Hall

The Department of Mathematics offers courses leading to the degrees of Bachelor of Arts, Bachelor of Science, Master of Arts, Master of Science, Master of Science in Mathematical Statistics, and Doctor of Philosophy. Two undergraduate curricula are offered, both of which lead to bachelor's degrees: an elective curriculum for students interested in a general, nonprofessional study of the subject, and a prescribed curriculum for those who plan graduate work or a professional career in mathematics. Students in the prescribed curriculum may choose either a mathematics or a mathematical statistics option. The Department also offers first and second teaching areas for students in the College of Education.

The prerequisite for a major in the Department of Mathematics is $1\frac{1}{2}$ units of algebra and $\frac{1}{2}$ unit of trigonometry in either high school or college. A fourth term of algebra in high school is strongly recommended.

Students presenting one and one-half years of high school algebra who wish to enter Mathematics 104, 105, or 112 must take a qualifying test before they can register for any of these courses. These tests are given by the Mathematics Department during registration periods and at certain other times. Students presenting credit for high school trigonometry must have this validated by a qualifying test given at the same time. Students presenting two years of high school algebra may be exempted from Mathematics 105 by passing a qualifying test. Students exempted from 105 may replace this course with approved mathematics electives.

Mathematics 120 is an introductory course for students who plan to major in mathematics and for other science students. It may be taken concurrently with any other freshman mathematics course. It may also be used in conjunction with Mathematics 121 as an introductory course for liberal arts students.

No grade lower than C in any mathematics course is accepted for credit toward a major.

BACHELOR OF ARTS

In the elective curriculum, 45 credits in mathematics are required. Courses must include Mathematics 105, 153, 251, 252, 253, and 22 credits in approved electives. The only approved lower-division electives are Mathematics 120 and 281.

BACHELOR OF SCIENCE

In the prescribed curriculum, a grade-point average of 2.50 is required in all mathematics courses. For both options, requirements in other fields include: one year of general physics including laboratory and 15 credits each in the humanities and the social sciences. The College of Arts and Sciences group requirements do not apply to this curriculum. German, French, or Russian is recommended as a humanities elective.

MATHEMATICS OPTION. Fifty-seven credits in mathematics are required, including Mathematics 105, 153, 251, 252, and 253 and 34 credits in approved electives. The electives must include 9 upper-division credits each in two of these fields: algebra, analysis, and geometry. The only approved lower-division electives are Mathematics 120 and 281.

This sequence of courses is recommended but not prescribed: freshman year,

Mathematics 105, 120, and 153; sophomore year, Mathematics 251, 252, and 253; junior year, 401, 402, and 403; 421, 422, and 423; and senior year, 424, 425, and 426; 441, 442, and 443 (or 441, 451, and 452).

MATHEMATICAL STATISTICS OPTION. This option has a threefold purpose: to train professional statisticians; to instruct students who want to broaden their mathematical studies or who want a mathematical background for work in economics, sociology, genetics, psychology, education, or some other field; and to conduct research in statistics and provide competent consultation on statistical problems. To coordinate this program and to conduct the statistical work, the Department maintains a Laboratory of Statistical Research, directed by Z. W. Birnbaum.

In this option, Mathematics 105, 153, 251, 252, 253, 281, 401, 481, 482, 483, and 484 are required. An additional requirement is 10 approved credits in courses on applications of statistical methods chosen from the offerings of other departments. Prospective graduate students should take additional upper-division mathematics courses.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. The candidate's minimum undergraduate preparation for an advanced degree in mathematics must be equivalent to the requirements for a mathematics major for the Bachelor of Arts degree.

The minor in mathematics for a master's degree requires at least 12 credits in approved courses numbered 400 or above, at least 9 of these 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, with at least 9 credits in courses numbered 500 or above, is prescribed. These courses must include at least 6 credits in each of three of the four categories: algebra, analysis, geometry, and statistics. The thesis for this degree, while demonstrating ability and aptitude, may be largely expository.

MASTER OF SCIENCE. A minimum of 27 approved credits, with at least 18 credits in courses numbered 500 or above, is prescribed. These courses must include at least 6 credits in each of three of the four categories: algebra, analysis, geometry, and statistics. The thesis should demonstrate the student's ability to engage in independent research.

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 mathematical statistics through Chi-Tests or the equivalent. The candidate must present a minimum of 27 approved credits in mathematics. This work may include, on approval, some courses in mathematical statistics needed to make up deficiencies in undergraduate preparation and must include 15 credits in mathematical statistics courses numbered 500 or above.

DOCTOR OF PHILOSOPHY. The general examination of a candidate for this degree covers (1) the subject matter usually covered in first-year graduate courses in algebra, real and complex variable, set theory and set topology, and one other field 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

XA, XB Survey of Algebra (1½ unit each)

Staff

For students who are deficient in high school algebra for entrance requirements. Offered by extension only. Prerequisite, XA or permission for XB.

- XC, XD Survey of Plane Geometry ($\frac{1}{2}$ unit each)** **Staff**
For students who are deficient in high school plane geometry for entrance requirements. Offered by extension only. Prerequisites, one year of high school algebra for XC; XC or permission for XD.
- 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. Prerequisite, one year of high school algebra.
- 102 Solid Geometry (3)** **Staff**
Not open to students who have taken solid geometry in high school. Prerequisite, one year of plane geometry.
- 104 Plane Trigonometry (3)** **Staff**
Trigonometric functions, identities, graphs, logarithms, and solution of triangles. Mathematics 120 may be taken concurrently as a supplement to this course. Prerequisites, one and one-half years of high school algebra, qualifying test or 101, and one year of plane geometry.
- 105 College Algebra (5)** **Staff**
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.
- 112 Mathematics of Business (5)** **Staff**
Discounts, simple interest, installment buying, binomial theorem, annuities, bonds, probability, and insurance mathematics. Prerequisites, one and one-half years of high school algebra and qualifying test or 101.
- 120 Introduction to Mathematical Thinking (2)** **Staff**
Mathematical logic and the number system. Background material for other freshman mathematics courses. (Formerly Mathematics 100.) Prerequisites, one year of high school algebra and one year of plane geometry.
- 121 Basic Ideas of Algebra (3)** **Staff**
Groups and fields; foundations of elementary algebra; simultaneous linear equations; quadratic equations; Boolean algebra. Prerequisite, 120.
- 153 Analytic Geometry and Calculus (5)** **Staff**
Equations of straight lines and simple curves. Differentiation of algebraic functions, applications. Differentials, indefinite integrals. Prerequisites, 104 and 105 or exemption by qualifying test.
- 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 or 153. Prerequisites, 104 for 155; 155 for 156.
- 251 Analytic Geometry and Calculus (5)** **Staff**
Definite integrals, integration of simple algebraic functions, applications. Conic sections, polar coordinates, and differentiation of transcendental functions. Prerequisite, 153.
- 252 Analytic Geometry and Calculus (5)** **Staff**
Parametric equations, curvature, integration of algebraic and transcendental functions, applications. Improper integrals, indeterminate forms, infinite series. Prerequisite, 251.
- 253 Analytic Geometry and Calculus (3)** **Staff**
Solid analytic geometry, multiple integrals, partial derivatives. Prerequisite, 252.
- 281 Elements of Statistical Method (5)** **Staff**
Numerical and machine computation; graphical and tabular presentation of data; averages, measures of scatter, and other statistics; scatter diagram, least-square lines, regression, and correlation; elements of sampling. Prerequisites, 105 and one year of plane geometry.
- 307, 308, 309 Differential and Integral Calculus (5,5,5)** **Staff**
Differentiation and integration of elementary functions with applications. Series, partial differentiation, and multiple integration. 307 not open to students who have taken 251; 308 not open to students who have taken 252; 309 not open to students who have taken 253. (This sequence is being withdrawn. 309 will be offered for the last time Autumn, 1955.)
- 351, 352, 353 Analytic Geometry and Calculus (5,5,3)** **Staff**
Honors sections of 251, 252, 253 following same outline, but with extra material. Prerequisites, 153 and permission for 351; 251 or 351, and permission for 352; 252 or 352, and permission for 353.
- 382, 383 Statistical Inference in Applied Research (5,5)** **Staff**
Elements of probability; discrete and continuous distribution; binomial, Poisson, and normal distributions. Elements of sampling; confidence limits; simple tests of statistical hypotheses, analysis of variance, and applications to biological problems. Prerequisites, 153 and 281, or permission for 382; 382 for 383.
- 401 Linear Algebra (5)** **Staff**
Matrices; determinants; groups of transformations; linear spaces; linear transformations and their invariants. Prerequisite, 253 or 309.
- 402, 403 Introduction to Modern Algebra (3,3)** **Staff**
Construction of the number systems in algebra; groups, rings, and fields; polynomials. Prerequisite, 401 for 402; 402 for 403.
- 421, 422 Differential Equations (3,3)** **Staff**
Elementary methods of solution, linear differential equations, systems of differential equations, series solutions. Prerequisites, 309 or 253 for 421; 421 for 422.

- 423 Advanced Calculus and Vector Analysis (3)** **Staff**
Line and surface integrals; Stokes' Theorem; vector methods; Jacobians; implicit function theorem. Prerequisite, 253 or 309.
- 424, 425, 426 Higher Calculus (3,3,3)** **Staff**
Elementary logic, sets, functions, real numbers, sequences, continuity, derivatives, integrals, elementary functions, functions on Euclidean n -space, and Fourier series. Prerequisites, 253 or 309, and 401, or permission for 424; 424 for 425; 425 for 426.
- 427, 428, 429 Topics in Applied Analysis (3,3,3)** **Staff**
Elementary complex variable; Fourier series and integrals; Laplace transforms; orthogonal functions; partial differential equations. Prerequisites, 421 and 423 for 427; 427 for 428; 428 for 429.
- 431 Applications of Vector Analysis (2½)** **Staff**
(Offered Summer Quarter only.)
- 441 Foundations of Geometry (3)** **Staff**
Axiomatic treatment of the foundations of projective and Euclidean geometries. Introduction to non-Euclidean geometry. Prerequisite, 253 or 309.
- 442 Advanced Analytic Geometry (3)** **Staff**
Advanced topics in plane analytic geometry; solid analytic geometry, including analysis of quadric surfaces; homogeneous coordinates. Prerequisites, 253 or 309, and 401 or permission.
- 443 Differential Geometry (3)** **Staff**
Elementary differential geometry of curves and surfaces. Prerequisites, 421 and 442.
- 444 Advanced Euclidean Geometry (5)** **Staff**
(Offered Summer Quarter only.)
- 445 Non-Euclidean Geometry (2½)** **Staff**
(Offered Summer Quarter only.)
- 451, 452 Elementary Topology (3,3)** **Staff**
A basic course in the properties of a space which are invariant under continuous transformations. Set topology, homology, homotopy, fixed point theorems, and manifolds. Prerequisites, 253 or 309 for 451; 451 for 452.
- 462, 463 Interpolation and Approximation (3,3)** **Staff**
Operations on a computing machine; polynomial interpolation by the methods of Lagrange; n th order difference; divided differences and valcepts; remainders; solution of equations, numerical integration of functions and differential equations of first and second orders. (Offered alternate years; offered 1956-57.) Prerequisites, differential calculus for 462; 462 or permission for 463.
- 465, 466 Methods of Applied Mathematics (3,3)** **Staff**
Matrices and their application to physical problems, numerical methods, analytic theory of difference equations, finite-difference approximations to boundary value problems, relaxation methods. Large-scale digital electronic calculators, theory and specific numerical techniques. (Offered alternate years; offered 1955-56.) Prerequisite, 421; recommended, 401.
- 481 Calculus of Probabilities (5)** **Staff**
Fundamental concepts; discrete and continuous random variables; mathematical expectations, laws of large numbers; important types of distributions; characteristic functions; central limit theorem. Prerequisite, 253 or 309.
- 482 Classical Methods of Statistical Inference (5)** **Staff**
Universe, sample, parameters, and statistics; point estimates and confidence regions; distributions of classical statistics and their use in estimation and tests of hypotheses. Prerequisites, 401 and 481.
- 483 Theory of Correlation (5)** **Staff**
Multivariate distributions; variances, covariances, regression, and correlation; specialization of multivariate normal distributions; sampling of bivariate normal variables. Prerequisite, 482.
- 484 Chi-Tests (5)** **Staff**
Distribution of the Chi-square, and its use for testing hypotheses; contingency tables; parameters estimated from sample; some nonparametric methods. Prerequisite, 483.
- 497 Seminar in Mathematics (2-5)** **Staff**
(Offered when demand is sufficient.)

COURSES FOR GRADUATES ONLY

- 501, 502 Foundations of Mathematics (3,3)** **Staff**
Fundamental concepts and methods of mathematics; the axiomatic method; the logical foundations of mathematics.
- 504, 505, 506 Modern Algebra (3,3,3)** **Staff**
Theory of groups, rings, integral domains, and fields; polynomials; vector spaces, Galois theory, and theory of ideals. Prerequisite, 403 or equivalent.
- 510 Seminar in Algebra (*, maximum 5)** **Staff**
- 511, 512, 513 Special Topics in Algebra (3,3,3)** **Staff**
Each may be repeated twice for credit.
- 521, 522, 523 Set Topology (3,3,3)** **Staff**
Theory of sets; ordinal and cardinal numbers; real numbers; topological spaces; compact

- spaces; metric spaces; product spaces; extension theorems; convergence; other topics in set topology; selected topics in topological groups. Prerequisite, 426 or equivalent.
- 524, 525, 526 Real and Complex Variable (3,3,3)** **Staff**
Lebesgue and Lebesgue-Stieltjes measure and integration on the line and in n -space; derivatives; functions of finite variation; absolutely continuous functions; Fourier series; examples of Banach spaces; analytic functions of a complex variable; Cauchy's theorem; power series expansions; contour integration; analytic continuation. Prerequisites or corequisites, 521 for 524; 522 and 524 for 525; 521 and 522 for 526.
- 527, 528, 529 Methods of Mathematical Physics (5,5,5)** **Staff**
Real and complex functions. Fourier analysis, Fuchsian differential equations, linear algebra, and eigenvalue theory. Special functions, second-order linear partial differential equations, and approximate solutions of Schrödinger equation. Prerequisite, 426 or 429, or equivalent.
- 530 Seminar in Analysis (*, maximum 5)** **Staff**
- 531, 532, 533 Special Topics in Analysis (3,3,3)** **Staff**
Each may be repeated twice for credit.
- 541, 542, 543 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. (Offered alternate years; offered 1956-57.)
- 544, 545, 546 Differential Geometry (3,3,3)** **Staff**
Differential geometry and curves and surfaces in ordinary space and in n -space. Riemannian geometry. (Offered alternate years; offered 1955-56.)
- 547, 548, 549 Algebraic Geometry (3,3,3)** **Staff**
Topics in the theory of algebraic curves in the plane and in space; quadratic transformations. (Offered when demand is sufficient.)
- 550 Seminar in Geometry (*, maximum 5)** **Staff**
- 551, 552, 553 Special Topics in Geometry (3,3,3)** **Staff**
Each may be repeated twice for credit.
- 581, 582, 583 General Theory of Statistical Estimation and Testing Hypotheses (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, 483 and 484.
- 590 Seminar in Probability and Statistics (*, maximum 5)** **Staff**
Reports by students and staff on contemporary research.
- 591, 592, 593 Special Topics in Statistics (3,3,3)** **Staff**
Topics may be selected from the following: multivariate analysis, advanced probability, modern theory of estimation, time series, stochastic processes, sequential analysis, decision theory, and discriminatory analysis. Each may be repeated twice for credit.
- 600 Research (*)** **Staff**
Prerequisite, permission.
- Thesis (*)** **Staff**

Mathematics courses offered through the University of Washington at the Graduate School of Nuclear Engineering, Richland, Washington.

- R437 Advanced Mathematics for Science and Engineering Students (5)**
- R438 Advanced Calculus (5)**
- R439 Functions of a Complex Variable (5)**
- R440 Differential Equations (5)**
- R460 Vector Analysis (5)**
- X470 Operations Research (5)** Offered through extension only.
- R481 Calculus of Probabilities (5)**
- R482 Classical Methods of Statistical Inference (5)**
- R491 Mathematical Statistics I (5)**
- R492 Mathematical Statistics II (5)**

MEDICAL TECHNOLOGY

Supervisor: LESTER D. ELLERBROOK, D511 Health Sciences Building

The medical technology program, which leads to a bachelor's degree, is designed to train young men and women to be technicians in laboratories of hospitals or clinics and in research laboratories. It consists of three years of training in chemistry, zoology, physics, physiology, anatomy, histology, and microbiology, followed by eighteen months of full-time theoretical and practical work under supervision in

University and hospital laboratories. This prescribed curriculum is supervised by the Department of Pathology in the School of Medicine. (Courses in biochemistry, microbiology, and pathology are listed with those of other departments in the *Schools of Medicine and Dentistry Bulletin*.)

BACHELOR OF SCIENCE IN MEDICAL TECHNOLOGY

Students must choose 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. 111 or 115 General ..	5	Chem. 112 General	5	Anatomy 301 General	4
Engl. 101 Composition	3	Engl. 102 Composition	3	Chem. 113 Qual. Anal.	5
Math. 101 Intermed.		Zool. 111 General	5	Engl. 103 Composition	3
Algebra or 104 Plane		Electives	2	Zool. 112 General	5
Trig.		Phys. Educ. activity	1	Phys. Educ. activity	1
Phys. Educ. 110 or 175		ROTC	2-3	ROTC	2-3
Health	2				
Phys. Educ. activity	1		16-19		18-21
ROTC	2-3				
	14-19				

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 221 Quant. Anal. ..	5	Chem. 231 Organic	3	Chem. 232 Organic	3
Electives	5	Chem. 241 Lab.	2	Chem. 242 Lab.	2
Zool. 381 Microtechnique ..	4	Electives	10	Zool. 208 Physiology	5
ROTC	2-3	ROTC	2-3	Electives	5
				ROTC	2-3
	14-17		15-18		15-18

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Micro. 441- Med. Bacteriol. 6		Micro. 442 Med. Bacteriol. 6		Micro. 443 Mycology	2
Speech 120 Public		Electives	9	Micro. 444 Parasit.	4
Speaking	5		15	Biochem. 361 Biochem.	3
Psychol. 100 General	5			Biochem. 363 Biochem.	
	16			Lab.	2
				Electives	4
					15

Third-year students register for biochemistry and microbiology courses at the Medical School Office. Permission is required.

At the conclusion of the third year, students must receive permission to register for the eighteen-month period of instruction in medical technology. Enrollment is limited. During this period, they take the full-time courses Pathology 321, 322-, -323-, -324-, -325, and 326 (Medical Technology). In order to make the fees comparable to those of many schools of medical technology, the University grants only 5 credits for Pathology 321 and 6 credits for Pathology 322- through -325. In order to meet graduation requirements, 16 credits are granted for Pathology 326.

MEDICINE, PREPROFESSIONAL PROGRAM

Adviser: RICHARD C. SNYDER, 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 inorganic 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 in the humanities and social sciences as possible. Students who have an aptitude for and an interest in the sciences, especially those who plan to do medical research or to become specialists in certain branches of medicine, are advised to take thorough training in a science such as chemistry, zoology, physics, or microbiology.

Because many premedical students are not admitted to 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 Medical School at the University of Washington (see Basic Medical Science, page 66), at the end of the fourth year.

During the third year, the premedical adviser should be consulted about taking a medical aptitude test and applying for admission to medical school. Students must arrange for the medical aptitude 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 synoptic and dynamic meteorology and climatology is offered for undergraduate students working toward the bachelor's degree. This curriculum prepares students to receive the rating of professional meteorologist given by the United States Civil Service Commission.

BACHELOR OF SCIENCE

The Department requires a minimum of 36 credits in meteorology and climatology in courses numbered above 300, of which 18 credits must be earned in courses above 400. Meteorology 322, 350, 442, and 445 are mandatory. Courses required from other departments are: Mathematics 252, 253 (Analytic Geometry and Calculus) or equivalent, and 281 (Elements of Statistical Method), and Physics 121, 122, and 123 (General Physics) or equivalent.

A grade of C or better must be earned in each of the required courses in mathematics, physics, and the mandatory courses in meteorology. An over-all grade-point average of at least 2.20 must be obtained in all courses taken in meteorology and climatology.

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 SCIENCE. The minimum course requirements are: 15 credits in lecture or laboratory courses in this Department numbered above 500 including 541, 542, and 546; in addition 2 credits in a seminar must be earned. Supporting courses must include Physics 320 (Introduction to Modern Physics for Engineers) or equivalent and Mathematics 421 (Differential Equations) (unless these courses were satisfactorily completed as an undergraduate). At least one course in applied mathematics must be taken.

Also required is a thesis which must be directed toward the solution of a problem of substantial importance and must demonstrate the candidate's ability to do independent research.

DOCTOR OF PHILOSOPHY. The minimum requirements are: 96 credits exclusive of research and thesis. Normally a student must complete a minimum of 12 credits in mathematics courses numbered 400 or above and 9 credits in physics courses numbered 400 or above beyond that required for entrance as a graduate student in the Department.

Admission to candidacy for the Ph.D. degree is granted on the basis of capability in general meteorology and climatology, theoretical meteorology and climatology, atmospheric analysis, and mathematical methods as demonstrated in written and oral examinations, and on comprehension of the fundamentals of physics and the important principles and concepts of meteorology.

COURSES FOR UNDERGRADUATES

- 101 Survey of the Atmosphere (5)** **Staff**
Composition and structure of earth's atmosphere; relation of earth to sun and consequent geographical temperature distribution; processes within the atmosphere which produce rain, snow, and other condensation phenomena; tropical and extratropical storms, thunderstorms, chinooks, and cold waves.
- 321 Physical Climatology (5)** **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 Koepfen and Thornthwaite classification systems. Prerequisite, 101.
- 329 Microclimatology (3)** **Church**
Climatic characteristics in the lower layers of the atmosphere. Soil temperatures and their relation to temperatures of overlying air. Vertical temperature, moisture, wind speed, and wind direction gradients. Effects of plane, concave, and convex surfaces and vegetal covering on temperature and wind distribution. Prerequisite, 101.
- 340, 341 Physical Meteorology (5,5)** **Fleagle**
340: review of mechanics, atmospheric statics; ideal gases and adiabatic process; real gases and condensation process; growth of liquid droplets and ice crystals in the atmosphere; behavior of acoustic and shock waves in the atmosphere; behavior of light waves, radar waves, and radio waves in the atmosphere. Prerequisites, one year of college physics and Mathematics 251, or permission. 341: interchange of thermal radiation between the sun, the atmosphere, and the earth; thermal radiation from "atomic" explosions; electrical and magnetic properties and behavior of the upper atmosphere; structure and composition of the atmosphere. Prerequisites, 340 and Mathematics 252, or permission.
- 350 Meteorological Laboratory (5)** **Read**
International meteorological codes; plotting of meteorological charts; introduction to analysis of weather maps and allied charts. Prerequisite, one year of calculus.
- 360 Meteorological Instruments and Observations (5)** **Badgley**
Accuracy and sensitivity of meteorological instruments and representativeness of meteorological observations; principles of operation and techniques of using common meteorological instruments for measuring precipitation, temperature, pressure, humidity, and wind (including winds aloft); principles of operation of radiosondes. Prerequisite, one year of calculus.
- 414, 415 Synoptic Meteorology (5,5)** **Read**
414: horizontal and vertical components of motion, equation of continuity, horizontal convergence and divergence; geostrophic and gradient winds, geostrophic deviations, circulation and vorticity; structure of weather systems: long and short waves, fronts and jet stream. Prerequisite, 340. 415: atmospheric stability and instability and related topics; clouds and hydrometeors; kinematic, objective and numerical methods of forecasting; the role of extratropical disturbances in the general circulation. Prerequisite, 414.
- 442 Introduction to Atmospheric Motions (5)** **Fleagle**
Equations of motion; simple and more complex types of flow, principle of continuity and application to large-scale motions, frontal surfaces, circulation and potential vorticity theorems, instability of large-scale motions. Prerequisites, 341, or permission, and Mathematics 253.
- 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.
- 451, 452 Meteorological Laboratory (5,5)** **Read**
451: routine three-dimensional weather analysis using current teletype data; practice forecasting by conventional techniques; measurement of vertical velocity and horizontal con-

vergence and divergence for a selected synoptic case; isentropic analysis; exercises in numerical prediction. Prerequisites, 350 and 414, which may be taken concurrently. 452: continuation of routine analysis and forecasting with emphasis upon flight cross sections and special forecast problems. Prerequisite, 451.

- 462 Oceanographic Meteorology (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 Summer Quarter only.) Prerequisite, 442 or permission.
- 492 Readings in Meteorology or Climatology (*)** **Staff**
Prerequisite, permission.
- 493 Special Problems in Meteorology or Climatology (*)** **Staff**
Prerequisite, permission.
- 494 Meteorological Statistics (*)** **Staff**
Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 520 Seminar (2-5)** **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.
- 523 Theoretical Climatology (3)** **Staff**
Theory of the general circulation of the atmosphere, energy transfer by the various processes, and variations of temperature with time and change of latitude. Prerequisite, 442 or permission.
- 528 Applied Meteorology and Climatology (3)** **Buettner**
Interrelationship of meteorology and climatology to: human heat balance, aviation medicine, air pollution, agriculture, forestry, transportation, etc. Prerequisites, 322 and 341 or permission.
- 531 The Upper Atmosphere (3)** **Staff**
Structure, composition, and dominant physical processes of the upper atmosphere; photochemical process. Upper atmospheric phenomena—sound propagation, auroral and night sky radiation, ionosphere, electrical currents, and magnetic variations. Role of the sun. Prerequisites, Physics 322 and Mathematics 422.
- 532 Atmospheric Electricity (3)** **Staff**
Separation of charge in precipitation; lightning and the electrostatic field; formation and recombination of ions; Maxwell's equations; paths followed by charged particles. Prerequisites, 531, Mathematics 422, or permission.
- 541, 542 Dynamic Meteorology (3,3)** **Fleagle**
541: basic equations of dynamic meteorology. Elements of complex variable; vector analysis; Eulerian equation in rotating coordinates; hydrodynamic equations; circulation and potential vorticity theorems; barotropic and baroclinic atmospheres. 542: applications of hydrodynamic equations. Unaccelerated flow and steady state; particle dynamics applied to large-scale air motion and to stability criteria; divergenceless waves in barotropic atmosphere, numerical forecasting equations. Prerequisites, 541 and Mathematics 421.
- 543, 544 Atmospheric Wave Theory (3,3)** **Fleagle**
543: perturbation equations of motion in Eulerian and Lagrangian form; wave motions in incompressible fluid; wave motions in compressible fluid; Norwegian theory of cyclone formation. Prerequisites, 442, Mathematics 422, or permission. 544: theory of long waves in compressible baroclinic atmosphere; dispersion of waves; instability of large-scale motions; Legendre polynomials; wave motion on spheres; atmospheric tides. Prerequisite, 543.
- 546, 547 Atmospheric Turbulence (3,3)** **Badgley**
546: distinction between laminar and turbulent flow; analogy between kinetic theory of gases and turbulence theory; Reynolds method of averaging; mean and eddy motion; mixing-length theory; wind profiles in the lower atmosphere. Prerequisite, 442 or permission. 547: recent "statistical" theories of turbulence applied to the atmosphere. Diffusion of heat and matter in the atmosphere. Prerequisite, 546.
- 551 Special Methods of Atmospheric Analysis (5, maximum 10)** **Reed**
Preparation of data and the techniques required for selected advanced nonroutine types of analysis. Analysis of special synoptic situations. Prerequisite, 452 or permission.
- 560 Theory of Meteorological Instruments (3)** **Staff**
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.
- 571 Seminar on Atmospheric Radiation (3)** **Staff**
Study and critical discussion of a selected reading list devoted to radiation theory, spectra of water vapor and carbon dioxide; actinometric observations and the effects of radiation on other phenomena. A critical review of each topic is required. Prerequisites, Physics 322 and Mathematics 422.

- 572 Seminar on Polar Meteorology (3)** **Staff**
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)** **Staff**
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**
Thesis (*) **Staff**

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 School of Medicine 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 Microbiology 300; 10 credits in botany or zoology or Biology 101J-102J (General); Physics 101, 102, 103, and 107, 108, 109, or 104, 105, 106, and 107, 108, 109 (General); Chemistry 115 and 116, or 111, 112, and 113 (General), 221 or 325 (Quantitative Analysis), 231, 232, 241, 242 or 335, 336, 345, and 346 (Organic); and Mathematics 104 (Plane Trigonometry), 105 (College Algebra), and 153 (Analytic Geometry and Calculus). Biology 451 (Genetics), Botany 461 (Yeasts and Molds), and Zoology 423 (General Protozoology) 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 Microbiology 300 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: Microbiology 300, 320, 430, and 441-442; Biology 451 (Genetics); Botany 461 (Yeasts and Molds); and Biochemistry 481, 482 (Biochemistry).

In addition to the above courses, the following are suggested for students with an interest in either general or medical microbiology:

GENERAL. Microbiology 499, 510, and 511; Zoology 400 (General Physiology); 423 (General Protozoology).

MEDICAL. Microbiology 322, 443, 444; Anatomy 301 (General), 330 (Microscopic Anatomy); Pathology 231 (General Pathology); Zoology 358 (Vertebrate Physiology).

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 micro-

biology 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

- 204 Medical Parasitology for Sanitarians (4)** **Groman**
Consideration of medically important parasites with emphasis on public health aspects. (Offered last eight weeks of quarter.) For undergraduate students majoring in public health. Prerequisites, 301 or equivalent and permission.
- 235, 236 Microbiology for Students of Dentistry (6,1)** **Zahler**
Lecture and, in 235, 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 be permitted to take these courses for less than full credit or to substitute a research problem for the laboratory work. Prerequisite, for nondental students, permission.
- 300 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 microbiology. 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.
- 301 General Microbiology (5)** **Klein**
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.
- 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. Prerequisite, permission.
- 322 Applied Bacteriology (5)** **Staff**
Practical experience in a public health laboratory, fifteen hours per week. For students majoring in medical bacteriology. Prerequisites, permission and letter to laboratory director.
- 430 Industrial Microbiology (3 or 5)** **Douglas**
Microbiological and biochemical aspects of industrially important fermentative and oxidative processes. For students majoring in microbiology or food technology. Prerequisites, 300 or 301, and Chemistry 221 and 232.
- 441-442 Medical Bacteriology, Virology, and Immunology (*, maximum 6-, -, *, maximum -6)**
Evans, Groman, Henry, Weiser
441- includes a survey of microorganisms and a general consideration of the morphology and physiology of bacteria; an introduction to immunology, formation and properties of antibodies, nature of antigen-antibody reactions, blood groups, allergies, and an analysis of factors of innate and acquired immunity. During the last part of 441- and throughout 442 specific pathogenic bacteria and viruses are studied in detail. Students who have had previous work in bacteriology may by special permission be allowed to take 441- or 442 for less than the full 6 credits. For medical students, 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 first three weeks of quarter.) For medical students, upper-division undergraduates, and graduate students. Prerequisites, 10 credits in organic chemistry, 10 credits in botany or zoology, 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 last eight weeks of quarter.) For medical students, upper-division undergraduates, and graduate students. Prerequisites, 10 credits in organic chemistry, 10 credits in botany or zoology, and permission.
- 499 Undergraduate Research (*)** **Staff**
Specific problems in industrial, medical, and general microbiology.

COURSES FOR GRADUATES ONLY

- 510 Physiology of Bacteria (3)** **Douglas, Groman, Klein, Ordal, Whiteley**
Fundamental physiological and metabolic processes of bacteria. Prerequisite, permission of instructor.
- 511 Techniques in Bacterial Metabolism (2)** **Klein**
An introduction to specialized techniques as applied to the study of microbial metabolism; including manometry, chromatography, spectrophotometry, tracer techniques, etc. (Offered Summer Quarter only.) Prerequisite, permission.
- 520 Seminar (1)** **Staff**
- 530 Comparative Morphology and Physiology of the Higher Bacteria (4)** **Ordal**
Enrichment, isolation, and comparative morphology and physiology of selected representa-

tives of the following groups of bacteria: Nitrobacteriaceae, Rhodobacteriineae, Caulobacteriineae, Actinomycetales, Myxobacteriales, Chlamydo bacteriales, Caryophanaes, and Borlomycetaceae. (Offered alternate years; offered 1955-56.) Prerequisite, permission.

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| 540 Filterable Viruses (*, maximum 4) | Evans |
| Consideration of the physical, chemical, and biological properties of viruses and methods of working with them. (Offered alternate years; offered 1955-56.) Prerequisites, -442 and permission; histology is recommended. | |
| 550 Advanced Immunology (*, maximum 4) | Weiser |
| (Offered alternate years; offered 1956-57.) Prerequisites, 441- and permission. | |
| 600 Research (*) | Staff |
| Thesis (*) | Staff |

MUSIC

Director: STANLEY CHAPPLE, 104 Music Building

The School of Music offers courses leading to the degrees of Bachelor of Arts, Bachelor of Arts in Music, Master of Arts in Music, and Doctor of Philosophy. For undergraduate students, the School provides one elective curriculum, which leads to the degree of Bachelor of Arts; four prescribed curricula, which lead to the degree of Bachelor of Arts in Music, with a major in music composition, performance, teaching, or music history and literature; a first area of concentration, a basic academic field, and a second area of concentration for students in the College of Education; and courses for students majoring in other fields.

Every prospective music student is interviewed to determine: (a) his musical sensitivity; (b) his musicianship: pitch, rhythm, singing or playing at sight, vocal or instrumental facility, the ability to identify keys and key signatures; (c) his musical skill through performance as a vocalist or as an instrumentalist; (d) his ability to play, on the piano, all major and harmonic minor scales, a simple piece by Bach, an easy sonatina, and an easy composition by a romantic or contemporary composer, and to read at sight music of the difficulty of the average hymn.

If a student meets requirements a, b, and c, but is unable to meet requirement d, he may begin his studies in music on condition that he enroll in Music 110A (Class Instruction: Piano) until he satisfies this requirement.

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.

In general, the student must complete three quarters of work in applied music before he receives a grade, but if his work falls below a C average he is given a grade of D or E at the end of the current quarter. A grade-point average of 2.50 in music courses is required for graduation.

BACHELOR OF ARTS

In the elective curriculum, minimum requirements are: 24 credits in first- and second-year theory and literature; 12 credits in vocal or instrumental instruction (130, 330); 18 credits in upper-division history and theory; 6 credits in upper-division ensemble; and 15 credits in the humanities.

BACHELOR OF ARTS IN MUSIC

The prescribed curricula are designed for those who intend to major in composition, in vocal or instrumental music (piano, violin, violoncello, voice, organ, or

another approved instrument), in music education, or in music history and literature.

CURRICULUM IN COMPOSITION

First Year		Second Year	
	CREDITS		CREDITS
Music 101, 102, 103 Theory	9	Music 124, 125 Orch. Instruments	2
Vocal or Instrumental Instruction	6	Music 201, 202, 203 Theory	9
Music Ensemble	0	Music 207, 208, 209 Music Lit.	6
Engl. 101, 102, 103 Composition	9	Vocal or Instrumental Instruction	6
Electives	19	Music Ensemble	0
Phys. Educ. 110 or 175 Health	2	Electives	21
Phys. Educ. activity	3	ROTC	6-9
ROTC	6-9		44-53
	48-57		
Third Year		Fourth Year	
	CREDITS		CREDITS
Music 224, 225, 226 Orch. Instruments	3	Music 408, 409 Music Hist. & Lit.	6
Music 301, 401 Contemp. Idioms	6	Music 322, 422 Tonal Counterpoint	6
Music 304 Choral Lit.	1	Music 353, 453 Orchestration	6
Music 321, 421 Modal Counterpoint	6	Music 484, 485, 486 Orch. Conducting	4
Music 384, 385, 386 Conducting	4	Music 491 Composer's Lab.	9
Music 491 Composer's Lab.	6	Music Ensemble	3
Music Ensemble	3	Electives	11
Electives	15		45
	44		

CURRICULUM IN VOCAL OR INSTRUMENTAL MUSIC. The student must take 30 credits in the major performance field, beginning with Music 150, and 6 credits in another instrument or in voice. If the major instrument is organ, the 6 credits must be in voice (Music 110C and 120C or 130C).

PIANO. 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, one each from romantic and contemporary periods; reading at sight an easy accompaniment; 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.

First Year		Second Year	
	CREDITS		CREDITS
Music 101, 102, 103 Theory	9	Music 150A Piano	9
Music 131, 132, 133 Piano Sight Reading	3	Music 201, 202, 203 Theory	9
Music 150A Piano	9	Music 207, 208, 209 Music Lit.	6
Music Ensemble	0	Music Ensemble	0
Engl. 101, 102, 103 Composition	9	Music Ensemble	0
Electives	13	Electives	18
Phys. Educ. 110 or 175 Health	2	ROTC	6-9
Phys. Educ. activity	3		42-51
ROTC	6-9		
	48-57		
Third Year		Fourth Year	
	CREDITS		CREDITS
Music 304 Choral Lit.	1	Music 350 Vocal or Instrumental Instr.	9
Music 331, 332, 333 Keyboard	6	Music 380 Adv. Chamber Music	3
Music 334, 335 Accompanying	6	Music 434, 435, 436 Piano Teaching	6
Music 337, 338, 339 Repertoire	6	Music History or Theory	6
Music 350 Vocal or Instrumental Instr.	9	Music Ensemble	3
Music Theory, upper division	6	Electives	18
Music Ensemble	5	Senior Recital	0
Electives	6		45
	45		

VIOLIN AND VIOLONCELLO

First Year

	CREDITS
Music 101, 102, 103 Theory	9
Music 150B or D Violin, Viola, or Violoncello	9
Music Ensemble	0
Engl. 101, 102, 103 Composition	9
Electives	16
Phys. Educ. 110 or 175 Health	2
Phys. Educ. activity	3
ROTC	6-9
	48-57

Third Year

	CREDITS
Music 337, 338, 339 Repertoire	6
Music 350 Vocal or Instrumental Instr.	9
Music 360 Symphony Orch.	3
Music 380 Adv. Chamber Music	3
Music 386 Conducting	1
Music Theory, upper-division	6
Electives	17
	45

ORGAN

First Year

	CREDITS
Music 101, 102, 103 Theory	9
Music 131, 132, 133 Piano Sight Reading	3
Music 150E Organ	9
Music Ensemble	0
Engl. 101, 102, 103 Composition	9
Electives	13
Phys. Educ. 110 or 175 Health	2
Phys. Educ. activity	3
ROTC	6-9
	48-57

Third Year

	CREDITS
Music 304 Choral Lit.	1
Music 337, 338, 339 Repertoire	6
Music 350 Vocal or Instrumental Instr.	9
Music 385 Conducting	2
Music 322, 422 Tonal Counterpoint	6
Music Theory, upper-division	6
Ensemble	6
Electives	9
	45

VOICE. 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 folk song or hymn tune. A voice major must complete 15 college credits in either French, German, or Italian by the end of the sophomore year.

First Year

	CREDITS
Music 101, 102, 103 Theory	9
Music 111, 112, 113 Rhythmic Movement	3
Music 150C Voice	9
Ensemble	0
Engl. 101, 102, 103 Composition	9
Electives or foreign language	13
Phys. Educ. 110 or 175 Health	2
Phys. Educ. activity	3
ROTC	6-9
	48-57

Second Year

	CREDITS
Music 150B or D Violin, Viola, or Violoncello	9
Music 201, 202, 203 Theory	9
Music 207, 208, 209 Music Lit.	6
Music Ensemble	0
Electives	21
ROTC	6-9
	45-54

Fourth Year

	CREDITS
Music 334 Accompanying	3
Music 350 Vocal or Instrumental Instr.	9
Music 360 Symphony Orch.	3
Music 380 Adv. Chamber Music	3
Music Theory or History	6
Electives	21
Senior Recital	0
	45

Second Year

	CREDITS
Music 150E Organ	9
Music 201, 202, 203 Theory	9
Music 207, 208, 209 Music Lit.	6
Music Ensemble	0
Electives	18
ROTC	6-9
	42-51

Fourth Year

	CREDITS
Music 350 Vocal or Instrumental Instr.	9
Music 357 Church Music	3
Music History or Theory, upper-division	6
Ensemble	6
Electives	22
Senior Recital	0
	46

Second Year

	CREDITS
Music 150C Voice	9
Music 201, 202, 203 Theory	9
Music 207, 208, 209 Music Lit.	6
Music 211 Advanced Rhythmic Movement	1
Music Ensemble	0
Electives or foreign language	20
ROTC	6-9
	45-54

Third Year		Fourth Year	
	CREDITS		CREDITS
Music 304 Choral Lit.	1	Music 334 Accompanying.....	3
Music 337, 338, 339 Repertoire ..	6	Music 350 Vocal or Instrumental Instr. .	9
Music 350 Vocal or Instrumental Instr. .	9	Music History or Theory, upper-division ..	6
Music 385 Conducting	2	Ensemble	6
Music Theory, upper-division	6	Electives	21
Ensemble	3		45
Engl. 257 or 320 Poetry	5		
Electives	13		
	45		

CURRICULUM IN MUSIC EDUCATION. Students majoring in music education must pass an examination in piano and voice before registering in Music 344, 345, or 346J.

PIANO. The requirements are: (1) play ten traditional community songs from memory; (2) improvise a suitable accompaniment to a melody in any given key; (3) play singly or in combination parts of a choral or instrumental composition suitable for use in the public schools; (4) transpose simple melodies; (5) play a group of short compositions suitable for use in the elementary-grade school program.

VOICE. The requirements are: (1) demonstrate an understanding of the elements of good voice production by singing from memory a repertoire of folk and art songs; (2) sing at sight one part in two- and four-part songs; (3) evaluate constructively the vocal performances of other students.

This prescribed curriculum meets the requirements for the degree of Bachelor of Arts in Music, and course requirements for a teaching certificate which is issued through the College of Education (see the *College of Education Bulletin* for other requirements for the provisional general certificate). Students who plan to teach outside the state of Washington may omit: Art 329 (Appreciation of Design); Education 360 (Principles of Education), 370E (Elementary School Methods), 372E (Professional Laboratory Experiences), 373 (Washington State Manual), 374 (Fundamentals of Reading Instruction); History 464 (History of Washington and the Pacific Northwest); Public Health 461 (School and Community Health Programs); and Speech 100 (Basic Speech Improvement).

First Year		Second Year	
	CREDITS		CREDITS
Music 101, 102, 103 Theory	9	Music 124, 125 Orch. Instruments	2
Vocal or Instrumental Instruction	6	Music 201, 202, 203 Theory	9
Music Ensemble	0	Music 207, 208, 209 Music. Lit.	6
Engl. 101, 102, 103 Composition	9	Vocal or Instrumental Instruction	6
Psychol. 100 General	5	Music Ensemble	0
Speech 100 Basic	5	Psychol. 306 Child Psychol. or	
Electives	9	Educ. 402	5-3
Phys. Educ. 110 or 175 Health	2	Educ. 209 and 370 Psychol. & Intro.	8
Phys. Educ. activity	3	Electives	9
ROTC	6-9	ROTC	6-9
	48-57		43-52

Third Year		Fourth Year	
	CREDITS		CREDITS
Music 224, 225, 226 Orch. Instruments ..	3	Music 244 Orch. Lab.	1
Music Theory, upper-division	6	Music 344, 345 Elementary, Junior	
Music 304 Choral Lit.	1	High School Music	6
Music 384, 385 Conducting	3	Music 345J Teachers' Course in	
Music 386 or 495 Conducting	1-3	Secondary School Music	3
Vocal or Instrumental Instruction	6	Vocal or Instrumental Instruction	6
Music Ensemble	3	Music Ensemble	3
Art 329 Design	2	Educ. 360 Principles	3
Educ. 370E Elementary School Methods ..	5	Educ. 371S Directed Teaching	8
Educ. 373 State Manual	2	Educ. 372E Prof. Lab. Experiences	3
Educ. 374 Reading Instruction	5	History 464 Wash. & Pacific NW	5
Educ. 390 Evaluation	3	Public Health 461 School and	
Electives	5	Community Programs	5
	45-47	Electives	3
			45

CURRICULUM IN MUSIC HISTORY AND LITERATURE. Students in this curriculum must demonstrate proficiency in vocal or instrumental performance by the end of the sophomore year.

First Year	CREDITS	Second Year	CREDITS
Music 101, 102, 103 Theory.....	9	Music 201, 202, 203 Theory.....	9
Vocal or Instrumental Instruction.....	6	Music 207, 208, 209 Music Lit.....	6
Music Ensemble.....	0	Vocal or Instrumental Instruction.....	6
Engl. 101, 102, 103 Composition.....	9	Music Ensemble.....	0
Electives.....	19	French or German.....	15
Phys. Educ. 110 or 175 Health.....	2	Electives.....	9
Phys. Educ. activity.....	3	ROTC.....	6-9
ROTC.....	6-9		
	48-57		45-54

Upper-division minimum requirements are: 21 credits in music history and literature, to include some work in each of five fields (renaissance, baroque, classic, romantic, contemporary); and 12 credits in theory and composition.

COURSES FOR STUDENTS MAJORING IN OTHER FIELDS

Recommended courses are: Music 107, 108, 117, 118, 119, 121, 122, 123, 217, 218, 219, and 317. Ensemble groups (Music 100, 140, 160, 180, 200, 340, 360, and 380) are also open to nonmajors and may be taken either for credit or as activities. Credit for Music 100 (University Singers) is granted upon completion of three consecutive quarters; no new students are admitted during Spring Quarter. All ensemble courses except Music 100 require auditions.

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 PHILOSOPHY. Candidates must have a broad knowledge of music literature and music theory and a reading knowledge of French and German. A minimum of 90 credits is required, of which 20 to 30 will normally represent a minor or supporting courses in other departments such as languages and literature, history, philosophy, psychology, or anthropology. The candidate may concentrate in musicology (18 credits required from Music 547, 568, 569, 577, 578, and 579) or in theory and composition (18 credits required in Music 591). All candidates must complete 18 credits in Music 507, 508, 509 and such supplementary work in music history, theory, performance, conducting, or music education as may be determined by the supervisory committee in considering the individual program.

COURSES FOR UNDERGRADUATES

100 University Singers (1-1-1, maximum 6)

Chapple

Study, preparation, and performance of oratorios, cantatas, and other large choral works.

101, 102, 103 First-Year Theory (3,3,3)

Staff

Intensive training in basic musicianship; sight reading, ear training, keyboard harmony,

creative harmony; elements of counterpoint, analysis, and form. Primarily for majors. Prerequisite, permission.

- N104 Sight Reading Laboratory (0)** **Staff**
- 107 Survey of Music (5)** **Kinscella**
Illustrated lectures with supplementary readings to provide the general student with background for the understanding of common musical forms, idioms, and styles. For nonmajors.
- 108 The Orchestra (2)** **Kinscella**
The development of the orchestra and its literature. For nonmajors.
- 110A Class Instruction: Piano (1-1-1, maximum 3)** **Staff**
Primarily for majors who cannot meet the entrance requirements in piano. Fee, \$5.00. Prerequisite, permission.
- 110C Class Instruction: Voice (1-1-1, maximum 3)** **Staff**
Primarily for majors. Fee, \$5.00. Prerequisite, permission.
- 110Y Class Instruction: Piano (1)** **Staff**
For elementary education students. Fee, \$5.00. Prerequisite for Education 377X- Y.
- 110Z Class Instruction: Voice (1)** **Staff**
For elementary education students. Fee, \$5.00. Prerequisite for Education 377X- Y.
- 111, 112, 113 Rhythmic Movement (1,1,1)** **Rosinbum**
Muscular coordination with musical rhythms.
- 117 Music Appreciation: Symphonic Music, Nineteenth Century (2)** **Kinscella, Sokol**
Illustrated studies to increase the understanding and enjoyment of symphonic music of the nineteenth century. For nonmajors. Prerequisite, 107 or 108.
- 118 Music Appreciation: Symphonic Music, Seventeenth and Eighteenth Centuries (2)** **Hokanson, Kinscella, Sokol**
For nonmajors. Prerequisite, 107 or 108.
- 119 Music Appreciation: Symphonic Music, Contemporary (2)** **Hokanson, Kinscella, Sokol**
For nonmajors. Prerequisite, 107 or 108.
- 120A Class Instruction: Piano (1-1-1, maximum 3)** **Staff**
Primarily for majors. Fee, \$5.00. Prerequisite, 110A or equivalent.
- 120C Class Instruction: Voice (1-1-1, maximum 3)** **Staff**
Primarily for majors. Fee, \$5.00. Prerequisite, 110C or equivalent.
- 121, 122, 123 Elementary Music Theory (2,2,2)** **Staff**
Fundamentals of music notation and harmony. For nonmajors.
- 124, 125, 126 Orchestral Instruments Laboratory (1,1,1)** **Kirchner, Sokol**
Class instruction in violin and viola. Primarily for majors.
- 130 Vocal or Instrumental Instruction (2-3, maximum 18)** **Staff**
Primarily for majors not specializing in performance. Fee, \$25.00 for 2 credits or \$37.50 for 3 credits. For description and teacher designation, see 150. Prerequisite, examination.
- 131, 132, 133 Piano Sight Reading Laboratory (1,1,1)** **Moore**
For majors in piano and organ; exemption by examination. Others by permission.
- 140 University Band (1, maximum 6)** **Welke**
- 150 Vocal or Instrumental Instruction (2-3, maximum 18)** **Staff**
One or two individual half-hour lessons per week; weekly studio class in interpretation. Fee, \$25.00 for 2 credits or \$37.50 for 3 credits.
A. PIANO. Jacobson (A1), Bostwick (A3), Normann (A4), Geissmar (A5), Moore (A6), Hokanson (A7)
B. VIOLIN or VIOLA. Zetlin (B1), Sokol (B2)
C. VOICE. Werner (C1), Lawrence (C2), Wilson (C3), Harris (C5)
D. VIOLONCELLO. Kirchner (D1), Heinitz (D2), Martin (double bass, D3)
E. ORGAN. Eichinger (E)
F. WOODWIND. * (flute, F1), Allport (oboe, F2), Phillips (clarinet, F3), * (bassoon, F4)
G. BRASS. Schardt (horn, G1), * (trumpet, G2), Cloud (trombone, G3), Welke (G4)
H. HARP. Graf (H1), Lundgren (H2)
K. HARPSICORD. Bostwick (K)
- 160 University Orchestra (1, maximum 6)** **Chapple**
- 180 Chamber Music (1, maximum 6)** **Staff**
Small instrumental and vocal groups.
Section A. PIANO
Section B. STRING
Section C. MADRIGAL
Section D. OPERA
Section E. ORGAN
Section F. WOODWIND
Section G. BRASS
Section H. SMALL VOCAL ENSEMBLES
- 181 Music Theory Laboratory (4)** **Staff**
Written and keyboard harmony, sight singing, literature, and analysis. With permission, 4 credits in this course may be substituted for Music 102, 103, or 201. (Offered Summer Quarter only.)
- 200 Concert Choir (1, maximum 6)** **Lawrence**
Prerequisite, permission.

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| 201, 202, 203 Second-Year Theory (3,3,3) | Staff |
| For majors. Prerequisite, 103. | |
| 207, 208, 209 Music Literature (Second Year) (2,2,2) | Staff |
| Periods of music history as exemplified in the works of important composers. For majors. Prerequisite, 103. | |
| 210A Class Instruction: Piano (2, maximum 12) | Staff |
| Primarily for majors not specializing in performance. Fee, \$10.00. Prerequisite, examination. | |
| 210C Class Instruction: Voice (2, maximum 12) | Staff |
| Primarily for majors not specializing in performance. Fee, \$10.00. Prerequisite, examination. | |
| 211 Music Theatre Technique (1) | Rosinbum |
| Stage deportment and dramatic movement for singers. Prerequisite, 113. | |
| 217, 218, 219 Music Appreciation: Opera (2,2,2) | Werner |
| Survey of opera. For nonmajors. | |
| 224, 225, 226 Orchestral Instruments Laboratory (1,1,1) | Kirchner, Normann, Sokol, Welke |
| Class instruction in violoncello and bass; woodwind; brass. Primarily for majors. | |
| 244, 245 Orchestra Laboratory (1,1) | Normann |
| May count as ensemble credit. Prerequisite, five quarters of instrumental classes. | |
| 254, 255 Advanced Orchestral Instruments (2,2) | Kirchner, Normann, Sokol, Welke |
| Class instruction in strings, winds, and percussion. Primarily for majors. | |
| 301 Contemporary Idioms (3) | McKay |
| Analytical study of present-day composition techniques. Prerequisite, 203 or permission. | |
| 304 Choral Literature (1) | Hall, Terry |
| Interpretation and analysis of choral music through performance. Prerequisite, 203 or permission. | |
| 307, 308, 309 Music History and Literature (3,3,3) | Terry, Woodcock |
| 307: classic period; 308: early romantic period; 309: late romantic period. Prerequisites, 203 and 209, or permission. | |
| 317 Music Appreciation: Chamber Music (2) | Heinitz |
| Survey of literature for chamber music ensembles. For nonmajors. Prerequisite, 107 or 108. | |
| 321 Modal Counterpoint (3) | Staff |
| Studies in sixteenth-century style. Prerequisite, 203 or permission. | |
| 322 Tonal Counterpoint (3) | Verrall |
| Polyphonic composition: canon, invention, and fugue. Prerequisite, 203 or permission. | |
| 330 Vocal or Instrumental Instruction (2-3, maximum 18) | Staff |
| For majors not specializing in performance. Fee, \$25.00 for 2 credits or \$37.50 for 3 credits. For description and teacher designation, see 150. | |
| 331, 332, 333 Keyboard Transposition and Improvisation (2,2,2) | Beale |
| Prerequisite, 203 or permission. | |
| 334, 335 Accompanying (3,3) | Woodcock |
| Study and performance of music of different types and periods for voice or instrument in combination with piano. | |
| 337, 338, 339 Repertoire (2,2,2) | Staff |
| For applied music majors. To be taken concurrently with 350 during the junior year. | |
| Section A. PIANO | Section C. SONG |
| Section B. STRING | Section D. ORGAN |
| 340 University Concert Band (1, maximum 6) | Welke |
| Prerequisite, audition. | |
| 344, 345 Elementary, Junior High School Music (4,2) | Hall, Sorensen |
| The development of the music program in the public schools from grade one through nine. Prerequisites, 385, Education 370, and examination. | |
| 346J Teachers' Course in Secondary School Music (3) | Normann, Sorensen |
| The development of the music program in the senior high school. Two credits count as education and 1 as music. Offered jointly with the College of Education. Prerequisites, 344, 385, and Education 370. | |
| 347 Music in the Americas (3) | Kinscolla |
| Contribution of music to church and society in the western hemisphere during the seventeenth and eighteenth centuries. Prerequisites, 203 and 209, or permission. | |
| 348 Music in the Americas (3) | Kinscolla |
| Study through performance of American composition of the nineteenth and twentieth centuries. Prerequisites, 203 and 209, or permission. | |
| 350 Vocal or Instrumental Instruction (2-3, maximum 18) | Staff |
| To be taken concurrently with 337, 338, and 339 during the junior year. Fee, \$25.00 for 2 credits or \$37.50 for 3 credits. For description and teacher designation, see 150. Prerequisite, examination. | |
| 352 Musical Form (3) | Woodcock |
| Analysis of the principal forms of music composition. Prerequisite, 203 or permission. | |

- 353 Orchestration (3)** **Verrall**
Technique of writing for orchestra and other large ensembles; analytical and historical approach to problems of organization and sonority. Prerequisite, 203.
- 354 Band Arranging (2)** **Welke**
Study of tone color, voicing, transposition, and arranging. Prerequisite, 203.
- 355 Music Calligraphy (1)** **Verrall**
Preparation, editing, proofreading, and copying of manuscripts.
- 357 Church Music (3)** **Staff**
Survey of liturgy, chant, hymn, anthem, and solo. Prerequisites, 203 and 209, or permission.
- 360 University Symphony Orchestra (1, maximum 6)** **Chapple**
Prerequisite, audition.
- 377, 378, 379 Score Reading (2,2,2)** **Irvine**
Reading from score at the piano as a technique for the investigation of ensemble literature. Prerequisites, 203 and 209, or permission.
- 380 Advanced Chamber Music (1, maximum 6)** **Staff**
Selected instrumental and vocal groups. Prerequisite, permission.
- 384, 386 Conducting (1,1)** **Kirchner, Welke**
Transposition, score analysis, and baton technique. Prerequisite, 203.
- 385 Conducting (2)** **Munro**
Score analysis, musical styles, hand technique. To be taken concurrently with 304. Prerequisite, 201.
- 401 Contemporary Idioms (3)** **McKay**
Continuation of 301.
- 407, 408, 409 Music History and Literature (3,3,3)** **Irvine, McKay**
407: renaissance; 408: baroque; 409: contemporary. Prerequisites, 203 and 209, or permission.
- 417 Music of the Middle Ages (3)** **Irvine**
Prerequisites, 203 and 209, or permission.
- 421 Modal Counterpoint (3)** **Staff**
Continuation of 321.
- 422 Tonal Counterpoint (3)** **Verrall**
Continuation of 322.
- 428 Beethoven (3)** **Woodcock**
Prerequisites, 203 and 209, or permission.
- 430 Vocal or Instrumental Instruction (2-3, maximum 18)** **Staff**
For majors not specializing in performance. Fee, \$25.00 for 2 credits or \$37.50 for 3 credits. For description and teacher designation, see 150.
- 434, 435, 436 Piano Teaching (2,2,2)** **Woodcock**
Survey and study of teaching material; supervised practice teaching.
- 437 Rococo and Preclassic Music (3)** **Terry**
Prerequisites, 203 and 209, or permission.
- 440 Wind Sinfonietta (1)** **Welke**
(Offered Summer Quarter only.)
- 447 Schumann (3)** **Woodcock**
Prerequisites, 203 and 209, or permission.
- 450 Vocal or Instrumental Instruction (2-3, maximum 18)** **Staff**
Fee, \$25.00 for 2 credits or \$37.50 for 3 credits. For description and teacher designation, see 150.
- 452 Musical Form (3)** **Woodcock**
Continuation of 352.
- 453 Orchestration (3)** **Verrall**
Continuation of 353.
- 460 Sinfonietta (1, maximum 9)** **Chapple**
Prerequisite, audition.
- 464, 465 Opera Direction and Production (4,4)** **Rosinbum**
Practical experience with problems of the opera theatre.
- 467 History of Keyboard Music (3)** **Kinscella**
Development of organ, clavichord, harpsichord, and piano; idioms of corresponding types of keyboard music and styles of performance. Prerequisites, 203 and 209, or permission.
- 474 The Curriculum in Music Education (3)** **Sorensen**
- 480 Opera Theatre (2, maximum 6)** **Chapple, Rosinbum**
Preparation for participation in public performance of roles in chamber opera. Prerequisite, permission.

- 481 Advanced Studies in Musical Analysis (3)** **Beale**
(Offered Summer Quarter only.) Prerequisite, 203 or permission.
- 484, 485, 486 Orchestral Conducting (2,1,1)** **Chapple, Munro**
Experience with choral and instrumental ensembles.
- 487, 488 History of Opera (3,3)** **Irvine, Munro**
Periods and styles of opera, with special study of representative works in the light of the cooperative contributions of the voice, orchestra, libretto, scenic design, and acting.
487: pre-opera through Mozart; 488: since Mozart. Prerequisites, 203 and 209, or permission.
- 490 Collegium Musicum (1-2, maximum 6)** **Heinitz**
Special studies in the performance of early ensemble music. Techniques and repertoire of the viols. Prerequisite, permission.
- 491 Composer's Laboratory (3, maximum 18)** **McKay, Verrall**
Prerequisite, 203 or permission.
- 495 Choral Conducting (3)** **Munro**
Prerequisite, permission.
- 497, 498 History of Choral Music (3,3)** **Munro, Wilson**
497: Josquin through Bach; 498: Haydn to the present. Prerequisites, 203 and 209, or permission.
- 499 Undergraduate Research (*, maximum 6)** **Staff**
Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 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**
Prerequisite, one or more undergraduate courses in the same field.
- 514 Psychological Foundations of Music (3)** **Normann**
The nature of musical effects, evaluation of attitudes and achievement, prognosis of musical talent, musical learning, and factors related to musical performance.
- 524, 525, 526 Seminar in Music Education (3,3,3)** **Normann, Sorensen**
Special problems in the teaching and supervision of music in the elementary grades, junior and senior high school, and junior college. Prerequisite, one year of teaching experience.
- 547 Seminar in American Music (3, maximum 6)** **Kinscella**
History and literature of music in the United States from 1600 to the present.
- 550 Vocal or Instrumental Instruction (3, maximum 12)** **Staff**
Fee, \$37.50. 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 Advanced 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 Seminar in Theory and Notation (3,3)** **Irvine**
Readings in theory and problems in notation. 577: middle ages to 1450; 578: renaissance through preclassic.
- 579 Seminar in Musicology (3, maximum 6)** **Irvine**
Selected topics in music history, literature, and theory. Prerequisite, permission.
- 584, 585, 586 Advanced Conducting (3,3,3)** **Chapple**
Rehearsal and preparation of musical groups for public performance.
- 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.
- Thesis (*)** **Staff**

OCEANOGRAPHY

Executive Officer: RICHARD H. FLEMING, 202 Oceanographic Laboratories

The Department of Oceanography offers courses leading to the degrees of Bachelor of Science, Bachelor of Science in Oceanography, Master of Science, and Doctor of Philosophy. For undergraduate students, the Department offers two programs leading to bachelor's degrees: an elective curriculum which provides a basic introduction and allows a wide choice of electives in other fields, and prescribed curricula which permit more specialized study.

Instruction and training during the Autumn, Winter, and Spring Quarters are given in the Department of Oceanography on the campus. Summer Quarter instruction is conducted only at the Friday Harbor Laboratories in the San Juan Islands. In many courses, work at sea is performed on board the M.V. "Brown Bear" and other vessels which are attached to the Laboratories.

BACHELOR OF SCIENCE

In the elective curriculum, at least 36 credits in upper-division courses in oceanography are required. A general background in the basic sciences is also required, paralleled by a comprehensive program in one of the basic fields. Students who contemplate graduate work should take at least one foreign language.

BACHELOR OF SCIENCE IN OCEANOGRAPHY

In order to complete the program for the degree of Bachelor of Science in Oceanography 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 and 1 unit each of plane geometry, chemistry, and physics.

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. The Summer Quarter between the third and fourth years will normally be spent in study at the Friday Harbor Laboratories.

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Ocean. 110- Lectures.....	1	Ocean. 111- Lectures.....	1	Ocean. 112 Lectures.....	1
Chem. 115 General.....	5	Chem. 116 General.....	5	Chem. 325 Quant. Anal. . .	5
Math. 104 Plane Trig.	3	Math. 105 College Algebra	5	Math. 153 Anal. Geom.	
Physics 121 General.....	5	Physics 122 General.....	5	& Calc.	5
Phys. Educ. 175 or 110		Phys. Educ. activity.....	1	Physics 123 General.....	5
Health	2	ROTC	2-3	Phys. Educ. activity.....	1
Phys. Educ. activity.....	1			ROTC	2-3
ROTC	2-3				
	17-20		17-20		17-20

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Engl. 101 Composition.....	3	Engl. 102 Composition.....	3	Ocean. 203 Intro.	5
Math. 251 Anal. Geom.		Math. 252 Anal. Geom.		Engl. 103 Composition.....	3
& Calc.	5	& Calc.	5	Math. 253 Anal. Geom.	
Science Electives	8	Science Electives	8	& Calc.	3
ROTC	2-3	ROTC	2-3	Math. 281 Elem. of	
	16-19		16-19	Stat. Method	5
				ROTC	2-3
					16-19

During the third and fourth years, all students will be expected to complete the following: Oceanography 360, 361, 390, 403, 405, 421-422, 440, 441, and 442; 10 credits in social sciences; and a minimum of 20 credits in a foreign language.

Furthermore, third-year students will select one of the following options and during their next two years will be expected to complete the additional courses listed below.

BIOLOGICAL OCEANOGRAPHY OPTION. Oceanography 401, 431, and 433; Zoology 111, 112 (General Zoology), 330 (Natural History of Marine Invertebrates), 400 (General Physiology), 433, and 434 (Invertebrate Zoology); Biology 472 (Principles of Ecology), or 473 (Limnology).

CHEMICAL OCEANOGRAPHY OPTION. Oceanography 401, 452, and 453; or 401 and 431; or 410, 411, and 412; Chemistry 335, 336, 337 (Organic Chemistry), 345, 346 (Organic Chemistry Laboratory), 355, 356, 357 (Physical Chemistry), 358, 359 (Physical Chemistry Laboratory), and 426 (Instrumental Analysis).

GEOLOGICAL OCEANOGRAPHY OPTION. Oceanography 401, 452, and 453; Geology 205 (Rocks and Minerals), 206 (Elements of Physiography), 207 (Historical Geology), 221 (Mineralogy), 308 (Structural Geology), 330 (General Paleontology), and 361 (Stratigraphy).

PHYSICAL OCEANOGRAPHY OPTION. Oceanography 410, 411, and 412; Meteorology 340, 341 (Physical Meteorology), 442 (Introduction to Atmospheric Motions), and 462 (Oceanographic Meteorology); Mathematics 421 (Differential Equations), and 423 (Advanced Calculus and Vector Analysis).

Students will take oceanography courses directly related to their option in their third year. 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*. Applicants must have completed the equivalent of an undergraduate major in oceanography or in one of the physical or biological sciences. For those without an undergraduate major in oceanography, a broad training in the exact and natural sciences is desirable. Students who have not majored in oceanography will be accepted only if their qualifications meet those of the department responsible for the field of their undergraduate major.

Specialization is in either physical, chemical, geological, or biological oceanography. Students will be expected to attain a general knowledge of oceanography in addition to their specialty.

German, Russian, and French are the most valuable foreign languages in the study of oceanography.

COURSES FOR UNDERGRADUATES

- 101 Survey of Oceanography (5)** **Staff**
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)** **Staff**
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 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.
- 360 Methods and Instruments in Oceanography (3)** **Paquette**
Practical experience with the types of observing and sampling devices used at sea and ashore; methods of observing, recording, and presenting oceanographic data; interpretation of results; sources of basic data; means of locating positions; routine chemical analyses. Prerequisite, 203.
- 361 Field Experience in Oceanography (6)** **Barnes**
Practical work on shipboard and ashore by participation in regular oceanographic survey operations on the "Brown Bear" and other vessels; chemical, physical, biological, and geological analyses; preparation of reports. To be taken at Friday Harbor during Summer Quarter only, between third and fourth year or by special arrangement. Prerequisite, 360.

- 390 General Oceanography (5)** **Fleming**
Comprehensive treatment of physical, chemical, biological, and geological aspects of the oceans. Introductory to all courses in 400 series.
- 401 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)** **Frolander**
Physical, chemical, and biological factors characterizing the marine environment; factors controlling plant and animal populations; methods of sampling, identification, and analysis. Prerequisite, 390.
- 405 Geological Oceanography (5)** **Gould**
Methods of marine geological exploration; physiography and structure of the ocean basins; processes of sedimentation and sediments in the marine environment. Prerequisite, 390.
- 410 General 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. Prerequisite, 390 or graduate standing.
- 412 Ocean Currents (3)** **Barnes**
Characteristics of currents and of the forces that establish and modify them; methods of direct measurement and computation, use of indirect techniques; associated distribution of mass and properties. Prerequisite, 410.
- 421-422 Chemical Oceanography (3-3)** **Thompson**
Physical and chemical properties of sea water and sea products; methods of quantitative analysis. Prerequisite, Chemistry 221 or 325 or graduate standing; Oceanography 360 is recommended.
- 431 Biological Oceanography of the Plankton (4)** **Frolander**
Floating plant and animal life of the sea; factors controlling population and production; regional distribution; methods of sampling, identification, and analysis; nuisance forms. Prerequisites, 403 and Zoology 112.
- 433 Plankton Ecology (6)** **Frolander**
Problems and methods of marine plankton investigations. Practical experience at sea and in the laboratory. (Offered Summer Quarter only; offered alternate years starting 1955.) Prerequisite, 431 or Zoology 330.
- 440, 441, 442 Undergraduate Seminar (2,2,2)** **Thompson**
Reviews of the history and literature of oceanography; descriptions of local waters and the applications of marine sciences. Required of all oceanography majors. Prerequisite, senior standing.
- 452 Sedimentary Processes (3)** **Gould**
Origin, transportation, and deposition of sediments; environments of sedimentation; interpretation of past climatic and physiographic conditions. Prerequisites, Geology 205, 206, and 207.
- 453 Sedimentary Techniques (2)** **Gould**
Laboratory study and statistical analysis of physical properties of sediments; size analysis, texture, composition, porosity, permeability, and mass properties; description and interpretation of sediments. May be taken concurrently with 452. Prerequisites, 452 and Geology 221.
- 499 Undergraduate Research (1-3, maximum 6)** **Staff**
Original 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 or permission.
- 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 or permission.
- 515 Waves (2)** **Rattray**
Application of marine hydrodynamics principles to the wave motion in the oceans. Prerequisites, 511, 512, and 513, or equivalent.
- 516 Underwater Sound (2)** **Rattray**
Application of marine hydrodynamics principles to sound transmission in the oceans. Prerequisites, 511, 512, 513, or equivalent.
- 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. Prerequisites, 411, 412, 440, 441, 442, 511, 512, and 513, or permission.

- 518 Seminar in Physical Oceanography (3, maximum 9)** **Staff**
Lectures, discussions, and field and laboratory work on selected problems of current interest.
Prerequisites, 410, 411, and 412.
- 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 (3, maximum 9)** **Thompson**
Lectures, discussions, and field and laboratory work on selected problems of current interest.
Prerequisite, 421-422.
- 531 Seminar in Biological Oceanography (3, maximum 9)** **Frolander**
Lectures, discussions, and field and laboratory work on selected problems of current interest.
Prerequisites, 403 and 431.
- 532 Marine Microbiology (1-4)** **Ordal**
Ecology and biochemistry of marine bacteria. Prerequisites, Microbiology 300 and permission.
- 551 Seminar in Geological Oceanography (3, maximum 9)** **Gould**
Lectures, discussions, and field and laboratory work on selected problems of current interest.
Prerequisites, 452 and 453.
- 561 Applications of Oceanography (3)** **Fleming**
Analysis of special cases involving the applications of oceanography to military, engineering, and industrial problems. Prerequisite, a physical or biological science major or permission.
- 600 Research (*)** **Staff**
Thesis (*) **Staff**

PHILOSOPHY

Executive Officer: ARTHUR E. MURPHY, 264 Savery Hall

The Department of Philosophy offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. Students majoring in other fields will find Philosophy 100, 110, 120, and 215 of particular interest.

BACHELOR OF ARTS

In the elective curriculum, the requirements are: 40 credits in philosophy, including Philosophy 110 or 215, 120, 320, 321, and 322. Humanities 103 and 203, in the General Education program, 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)** **Miller, Murphy, Rader**
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. (Not open to those who have had 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)** **Melden, Miller, Smullyan**
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.
- 215 Introduction to Ethics (5)** **Melden**
Systematic study of typical analyses of the distinction between good and evil, right and wrong. Special attention is directed to the appeals to custom, theology, reason, human nature, and happiness as standards for the solution of moral problems. Readings in Plato, Hume, Kant, Bentham, and Mill.
- 230 Philosophic Issues in World Affairs (2)** **Rader**
(Not offered 1955-56.)

- 320 History of Ancient and Medieval Philosophy (5)** **Staff**
History of ancient and medieval philosophy from the sixth century B.C. to the thirteenth century. Readings in the works of the great philosophers with attention to their historical and cultural settings.
- 321 History of Modern Philosophy (5)** **Miller**
The development of philosophical ideas from the beginnings of the Renaissance, through the Continental Rationalists, the British Empiricists, and Kant.
- 322 History of Recent Philosophy (5)** **Murphy**
History of philosophy from Kant to Bergson.
- 324 American Philosophy (5)** **Murphy**
A brief account of early American philosophy and a more extended treatment of America's contribution to the main currents of western philosophy. (Offered 1956-57.)
- 347 Philosophy in Literature (5)** **Staff**
Study of philosophical ideas expressed in great works of literature.
- 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.
- 431 Philosophy of Plato (3)** **Staff**
The social, political, educational, ethical, and metaphysical doctrines in a representative selection of Plato's dialogues. (Offered alternate years; offered 1956-57.) Prerequisite, 100 or 320, or Humanities 103 or 203, or permission.
- 433 Philosophy of Aristotle (3)** **Staff**
Survey of the Aristotelian writings, with emphasis on the *Metaphysics* and *Ethics*; the influence of Aristotle on modern thought. (Offered alternate years; offered 1955-56.) Prerequisite, one course in philosophy or Humanities 103.
- 436 British Empiricism (3)** **Melden**
A study of the development of empiricism in the writings of Locke, Berkeley, and Hume. Detailed attention will be paid to the application of the empiricist views of the origin and nature of ideas to the problems of substance, self, nature, causation, mathematics, and induction. (Not offered 1955-56.) Prerequisite, Philosophy 321 or permission.
- 437 Philosophy of Hume (3)** **Melden**
Study of the principles and methods employed by Hume in the elaboration of his system of philosophy, comprising his analyses of knowledge, the passions, and morals. Prerequisite, 321 or permission.
- 438 Philosophy of Kant (3)** **Smullyan**
A systematic study of *The Critique of Pure Reason*. (Offered alternate years; offered 1955-56.) Prerequisite, 321 or permission.
- 440 Advanced Ethics (3)** **Melden**
A critical examination of the concepts and judgments of value, including an analytical treatment of the notions of right and wrong, obligation, good and bad, and the relationship between ethical and aesthetic value. Prerequisite, 215, formerly 115, or permission.
- 445 Philosophy of Art (3)** **Rader**
The principal systems of aesthetics; interpretations of the creative activity of the artist, the work of art, contemplation and criticism of art objects, and the relationship of art to the social order.
- 448 Philosophy in Nineteenth-Century Literature (5)** **Staff**
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. (Not offered 1955-56.)
- 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)** **Miller**
The main theories of the origin and functions of language, including its logical, descriptive, emotive, and expressive uses; attention to semantical problems of the social sciences and the humanities. Prerequisite, 120.
- 456 Metaphysics (5)** **Murphy**
Nature of existence; appearance and reality; substance, causation and law; pluralism and monism; universals; space and time; presuppositions of knowledge; realism, naturalism, idealism, positivism. Prerequisite, 100 or 321, or Humanities 103, or permission.
- 460 Introduction to the Philosophy of Science (5)** **Smullyan**
Concepts and methods which are fundamental in mathematics and in physical and social sciences. The relations of the sciences to each other as well as to art, religion, and philosophy. Speculations on the nature of the world which have been suggested by past and present scientific theories. Operationist tendencies in recent interpretations of science. Prerequisite, 100 or 120, or Humanities 103. (Offered alternate years; offered 1955-56.)
- 463 Philosophy of Mind (5)** **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. Prerequisite, 100 or Humanities 103.

- 465 Philosophy of History (5)** **Rader**
Analyses of the basic concepts employed in historical interpretation and an introduction to some of the principal philosophers of history: Plato, St. Augustine, Hegel, Marx, Spengler, Toynbee, etc.
- 467 Philosophy of Religion (5)** **Staff**
Origin, nature, and types of religion. The grounds of religious belief: mysticism, faith, reason, and evidence. The main religious problems: free will, immortality, the existence and nature of God, the problem of evil, religion as a basis of ethics, and the social implications of religion.
- 470, 471 Advanced Logic (5,5)** **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. (Offered alternate years; offered 1956-57.)
- 484 Reading in Philosophy (1-4, maximum 12)** **Staff**
Reading of approved philosophical works.
- 490 Philosophy of Leibniz (3)** **Melden**
(Not offered 1955-57.)

COURSES FOR GRADUATES ONLY

- 520 Seminar in Ancient Philosophy (2)** **Staff**
- 521 Seminar in Modern Philosophy (2)** **Murphy**
Topic for 1955: Locke.
- 522 Seminar in Recent Philosophy 2)** **Murphy**
Topic for 1956: Whitehead.
- 540 Seminar in Ethics (2)** **Melden**
Topic for 1956: moral obligation.
- 545 Seminar in Philosophy of Art (2)** **Rader**
(Offered 1956-57.)
- 550 Seminar in Epistemology (2)** **Smullyan**
Topic for 1955: the concept of truth.
- 556 Seminar in Metaphysics (2)** **Murphy**
(Offered 1956-57.)
- 565 Seminar in Philosophy of History (2)** **Rader**
Topic for 1956: Hegel and his influence.
- 567 Seminar in Philosophy of Religion (2)** **Staff**
- 570 Seminar in Logic (2)** **Smullyan**
(Offered alternate years; offered 1955-56.)
- 584 Reading in Philosophy (1-4)** **Staff**
Intensive reading in the philosophical literature. Prerequisite, permission of Executive Officer.
- 587 Contemporary Analytic Philosophy (3)** **Melden**
(Offered 1955-56.)
- 600 Research (1-6)** **Staff**
Prerequisite, permission.
- 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 functions in three main areas: the physical education activity and health instruction programs, which provide courses required of undergraduate University students (see page 50); 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 (for women only), and teacher training in both physical education and health education. These professional curricula lead to the degree of Bachelor of Arts. These 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.

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 basic academic fields in physical education and health education as well as second teaching areas for students in the College of Education.

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		Phys. Educ. 110 Health Educ.	2
Activities for Majors	6	Phys. Educ. 115, 121, 157 Archery	
Phys. Educ. 181, 182, 183, 284, 285, 286		Bowling, Canoeing	3
Phys. Educ. Backgrounds	6	Phys. Educ. 181, 182, 183, 281, 282,	
Anat. 301 General	4	283, 284, Phys. Educ. Backgrounds	7
Engl. 101, 102, 103 Composition	9	Anat. 301 General	4
Psychol. 100 General	5	Phys. Sci. 102 The Physical Universe	
Sociol. 110 Survey	5	or Chem. 101 General (or one year	
Speech 100 Basic Speech Improvement	5	of high school chemistry)	5
Zool. 111 General or Biol. 101J- General	5	Engl. 101, 102, 103 Composition	9
Zool. 112 General or Biol. 102J General	5	Physics (approved introductory course)	5
Zool. 114 Evolution	2	Psychol. 100 General	5
Zool. 118 & 118L, or 208 Physiol. (or		Sociol. 110 Survey	5
approved substitute)	6-5	Speech 100 Basic Speech Improvement	5
Electives	30-31	Zool. 118 & 118L or 208 Physiol. (or	
ROTC	12-18	approved substitute)	6-5
	100-106	Electives	40-41
			96

The professional requirements are:

MEN		WOMEN	
	CREDITS		CREDITS
Phys. Educ. 190 Introduction	2	Phys. Educ. 190 Introduction	2
Phys. Educ. 291 Personal & General		Phys. Educ. 292 First Aid & Safety	3
Hygiene	3	Phys. Educ. 293 Physiol. of Muscular	
Phys. Educ. 292 First Aid & Safety	3	Exercise	3
Phys. Educ. 293 Physiol. of Muscular		Phys. Educ. 311 Rhythmic Activities	
Exercise	3	for Small Children	2
Phys. Educ. 294 Introduction to		Phys. Educ. 312 Elem. School Athletic	
Recreation	2	Program	3
Phys. Educ. 309 School Dance Program	2	Phys. Educ. 318 Analysis of Rhythm	3
Phys. Educ. 324 Playground Programs	3	Phys. Educ. 344 Camp Programs	3
Phys. Educ. 340 Admin. of Intramural		Phys. Educ. 345 Principles	3
Sports	3	Phys. Educ. 465 The School Health	
Phys. Educ. 345 Principles of Phys. Educ.	3	Educ. Program	3
Phys. Educ. 363 Methods & Materials		Home Ec. 300 Nutrition	2
in Teaching Sports	2	Four of the Following:	
Phys. Educ. 370 Teaching Football	2	Phys. Educ. 301 Methods & Materials	
Phys. Educ. 371 Teaching Basketball	2	in Gymnastics, Stunts, & Tumbling	3
Phys. Educ. 450 The School Phys.		Phys. Educ. 356 Methods & Materials	
Educ. Program	3	in Teaching Modern Dance	2
Phys. Educ. 465 The School Health		Phys. Educ. 362 Methods & Materials	
Educ. Program	3	in Teaching Folk, Tap, & Clog Dancing	2
Phys. Educ. 493 Problems in Athletics	3	Phys. Educ. 363 Methods & Materials	
	39	in Teaching Sports	3
		Phys. Educ. 364 Methods & Materials	
		in Teaching Swimming	3
			40

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.

MEN

Additional credit requirements for men are as follows: education and nursery school, 5; sociology, 15; business administration, 5; physical education activities, health education, sports activities, and professional physical education, 40; recreation theory, 16; 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 Activities for Majors, 181		Phys. Educ. 162 Activities for Majors, 182		Phys. Educ. 163 Activities for Majors, 183	
Backgrounds	2	Backgrounds	2	Backgrounds	2
Engl. 101 Composition	3	Engl. 102 Composition	3	Engl. 103 Composition	3
Science electives	5	Science electives	5	Psychol. 100 General	5
Sociol. 110 Survey	5	Speech 100 Basic Speech Improvement	5	Science electives	5
ROTC	2-3	ROTC	2-3	ROTC	2-3
	17-18		17-18		17-18

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Phys. Educ. 292 First Aid & Safety	3	Phys. Educ. 265 Activities for Majors, 285		Phys. Educ. 266 Activities for Majors, 286	
Phys. Educ. 294 Intro. to Recreation	2	Backgrounds	2	Backgrounds	2
Phys. Educ. activity electives	1	Phys. Educ. 290 Officiating	2	Phys. Educ. 344 Play-ground Mgmt.	2
Phys. Educ. electives	2	Phys. Educ. 291 Hygiene	3	Drama electives	5
Drama 437 Creative	3	Art 300 Elem. Crafts	2	Hist. or gov. electives	5
Sociol. electives	5	Music electives	3	Phys. Educ. 254 Recreation Resources	1
ROTC	2-3	Electives	2-3	ROTC	2-3
	18-19		16-18		17-18

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Phys. Educ. 309 School Dance Program	2	Phys. Educ. 324 Play-ground Programs	3	Phys. Educ. 344 Camp Programs	3
Librarianship. 452 Storytelling	3	Phys. Educ. 340 Intramural Sports	3	Phys. Educ. 363 Teaching Sports	2
Psychol. electives	5	Phys. Educ. 358 Teaching Apparatus, Tumbling, & Stunts	2	Phys. Educ. 354 Recreation Practicum	2
Speech 332 Group Discussion	3	Communications electives	3-5	Phys. Educ. electives	2
	18	Cultural skills electives	3-5	Bus. Admin. electives	5
			16-18	Cultural skills electives	3-5
					17-19

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Educ. electives	5-10	Phys. Educ. electives	4	Phys. Educ. 364 Teaching Swimming	2
Gov. electives	5	Bus. electives	10	Phys. Educ. 454 Recreation Field Work	3
Electives	5-10	Educ. electives	5	Educ., bus., or gov. electives	10-13
	15-25		19		15-18

WOMEN

Additional credit requirements for women are as follows: art, 7; business administration, 4; drama, 6; education, 3; health education, 2; librarianship, 3; music, 6; outdoor education, 6; physical education activity, 3; professional physical education and recreational theory, 29-32; sociology and Graduate School of Social Work, 17; and two areas of specialization to be selected from art, dance, drama, music,

outdoor education, sports, 20-25. The choice of particular courses within the various areas of study is to be determined in consultation with an adviser.

First Year

CREDITS

Phys. Educ. Activity	3
Phys. Educ. 110 Health Educ.	2
Phys. Educ. 190 Introduction	2
Phys. Educ. *181, 182, *183, 281, 282, 283, *284 Backgrounds	4-7
Engl. 101, 102, 103 Composition	9
Psychol. 100 General	5
Science or elective	10
Sociol. 110 Survey	5
Speech 100 Basic Speech Improvement ..	5
Electives and/or area specialization	4
	<hr/> 49-52

Second Year

CREDITS

Phys. Educ. 292 First Aid & Safety	3
Phys. Educ. 294 Intro. to Recreation	2
Phys. Educ. 324 Playground Programs	3
Phys. Educ. 344 Camp Programs	3
Anat. 301 General or elective	4
Art 100 Introduction	5
Art 300 Elem. Crafts	2
Acct. 150 Fundamentals	4
Psychol. 101 Adjustment or 306	5
Child Psychol.	5
Sociol. 240 Group Behavior	5
Electives and/or area specialization	10-11
	<hr/> 46-47

*Dependent upon area of specialization

Third Year

CREDITS

Phys. Educ. 311 Rhythmic Activities for Small Children or Educ. 378D	2-3
Phys. Educ. 312 Elem. School Athletic Prog. or Educ. 378C Phys. Educ. for the Elem. School	3
Phys. Educ. 363 Teaching Sports	3
Drama 437 Creative	3
Education 377X-377Y Music for Elementary Teachers	3-3
Forestry 301 Survey or 350	3
Wildlife Management	3
Sociol.	5
Electives and/or area specialization	19-20
	<hr/> 44-46

Fourth Year

CREDITS

Phys. Educ. 426 Field Work in Recreation ..	5
Drama 426 H.S. Play Production	3
Educ. 455 Auditory and Visual Aids	3
Forestry 356 Forest Recreation	3
History	5
Journ. 303 Public Relations	3
Librshp. 452 Storytelling	3
Soc. Work 521 Social Group Work	2
Speech 332 Group Discussion	3
Electives and/or area specialization	14
	<hr/> 44

AREAS OF SPECIALIZATION

- Art, 10 credits—109 and select 7 credits from 105, 151, 302, 303, 357 or Home Economics 329.
- Dance, 13 credits—Physical Education 318, 355, 356, 362, 459-460.
- Drama, 10 credits—select 10 credits from 307, 403, 405, 406, 414.
- Music, 13 credits—108; 110A, three quarters; 110C, three quarters; 100, three quarters or 180, or 140, three quarters; one music elective, 2 credits.
- Outdoor Education, 10 credits—to be determined in consultation with adviser.
- Sports, 12 credits—Physical Education 157, 181, 183, 284 or equivalent; 293; 301; 304, 305, or 306; 364.

CURRICULUM IN PREPHYSICAL THERAPY FOR WOMEN. The requirements are:

First Year

CREDITS

Phys. Educ. 121 Bowling, 157 Canoeing. ..	2
Phys. Educ. 110 Health Educ.	2
Phys. Educ. 181, 182, 183 Backgrounds. .	3
Phys. Educ. 190 Introduction	2
Phys. Educ. 281 or 284 Backgrounds	1
Engl. 101, 102, 103 Composition	9
Sociol. 110 Survey	5
Speech 100 Basic, 110 Voice Improve- ment, or 120 Public Speaking	5-2
Zool. 111, 112, or Biol. 101J-102J General, or Chem. 101 General, 230 Organic	10
Electives	9
	<hr/> 48-45

Second Year

CREDITS

Phys. Educ. 282, 283 and 281 or 284 Backgrounds	3
Phys. Educ. 292 First Aid & Safety	3
Phys. Educ. 312 Elem. School Athletic Program	3
Phys. Educ. 318 Analysis of Rhythm	3
Anat. 301 General	4
Physics 100 Survey, or 170 for Nurses ..	5
Psychol. 100 General	5
Electives	21
	<hr/> 47

Third Year		CREDITS	Fourth Year		CREDITS
Phys. Educ. 115	Archery	1	Phys. Educ. 322	Kinesiology	3
Phys. Educ. 293	Physiol. of Muscular Exercise	3	Phys. Educ. 345	Principles	3
Phys. Educ. 301	Methods & Materials in Gymnastics, Stunts, & Tumbling	3	Phys. Educ. 435	Adapted Activities	3
Phys. Educ. 311	Rhythmic Activities for Small Children	2	Phys. Educ. 465	School Health Educ.	3
Phys. Educ. 362	Teaching Dancing	2	Phys. Educ. N466 (3 quarters)	Coaching	0
Phys. Educ. 363	Teaching Sports	3	Phys. Educ. 480	Principles of Movement	3
Phys. Educ. 364	Teaching Swimming	3	Psychol. 101	Psychol. of Adjustment	5
Zool. 118 & 118L, or 208 Physiol., or 358 Vertebrate Physiol.		5-6	Psychol. 306	Child Psychol.	5
Electives		23-24	Electives		20
		46			45

TEACHER-TRAINING CURRICULA. The two teacher-training curricula offered by the School of Physical Education may be taken through either the College of Arts and Sciences or the College of Education. Since the admission requirements of the two colleges differ, interested students should check the requirements listed in this bulletin (see page 37) 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.

Students who intend to qualify for the provisional general certificate, which is necessary for teaching in the state of Washington, must be sure to include the following courses in the curriculum they choose: Psychology 306 (Child Psychology), or Psychology 320 (Directed Observation of Child Behavior in the Nursery School), Education 402 (Child Study and Development); History 464 (History of Washington and the Pacific Northwest); Music 107 (Survey of Music) or Education 377X-377Y (Music for Elementary Teachers) or approved substitute; Art 100 (Introduction to Art) or Education 376 (Art in the Elementary School) or approved substitute; Public Health 461 (School and Community Health Programs); Education 209 (Educational Psychology), 373 (Washington State Manual), and 370 (Introduction to Teaching Procedures) concurrently; Education 370E (Elementary School Methods); Education 339 (Teachers' Course in Physical Education for Men) or 340 (Teachers' Course in Health and Physical Education for Women); Education 374 (Fundamentals of Reading Instruction), 390 (Evaluation in Education), 371K, E, X, or S (Directed Teaching), and 360 (Principles of Education).

All certification requirements are listed in the *College of Education Bulletin*.

CURRICULUM FOR TEACHER TRAINING IN PHYSICAL EDUCATION. Students who wish to emphasize high school physical education teaching may follow this curriculum, which meets preprofessional and professional course requirements for the Bachelor of Arts degree. The curriculum for men includes the courses listed above as necessary for teacher certification in the state of Washington, second teaching areas 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 listed above; these courses, as well as those for a second area, are to be included in the electives.

All electives must be chosen in consultation with an adviser.

MEN					
First Year			Second Year		
FIRST QUARTER	CREDITS		SECOND QUARTER	CREDITS	
Phys. Educ. 161 Activities for Majors, 181			Phys. Educ. 162 Activities for Majors, 182		
Backgrounds	2		Backgrounds	2	
Phys. Educ. 190 Intro-			Engl. 102 Composition	3	
duction	2		Speech 120 Public Speaking or humanities elective	5	
Engl. 101 Composition	3		Zool. 112 or Biol. 102J		
Sociol. 110 Survey	5		General	5	
Zool. 111 or Biol. 101J			Electives	2-3	
General	5		ROTC	2-3	
ROTC	2-3				
	19-20			19-20	

THIRD QUARTER	CREDITS
Phys. Educ. 163 Activities for Majors, 183	
Backgrounds	2
Engl. 103 Composition	3
Psychol. 100 General	5
Speech 100 Basic Speech Improvement	5
Electives	2
ROTC	2-3
	19-20

Second Year

FIRST QUARTER	CREDITS
Phys. Educ. 264 Activities for Majors, 284 Backgrounds	2
Phys. Educ. 292 First Aid & Safety	3
Phys. Educ. 294 Intro. to Recreation	2
Zool. 114 Evolution	2
Zool. 118, 118L Physiol.	6
Electives	2
ROTC	2-3
	<hr/> 19-20

SECOND QUARTER	CREDITS
Phys. Educ. 265 Activities for Majors, 285 Backgrounds	2
Phys. Educ. 291 Hygiene. Art 300 Elem. Crafts, or 329 Appreciation	3
Music 107 Survey, 108 Orchestra, or 217 Appreciation	5-2
Electives	5
ROTC	2-3
	<hr/> 16-20

THIRD QUARTER	CREDITS
Phys. Educ. 266 Activities for Majors, 286 Backgrounds	2
Phys. Educ. 293 Physiol. of Muscular Exercise	3
Anatomy 301 General	4
Educ. 209 Educ. Psychol.	3
Educ. 370 Teaching Procedures	5
ROTC	2-3
	<hr/> 19-20

Third Year

FIRST QUARTER	CREDITS
Phys. Educ. 309 School Dance Program	2
Phys. Educ. 322 Kinesiology	3
Phys. Educ. 345 Principles of Teaching Basketball	3
Phys. Educ. 372 Teaching Track & Field, or elective	2
Educ. 373 Wash. State Manual	2
Electives	2
	<hr/> 19

SECOND QUARTER	CREDITS
Phys. Educ. 324 Play-ground Programs	3
Phys. Educ. 370 Teaching Football	2
Educ. 370E Elem. Methods 5	5
Educ. 390 Evaluation	3
Electives	5
	<hr/> 18

THIRD QUARTER	CREDITS
Electives from 334 Play-ground Mgmt., 336 Train. & Cond., 344 Camp Programs	4
Phys. Educ. 340 Intramural Sports	3
Phys. Educ. 363 Teaching Sports	2
Phys. Educ. 373 Teaching Baseball	2
Educ. 339 Teachers' Course in Phys. Educ.	2
Educ. 374 Reading Instr.	5
	<hr/> 18

Fourth Year

FIRST QUARTER	CREDITS
Phys. Educ. 361 Teaching Box. & Wrest.	2
Educ. 371E, X, or S Directed Teaching	8
Public Health 461 School & Comm. Health	5
Educ. 339 Teachers' Course in Phys. Educ. or elective	2
	<hr/> 17

SECOND QUARTER	CREDITS
Phys. Educ. 358 Teaching Apparatus, Tumbling, & Stunts	2
Phys. Educ. 447 Tests & Measurements	3
Phys. Educ. 450 School Phys. Educ.	3
Phys. Educ. 465 School Health	3
Educ. 360 Principles	3
Educ. 372E, X, or S Professional Lab. Experiences	3
	<hr/> 17

THIRD QUARTER	CREDITS
Phys. Educ. 364 Teaching Swimming	2
Phys. Educ. 435 Adapted Activities	3
Phys. Educ. 493 Problems 3	3
Educ. 402 Child Development, Psychol. 320 Obs. Nurs. School, or Psychol. 306 Child Psychol.	3-5
Hist. 464 Wash. & Pac. NW	5
Electives	3
	<hr/> 19-21

WOMEN

First Year

	CREDITS
Phys. Educ. 110 Health Educ.	2
Phys. Educ. 115 Archery	1
Phys. Educ. 121 Bowling, 157 Canoeing	2
Phys. Educ. 181, 182, 183, 283 Backgrounds	4
Phys. Educ. 190 Introduction	2
Phys. Educ. 281 or 284 Backgrounds	1
Engl. 101, 102, 103 Composition	9
Phys. Science 102 Physical Universe, or Chem. 101 General (or 1 yr. high school chem.)	5
Phys. 170 For Nurses	5
Sociol. 110 Survey	5
Speech 100 Basic Speech Improvement	5
Electives and teacher training requirements	7
	<hr/> 48

Second Year

	CREDITS
Phys. Educ. 282 and 281 or 284 Backgrounds	2
Phys. Educ. 292 First Aid & Safety	3
Phys. Educ. 304, 305, or 306 Officiating	2
Phys. Educ. 312 Elem. School Athletic Program	3
Phys. Educ. 318 Analysis of Rhythm	3
Phys. Educ. 344 Camp Programs	3
Anat. 301 General	4
Psych. 100 General	5
Electives and professional education requirements	20
	<hr/> 45

Third Year

CREDITS

Phys. Educ. 293 Physiol. of Muscular Exercise	3
Phys. Educ. 301 Methods & Materials in Gymnastics, Stunts, & Tumbling	3
Phys. Educ. 311 Rhythmic Activities for Small Children	2
Phys. Educ. 362 Teaching Folk, Tap, & Clog Dancing	2
Phys. Educ. 363 Teaching Sports	3
Phys. Educ. 364 Teaching Swimming	3
Phys. Educ. N466 (2 quarters) Coaching	0
Home Ec. 300 Nutrition	2
Public Health 301 Communicable Diseases (if not accompanied by health educ. area)	3
Zool. 118 & 118L Physiol.	6
Electives and professional education requirements	18
	<hr/> 45

Fourth Year

CREDITS

Phys. Educ. 322 Kinesiology	3
Phys. Educ. 345 Principles	3
Phys. Educ. 356 Teaching Modern Dance	2
Phys. Educ. 435 Adapted Activities	3
Phys. Educ. 450 School Phys. Educ. Program	2
Phys. Educ. 453 (if not accompanied by health educ. area) Health Teaching	3
Phys. Educ. N466 Coaching	0
Phys. Educ. 480 Principles of Movement	3
Electives and professional education requirements	26
	<hr/> 45

CURRICULUM FOR TEACHER TRAINING IN HEALTH EDUCATION. Students who wish to emphasize high school health education teaching may follow this curriculum, which meets preprofessional and professional 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 (see page 163), as well as those required for a second area of study. All electives must be chosen in consultation with an adviser.

A health education curriculum which emphasizes public health is offered through the Department of Public Health and Preventive Medicine (see page 183).

MEN AND WOMEN

First Year

CREDITS

Phys. Educ. 110 or 175 Health Educ., Personal Health	2
Phys. Educ. activities	3
Engl. 101, 102, 103 Composition	9
Chem. 101 General, or 230 Organic	10
Sociol. 110 Survey	5
Speech 100 Basic Speech Improvement	5
Zool. 111, 112 or Biol. 101J-102J General	10
Electives	4
ROTC	6-9
	<hr/> 48-57

Second Year

CREDITS

Phys. Educ. 291 Hygiene	3
Phys. Educ. 292 First Aid & Safety	3
Anat. 301 General or Conjoint 317-318	
Anat. and Physiol.	4-12
Psychol. 100 General	5
Electives	30-22
ROTC	6-9
	<hr/> 45-54

Third Year

CREDITS

Phys. Educ. 345 Principles	3
Home Ec. 300 Nutrition	2
Micro. (or approved substitute)	5
Psychiatry 267 Introduction to Mental Hygiene or Educ. 408 Mental Hygiene for Teachers	2-3
Public Health 402 Commun. Disease Control or 301 Commun. Disease Causes	3
Zool. 208 or 358 Physiol. or Conjoint 317-318 Anat. and Physiol.	5-12
Electives	25-18
	<hr/> 45-46

Fourth Year

CREDITS

Phys. Educ. 453 Methods and Materials in Health Teaching	3
Conjoint 496 Concept of the Child, or Educ. 402 Child Study	3
Public Health 412 Public Health Org. & Services	3
Public Health 461 School & Comm. Health	5
Public Health 464 Comm. Health Educ.	3
Sociol. 353 Social Factors in Marriage, or Home Ec. 356 Family Relationships	3
Related electives	8
Electives	17
	<hr/> 45

Recommended electives are:

MEN AND WOMEN

CREDITS	CREDITS
Phys. Educ. 293 Physiol. of Muscular Exercise 3	Psychol. 101 Adjustment 5
Phys. Educ. 322 Kinesiology 3	Psychol. 135 Applied 3
Phys. Educ. 429 Teaching First Aid & Safety 2	Public Health 330 Environmental Sanitation 3
Phys. Educ. 435 Adapted Activities 3	Public Health 460J Field Training in Health Educ. 5
Anthro. 280 Race 2	Public Health 463 Community Organization for Health Educ. 3
Econ. 211 General, or Pol. Sci. 376 State & Local Government & Admin. or 475 Municipal Government & Admin. 3 or 5	Public Health 470 Introduction to Public Health Statistics 2
Journ. 200 News Writing or 303 Pub. Relations 5 or 3	Public Health 482, 483, 484 Field Practice 2-15
Nursing 100 Care & Prevention of Illness 3	Radio-TV 100 Survey 5
Nursing 380 Pub. Health & Community Nursing 3	Sociol. 270 Contemporary Social Problems 5
Pol. Sci. 100 Mod. Govt. 5	Sociol. 352 The Family 5
Psychiatry 558 Seminar: Interviewing 2	Sociol. 364 Rural Community 5
	Speech 332 Group Discussion 3

Additional courses in health education are given in the Schools of Home Economics, Nursing, and Medicine.

ADVANCED DEGREES

Students who intend to work toward the degree of Master of Science or Master of Science in Physical Education must meet the requirements of the Graduate School 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.

COURSES FOR UNDERGRADUATES

ACTIVITY AND HEALTH COURSES

- 101, 102, 103, 201, 202, 203 Adapted Activities (Men) (1,1,1,1,1)** **Cutler**
Gymnastics, games, and sports to meet the needs of the individual. For physically handicapped students.
- 106 through 250 Physical Education Activities (Men) (1 each)** **Staff**
106, handball; 107, basketball; 108, tennis; 109, softball; 110, golf (fee, \$3.00 per quarter); 111, track; 112, crew (class), prerequisite, swimming; 113, fencing; 114, boxing; 115, tumbling and apparatus; 117, wrestling; 118, volleyball; 119, swimming; 120, Rugby; 121, touch football; 122, badminton; 123, archery; 125, skiing (fee); 126, speedball; 127, bowling (fee, \$3.00 per quarter); 128, weight training; 129, sailing; 131, beginning, 134, intermediate folk and square dancing; 141, freshman, 241, varsity basketball; 142, freshman, 242, varsity crew, prerequisite, swimming; 143, freshman, 243, varsity football; 144, freshman, 244, varsity track; 145, freshman, 245, varsity swimming; 146, freshman, 246, varsity baseball; 147, freshman, 247, varsity tennis; 148, freshman, 248, varsity golf; 149, freshman, 249, varsity skiing (fee); 150, freshman, 250, varsity volleyball.
- 110 Health Education (Women) (2)** **Gunn, Horne, Waters**
Health problems of freshman women. Required of all freshmen.
- 111 through 267 Physical Education Activities (Women) (1 each)** **Staff**
111, adapted activities; 113-114, basic activities; 115, archery; 118, badminton; 121, bowling (fee, \$3.00 per quarter); 124, fencing; 126, golf (fee, \$3.00 per quarter); 128, riding (fee); 129, sailing; 131, dry skiing; 132, elementary skiing (fee); 133, stunts and tumbling; 135, tennis; 141, basketball; 142, field sports; 143, hockey; 144, softball; 145, volleyball; 148, folk and square dancing; 149, European folk dance; 151, modern dance; 154, social dance; 155, tap and clog; 157, canoeing (fee, \$2.50 per quarter); 160, adapted swimming; 161, beginning swimming; 162, elementary swimming; 213, intermediate archery; 218, intermediate badminton; 221, intermediate bowling (fee, \$3.00 per quarter); 222, advanced bowling (fee, \$3.00 per quarter); 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 dancing; 251, intermediate modern dance; 252, advanced modern dance; 257, intermediate canoeing (fee, \$2.50 per quarter); 263, intermediate swimming; 264, advanced swimming; 265, rhythmic swimming; 266, diving; 267, lifesaving.

- 161, 162, 163, 264, 265, 266 Physical Education Activities for Majors (Men) (1,1,1,1,1,1) Staff**
 161, swimming, diving, lifesaving; 162, tumbling and apparatus; 163, team games (volleyball, basketball, football, softball); 264, boxing, wrestling; 265, low-organization games (recreational games); 266, individual games (tennis, golf, badminton).
- 175 Personal Health (Men) (2) Mills, Reeves, Staff**
 Health information that affords a basis for intelligent guidance in the formation of health habits and attitudes. Required of all freshmen; exemption by examination.

PROFESSIONAL COURSES

- 181, 182, 183, 284, 285, 286 Physical Education Backgrounds (Men) (1,1,1,1,1) Staff**
 Fundamental information on methods and materials in swimming, lifesaving, tumbling, apparatus, individual games, boxing, wrestling, recreational games, and group games.
- 181, 182, 183, 281, 282, 283, 284 Physical Education Backgrounds (Women) (1,1,1,1,1,1) Horne, Kidwell, MacLean, Rulifson**
 Fundamental information for methods and materials in the presentation of field hockey, soccer, speedball, basketball, badminton, tennis, stunts, tumbling, gymnastics, tap dance, folk dance, social dance, modern dance, swimming, and lifesaving. Basic skills with emphasis for professional training.
- 190 Introduction to Physical and Health Education (Men and Women) (2) Horne, Palmer**
 Orientation to these fields, professional opportunities; problems encountered; qualifications and training for teaching recreational leadership in communities and organizations, coaching (men), and physical therapy (women).
- 254 Recreation Resources (Men) (1) Kunde**
 Directed observations of recreational resources including general and community, public school, youth serving agencies, hospitals, institutional and industrial organizations.
- 290 Officiating (Men) (2) Mills**
 Techniques of officiating football, basketball, baseball, track and field, swimming, tennis, volleyball, softball, speedball, and Rugby.
- 291 Personal and General Hygiene (Men and Women) (3) Mills, Waters**
 Advanced course designed for the professional student in health education areas. Prerequisite, 110, 175, or equivalent.
- 292 First Aid and Safety (Men and Women) (3) Brumbach, MacLean, Reeves, Roloff, 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.
- 293 Physiology of Muscular Exercise (Men and Women) (3) Mills, Reeves**
 Muscular efficiency, fatigue, recovery, chemical changes, and neuromuscular control, with special reference to games, sports, corrective work, and body mechanics. Prerequisite, Zoology 118, 208, or 358.
- 294 Introduction to Recreation (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.
- 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, school, beaches, recreation departments, the Armed Forces, and service organizations. Prerequisites, 119 or 219 for men; 267 for women, and American Red Cross lifesaving card or permission for men and women.
- 301 Methods and Materials in Gymnastics, Stunts, and Tumbling (Women) (3) Broer, MacLean**
 Methods and opportunities for presentation of these activities, including marching tactics. Prerequisites, 183, 281, 292, Anatomy 301, and Zoology 118 or 208, which may be taken concurrently.
- 304, 305, 306 Officiating (Women) (2,2,2) Fox, Horne, Kidwell**
 Techniques for officiating in field hockey, volleyball, aquatics, basketball, badminton, softball, and tennis; opportunity for national and local ratings. Prerequisite, junior standing or permission.
- 309 The School Dance Program (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) de Vries**
 Activities suited to the preschool, kindergarten, and primary child. Educational value, significance in child growth and development, and methods of presentation. Prerequisite, junior standing.
- 312 Elementary School Athletic Program (Women) (3) Rulifson**
 Program planning, small group play, and team game activities for elementary grades.
- 318 Analysis of Rhythm (Women) (3) de Vries, Wilson**
 Rhythmic form and analysis; relationship to the physical education program; principles of building rhythmic patterns to be used in teaching dancing; relationship of musical form to dance form. Prerequisites, 281, which may be taken concurrently, and 283 or permission.

- 322 **Kinesiology (Men and Women) (3)** **Cutler**
Analysis of leverage in body movement and problems of readjustment in relationship to body mechanics and to physical education activities. Prerequisites, 293 and Anatomy 301.
- 324 **Playground Programs (Men and Women) (3)** **Kunde**
Lectures, demonstrations, and reading assignments for orientation in recreation skills and techniques suitable for various age groups; classifying, adapting, directing, experiencing, and utilizing recreation program materials. Prerequisites, 292, 294, and 6 credits in physical education major activities or the equivalent.
- 334 **Management and Operation of Playgrounds and Recreation (Men) (2)** **Kunde**
Practices and procedures in management and operation of areas and facilities. Duties and responsibilities, personnel regulations, and staff organization. Motivating and conducting a diversified program. Prerequisite, 294.
- 336 **Athletic Training and Conditioning (Men) (1)** **Clark**
Prerequisite, 292 or permission.
- 340 **Administration of Intramural Sports (Men) (3)** **Stevens**
- 344 **Organization and Administration of Camp Programs (Men and Women) (3)** **Kunde, Roloff**
The educational and social significance of camping; organization of activities and problems of administration. Prerequisites, junior standing, Psychology 100, and Sociology 110, or permission.
- 345 **Principles of Physical Education (Men and Women) (3)** **Torney**
Social, biological, and educational foundations; its place in the school program. Prerequisites, Zoology 118, 208, or 358, Sociology 110, and Psychology 100.
- 354 **Recreation Practicum (Men) (2)** **Kunde**
Directed experience in recreational activities and program services for the enhancement of leadership techniques. Prerequisites, 294 and permission.
- 355 **Dance Composition (Women) (2)** **de Vries**
Practice in modern dance; analysis of choreography; creative work. Prerequisites, 151 and 318, or permission.
- 356 **Methods and Materials in Teaching Modern Dance (Women) (2)** **de Vries**
Sources of materials; their selection and organization; methods of presentation; music and types of accompaniment. Prerequisites, 283 and 318, or permission.
- 358 **Methods in Teaching Apparatus, Tumbling, and Stunts (Men) (2)** **Hughes**
Prerequisites, 162 and 182, or permission.
- 361 **Methods in Teaching Boxing and Wrestling (Men) (2)** **Mills, Stevens**
Prerequisites, 264, 284, or permission.
- 362 **Methods and Materials in Teaching Folk, Tap, and Clog Dancing (Women) (2)** **Wilson**
Methods and materials and opportunities for presentation of these activities as well as social dancing. Prerequisites, 281, 282, and 318, which may be taken concurrently.
- 363 **Methods and Materials in Teaching Sports (Men and Women) (men, 2; women, 3)** **MacLean, Peek, Rulifson**
Program planning; methods in teaching team and individual sports, including volleyball, basketball, field hockey, soccer, speedball, Rugby, and other field games, softball, tennis, and badminton. Prerequisites for men, 163, 183, 264, 265, 266, 284, 285, and 286, or permission; for women, 181, 182, 183, and 312 or permission.
- 364 **Methods and Materials in Teaching Swimming (Men and Women) (men, 2; women, 3)** **MacLean, Torney**
Diving, lifesaving, and direction of camp waterfront program. Prerequisites for men, 161, 162, 163, 181, 264, 265, and 266, or permission; for women, 157 and 284, or permission.
- 370 **Methods in Teaching Football (Men) (2)** **Cherberg**
- 371 **Methods in Teaching Basketball (Men) (2)** **Dye**
- 372 **Methods in Teaching Track and Field (Men) (2)** **Hiserman**
- 373 **Methods in Teaching Baseball (Men) (2)** **Marx**
- 426 **Field Work in Recreation (Women) (5)** **Kidwell**
Practice in planning programs; supervised work experiences in recreational fields such as hospital, industrial, public, and semiprivate agencies, etc. 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.
- 429 **Methods in Teaching First Aid and Safety (Men and Women) (2)** **Brumbach, Reeves, Stevens**
The student may meet requirements for American Red Cross Instructor's First Aid Certification. Prerequisite, 292.
- 435 **Adapted Activities (Men and Women) (3)** **Cutler, Waters**
Program for an atypical case from the standpoint of individual needs. Prerequisites, 293, 322, and Zoology 118, 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, 362, 363, 364, and senior standing.
- 453 Methods and Materials in Health Teaching (Men and Women) (3)** **Waters**
Health instruction in elementary, junior and senior high schools, including subject matter, source material, and method. Prerequisites, 345, Public Health 461, and Zoology 118, 208, or 358.
- 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.
- 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 experience. Prerequisites, 151 and 251, or 283.
- 465 The School Health Education Program (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. Prerequisite, 345.
- N466 Coaching (Women) (0)** **Fox, Staff**
Prerequisite, permission.
- 480 Principles of Movement (Women) (3)** **Broer**
The interpretation of the physical principles which make for efficient movement through the integration of physics, anatomy, kinesiology, and sport and dance techniques. Prerequisites, 301, 322, 356, 363, 364, Anatomy 301, and Physics 170, 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.

COURSES FOR GRADUATES 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)** **Waters**
(Offered Summer Quarter only.) Prerequisites, 345 and 450, or permission.
- 503 Seminar in Health Education (Men and Women) (3)** **Waters**
Prerequisites, 345, 453, and 465.
- 504 Administration of Recreation (Men and Women) (5)** **Kunde**
Prerequisites, 324, 345, 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.
- 524 Seminar in Community Resources and Organization for Recreation (Men) (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.
- 547 Seminar in Research Procedures (Men and Women) (3)** **Broer**
Prerequisites, 447 and Mathematics 281 or equivalent.
- 600 Research (Men and Women) (2-5)** **Broer, Fox, Kunde, Palmer, Staff**
A. Physical education
B. Tests and measurements
C. Physiology of exercise
D. Health education
E. Recreation
- Thesis (Men and Women) (*)** **Staff**

PHYSICS

Executive Officer: JOHN H. MANLEY, 215 Physics Hall

The Department of Physics offers courses leading to the degrees of Bachelor of Science, Bachelor of Science in Physics, Bachelor of Science in Engineering Physics, Master of Science, and Doctor of Philosophy. For undergraduate students it offers an elective curriculum, which provides a basic introduction to physics and allows a wide choice of electives in other fields; a prescribed curriculum in physics, which provides intensive study in preparation for a professional career; and, in collaboration with the College of Engineering, a prescribed curriculum in engi-

neering physics, which adds basic engineering training to a thorough preparation in physics. In addition, the Department offers a first teaching area for students in the College of Education.

Students who are majoring in physics should take Physics 121, 122, and 123 in their freshman year. The following less detailed courses are offered primarily for other students: Physics 101, 102, and 103 with concurrent registration in 107, 108, or 109 for those who have had high school physics, and Physics 104, 105, and 106 with concurrent registration in 107, 108, and 109 for those who have had plane geometry but no physics. Physics 100 or Physical Sciences 101 (The Physical Universe) is recommended as an elective for nontechnical students. Courses of specialized emphasis are provided for architecture, engineering, and nursing students.

Entrance requirements for physics majors, as of Autumn Quarter, 1954, are high school physics, trigonometry, and $1\frac{1}{2}$ units of algebra. High school chemistry and a fourth term of algebra are strongly recommended. Students who enter without the required preparation may be delayed in their progress toward graduation.

Physics majors must maintain a grade-point average of at least 2.20 in physics courses.

A student in any of the three 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 undertake an undergraduate research problem, on the completion of which the Department will certify and record this distinction.

BACHELOR OF SCIENCE

In the elective curriculum, 42 credits in physics are required. Courses must include: Physics 121, 122, 123 (or 101, 102, 103; or 104, 105, 106 with 107, 108, 109), 321, 322, 323, 325, 326, 360, and 361.

BACHELOR OF SCIENCE IN PHYSICS

The total requirements for the prescribed curriculum are:

First Year			First Year			First Year		
FIRST QUARTER	CREDITS		SECOND QUARTER	CREDITS		THIRD QUARTER	CREDITS	
Physics 121 General	5		Physics 122 General	5		Physics 123 General	5	
Chem. 105 General	3		Chem. 106 General	3		Chem. 107 General	3	
Math. 105 College Algebra	5		Engl. 101 Composition	3		Engl. 102 Composition	3	
Math. 120 Intro. to			Math. 153 Anal. Geom.			Math. 251 Anal. Geom.		
Math. Thinking	2		& Calc.	5		& Calc.	5	
Phys. Educ. activity	1		Phys. Educ. activity	1		Phys. Educ. activity	1	
ROTC	2-3		ROTC	2-3		ROTC	2-3	
	16-19			17-20			17-20	

Second Year			Second Year			Second Year		
FIRST QUARTER	CREDITS		SECOND QUARTER	CREDITS		THIRD QUARTER	CREDITS	
Physics 321 Intro. Mod.	3		Physics 322 Intro. Mod.	3		Physics 323 Intro. Nuclear	3	
Engl. 103 Composition	3		Physics 350 Heat	3		Physics 340 Sound	3	
Math. 252 Anal. Geom.			Math. 253 Anal. Geom.			Electives	8	
& Calc.	5		& Calc.	3		Phys. Educ. 110 or 175		
Electives	5		Electives	7		Health	2	
ROTC	2-3		ROTC	2-3		ROTC	2-3	
	16-19			16-19			16-19	

Third Year			Third Year			Third Year		
FIRST QUARTER	CREDITS		SECOND QUARTER	CREDITS		THIRD QUARTER	CREDITS	
Physics 325 Electricity	4		Physics 326 Electricity	4		Physics 327 Freq. Meas.	4	
Chem. 355 Physical	3		Physics 360 Optics	3		Physics 361 Optics	3	
Math. 423 Adv. Calc. &			Chem. 356 Physical	4		Math. 422 Diff. Equations	3	
Vect. Anal.	3		Math. 421 Diff. Equations	3		Electives	6	
Mech. Engr. 203 Metal			Electives	3				
Machining	1			17				
Electives	6							
	17							

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Physics 491 Mechanics .. 4		Physics 492 Mechanics .. 4		Physics 497 Exptl. Nuclear 3	
Physics 495 Exptl. Atomic 3		Physics 496 Exptl. Atomic 3		Math. 429 Applied Analysis 3	
Math. 427 Applied Analysis 3		Math. 428 Applied Analysis 3		Electives	10
Electives	5	Electives	6		16
	15		16		

German or French is recommended as an elective in the second year. Senior students who are candidates for Physics Honors take Physics 499 as an elective in the last quarter of the fourth year. Students without high school chemistry will arrange to take Chemistry 111, 112, and 113.

Students who do not intend to enter graduate work in physics may replace Mathematics 427, 428, and 429 (Topics in Applied Analysis) with three courses selected from Electrical Engineering 420 (Vacuum Tubes and Electronics), 440 (Vacuum-Tube Circuits), 457 (Industrial Control), and 461 (Vacuum-Tube Circuits); otherwise these engineering courses are suggested as electives.

In special circumstances, minor changes in the list of prescribed courses for the degrees of Bachelor of Science in Physics and Bachelor of Science in Engineering Physics may be approved by the Department.

BACHELOR OF SCIENCE IN ENGINEERING PHYSICS

Students who wish an engineering background with their full training in physics should elect the prescribed curriculum leading to the degree in engineering physics. Two approaches are possible.

A student may follow the prescribed curriculum for the Bachelor of Science in Physics with a suitable choice of engineering electives as follows: for second-year electives take General Engineering 101, 102 (Engineering Drawing), 103 (Applied Descriptive Geometry), and Mechanical Engineering 201 (Metal Castings), 202 (Welding), 203 (Metal Machining). For third-year electives take Mechanical Engineering 260 (Mechanism) or Metallurgical Engineering 441 (Engineering Physical Metallurgy), and Electrical Engineering 301 (Electrical Machinery). For fourth-year electives take Electrical Engineering 420 (Vacuum Tubes and Electronics), 440 (Vacuum Tube Circuits), 457 (Industrial Control). Physics 327 and Mathematics 427, 428, 429 (Topics in Applied Analysis) are optional.

Alternatively, a student may choose to complete two years of engineering (including Physics 217, 218, 219) before undertaking his advanced work as a physics major. In transferring to the College of Arts and Sciences, he will have to satisfy the English composition requirement (normally by taking English 102, 103). The College entrance requirement in foreign language is waived for students who transfer after at least one year in the College of Engineering and obtain a degree in engineering physics.

The course of study for these transfer students is as follows:

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Physics 321 Intro. Mod... 3		Physics 322 Intro. Mod... 3		Physics 323 Intro. Nuclear 3	
Physics 325 Electricity .. 4		Physics 326 Electricity .. 4		Elect. Engr. 301	
Chem. 355 Physical	3	Physics 340 Sound	3	Elect. Mach.	5
Engl. 102 Composition	3	Chem. 356 Physical	4	Engl. 103 Composition ..	3
Math. 423 Adv. Calc. & Vect. Anal.	3	Math. 421 Diff. Equations 3		Math. 422 Diff. Equations 3	
Mech. Engr. 201 Metal Castings	1		17	Mech. Engr. 202 Welding 1	
	17			Mech. Engr. 203 Metal Mach.	1
					16

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Physics 491 Mechanics . . .	4	Physics 360 Optics	3	Physics 361 Optics	3
Physics 495 Exptl. Atomic	3	Physics 492 Mechanics . . .	4	Physics 497 Exptl. Nuclear	3
Elect. Engr. 420 Vac.		Physics 496 Exptl. Atomic	3	Elect. Engr. 440 Vac.	
Tubes	4	Elect. Engr. 457 Indust.		Tubes	6
Mech. Engr. 260 Mechan-		Control	3	Electives	4
ism or Met. Engr. 441		Electives	3		
Phys. Met.	3		16		16
	14				

Some of these courses will have been taken in the first two years, and the vacancies thereby created will be considered advisory electives. Physics 350 must be taken as one such elective.

Qualified students may, as before, take Physics 499 in the senior year.

ADVANCED DEGREES

The Department of Physics offers programs leading to the degrees of Master of Science and Doctor of Philosophy. General University requirements are outlined in the *Graduate School Bulletin*. 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, physical optics, heat, mechanics, atomic and nuclear physics, and advanced calculus. Deficiencies may cause a delay of as much as a year. A reading knowledge of German or French is desirable.

MASTER OF SCIENCE. The Department requires candidates for this degree to take four courses selected from those in the 500 series. A grade-point average of less than 3.00, unless there are compensating qualifications, will prevent the student from becoming a candidate for the degree. A thesis describing the results of a research investigation must be submitted. Each candidate will take the yearly departmental comprehensive examination until he has passed his oral master's examination.

Students in other fields desiring a minor in physics for a master's degree must submit 18 credits in undergraduate courses selected from those numbered above 300 and one graduate course.

DOCTOR OF PHILOSOPHY. The Department requires basic training equivalent to the courses 505, 506, 509, 510, 513, 514, 515, 517, 518, 524, 525, and 528, as well as Mathematics 527, 528, and 529 (Methods of Mathematical Physics). Additional courses of interest will be selected by the student and his supervisory committee. A grade-point average of less than 3.00, unless there are compensating qualifications, will prevent the student from becoming a candidate for this degree.

Each Spring Quarter, a comprehensive examination is given to each student who has not passed his general examination. The former is mainly written and is designed to indicate the student's growth of understanding. The latter is an individual oral examination given by the student's supervisory committee, generally after about two years of graduate study and satisfaction of the language requirement. Completion of this examination signifies admission to candidacy and an intensification of research effort.

The Department recognizes German and French as suitable foreign languages. Others may be substituted with the approval of the supervisory committee and the Graduate School.

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)** **Staff**
A nontechnical treatment of the various fields in physics.
- 101, 102, 103 General Physics (4,4,4)** **Staff**
101: mechanics and sound. Prerequisite, one year of high school physics and concurrent registration in 107. 102: electricity and magnetism. Prerequisite, 101 and concurrent registration in 108. 103: heat, light, and modern physics. Prerequisite, 101 and concurrent registration in 109. No credit for 101, 102, and 103 without credit in 107, 108, and 109 respectively.
- 104, 105, 106 General Physics (4,4,4)** **Staff**
104: mechanics and sound. Prerequisite, concurrent registration in 107. 105: electricity and magnetism. Prerequisite, 104 and concurrent registration in 108. 106: heat, light, and modern physics. Prerequisite, 104 and concurrent registration in 109. No credit for 104, 105, and 106 without credit in 107, 108, and 109 respectively.
- 107, 108, 109 General Physics Laboratory (1,1,1)** **Sanderman**
107: mechanics and sound laboratory to be taken concurrently with either 101 or 104. 108: electricity and magnetism laboratory to be taken concurrently with either 102 or 105. 109: heat and light laboratory to be taken concurrently with either 103 or 106.
- 112, 113 Physics for Architecture Students (5,5)** **Staff**
General physics with special emphasis on acoustics, heating, ventilating, and illumination. Prerequisite, 101 or 104 with concurrent registration in 107.
- 121, 122, 123 General Physics (5,5,5)** **Kenworthy**
For physical science students. 121: mechanics and sound. Prerequisite, one year of high school physics. 122: electricity and magnetism. Prerequisite, 121. 123: heat and light. Prerequisite, 121.
- 154 Elementary Photography (4)** **Higgs**
Principles and practice of elementary photographic processes. Laboratory experience in fundamental photographic procedures. Prerequisite, high school physics or chemistry.
- 170 Physics for Nurses (5)** **Sanderman**
Selected physical theories and principles and their applications to various nursing situations and to hospital equipment.
- 217, 218, 219 Physics for Engineers (4,4,4)** **Henderson**
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. Prerequisite, 217 and a concurrent calculus course. 219: heat, sound, and light. Geometrical and physical optics. Prerequisites, 217 and calculus.
- 315 Photography (4)** **Higgs**
Photographic processes; photographic optics; lighting, and color photography; application of photography to the sciences and arts. Laboratory. Prerequisites, 154 or equivalent, and permission.
- 320 Introduction to Modern Physics for Engineers (3)** **Staff**
Emphasis is placed upon discoveries in modern physics which are particularly basic to applications in engineering, including the electrical nature of matter, elementary particles, interaction of radiation with matter, nuclear disintegration. Solid state, semiconductors, and nuclear reactors are especially treated. Prerequisite, 219 or permission.
- 321, 322 Introduction to Modern Physics (3,3)** **Manley**
Concepts of the particles of modern physics; the atomic character of electricity; the photon character of radiation; the positron; the neutron; the meson; the existence of isotopes; the nature of cosmic rays; natural radioactivity. Prerequisite, 103, 106 with concurrent registration in 109, or 123.
- 323 Introductory Nuclear Physics (3)** **Manley**
A study of nuclear reactions, including fission, particle accelerators, and nuclear instrumentation; cosmic rays; astrophysics; applications of nuclear phenomena in atomic energy; use of tracers, etc. Prerequisite, 322.
- 325, 326 Electricity (4,4)** **Streib**
Elementary theory of direct, alternating, and transient currents in linear circuits. Electrostatics and electromagnetism. Laboratory use of meters, potentiometers, bridges, and electronic instruments. Concurrent registration in Mathematics 423 is recommended. Prerequisites, 103, 106 with concurrent registration in 109, or 123, and calculus.
- 327 Low- and High-Frequency Measurements (4)** **Streib**
Measurement of frequency and of impedance as a function of frequency; production, amplification, propagation, and detection of electromagnetic oscillations at low- and high-frequencies; analysis of electromagnetic circuit and field conditions. Laboratory. Prerequisites, 326 and calculus.
- 340 Sound (3)** **Kenworthy**
The sources of sound, transmission in different media, and elements of acoustics. Laboratory. Prerequisite, 103, 106 with concurrent registration in 109, or 123.
- 350 Heat and Introduction to Thermodynamics and Kinetic Theory (3)** **Sanderman**
Concepts of heat and energy changes; experimental laws of heat and thermal reactions;

- ideas of reversibility, entropy, etc.; application of general principles to specific cases. Laboratory. Prerequisite, 103, 106 with concurrent registration in 109, or 123.
- 360, 361 Optics (3,3)** **Clark**
Thick lenses and lens combinations; wave motion; interference and diffraction; propagation in moving media; polarization; dispersion; introduction to the electromagnetic and the discrete character of light. Laboratory. Prerequisites, 103, 106 with concurrent registration in 109, or 123, and calculus.
- 367, 368, 369 Special Problems (*,*,*)** **Staff**
Prerequisite, permission.
- 380 History of Physics (2)** **Staff**
Prerequisite, 103, 106 with concurrent registration in 109, or 123.
- 491, 492 Mechanics (4,4)** **Geballe**
Lectures and laboratory work in classical mechanics. Prerequisites, Mathematics 253 and 30 credits in physics.
- 495, 496 Experimental Atomic Physics (3,3)** **Higgs**
Phenomena representative of modern experimental atomic physics. Laboratory. Prerequisite, 30 credits in physics.
- 497 Experimental Nuclear Physics (3)** **Farwell**
The experiments are examples of the basic techniques and measurements discussed in the lectures, including measurement of beta and gamma ray energies, mean life of beta decay, and meson to proton mass ratio. Prerequisite, 320, 323, or permission.
- 499 Undergraduate Research (2-5, maximum 5)** **Staff**
Supervised individual research leading to Physics Honors award. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 505, 506 Advanced Mechanics (3,3)** **Staff**
Dynamics of a particle and of rigid bodies; generalized coordinates and Lagrangian theory; variational principles. Hamilton's equations of motion, vibration, and normal coordinates.
- 509, 510 Atomic, Molecular, and Nuclear Structure (3,3)** **Staff**
Energy-level systems of nuclear, atomic, and molecular aggregates of elementary particles studied primarily on the vector model and other phenomenologic 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)** **Staff**
The properties of electric and magnetic fields as boundary value problems; application of harmonic function and conformal representation; electrodynamics and electromagnetic waves in empty space and material media.
- 517, 518, 519 Quantum Mechanics (4,4,3)** **Staff**
Prerequisite, 513 for 518.
- 520 Seminar (1-2)** **Staff**
Seminars in the following subjects meet regularly: cosmic rays, gaseous electronics and spectroscopy, nuclear physics, theoretical physics, and solid state physics. Prerequisite, permission.
- 524 Thermodynamics (3)** **Staff**
- 525 Statistical Mechanics (3)** **Staff**
Prerequisite, 517.
- 528 Current Problems in Physics (2)** **Staff**
Discussion of several active research fields; survey of the background of each field; discussion of generally accepted concepts and those at variance with experiment or untested; detailed study of at least one recent paper in the field.
- 550 X Rays (3)** **Staff**
(Not offered 1955-57.) Prerequisite, 509.
- 552 Conduction through Gases (3)** **Staff**
Prerequisite, 509.
- 558 Cosmic Rays (3)** **Staff**
Prerequisite, 510.
- 560 Theoretical Nuclear Physics (3)** **Staff**
Prerequisites, 510 and 518.
- 561 Theoretical Nuclear Physics (3)** **Staff**
Prerequisite, 560.
- 562 Theory of Spectra (3)** **Staff**
(Offered alternate years; offered 1956-57.) Prerequisites, 509 and 518.
- 564 Relativity (3)** **Staff**
(Offered alternate years; offered 1955-56.) Prerequisites, 506 and 515.
- 566 Theory of Collisions (3)** **Staff**
(Offered alternate years; offered 1956-57.) Prerequisite, 518.
- 568 Theory of Solids (3)** **Staff**
Prerequisite, 518.

570 Radiation Theory (3) (Offered alternate years; offered 1955-56.) Prerequisite, 519.	Staff
572 Foundations of Statistical Mechanics (3) (Offered alternate years; offered 1956-57.)	Staff
574 Atomic and Molecular Interactions (3) (Not offered 1955-57.)	Staff
576 Selected Topics in Experimental Physics (*, maximum 6) Prerequisite, permission.	Staff
578 Selected Topics in Theoretical Physics (*, maximum 6) Prerequisite, permission.	Staff
600 Research (*) Research currently is in progress in the following fields: acoustics, cosmic rays, gaseous electronics, low temperature physics, magnetic resonance phenomena, natural radioactivity, nuclear physics, solid state physics, spectroscopy, and theoretical physics. Prerequisite, permission.	Staff
Thesis (*) Prerequisite, permission.	Staff

POLITICAL SCIENCE

Executive Officer: KENNETH C. COLE, 206 Smith Hall

The Department of Political Science offers courses leading to the degrees of Bachelor of Arts, Master of Arts, Master of Public Administration, and Doctor of Philosophy. For undergraduate students, it offers three elective curricula leading to the bachelor's degree. The general curriculum is for students interested in a flexible liberal arts program; the preprofessional program in international relations is for students preparing to enter the Foreign Service, the State Department, or international agencies; and the preprofessional program in public administration is for those who plan careers in other branches of government service. In addition, the Department offers first and second teaching areas for students in the College of Education.

The Bureau of Governmental Research and Services provides research and consultative services for state and local agencies and conducts the annual Institute of Government. Other organizations functioning through the Department include the Institute of Public Affairs and the Institute of International Affairs.

The Department cooperates with other departments and schools in a program leading to the degree of Master of Arts in Urban Planning (see the *Graduate School Bulletin*).

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. In the general curriculum, a total of 50 credits in political science courses is required. These must include: Political Science 202; 201 or 203; 328, 336, or 427; 411, 412, or 418; any three of 445, 450, 460, and 470; and 15 credits in political science electives.

CURRICULUM IN INTERNATIONAL RELATIONS. The requirements are: Political Science 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 (Introduction to Economics); Geography 100 (Introductory Human Geography); and Sociology 110 (Survey of Sociology).

A reading and translating knowledge of at least one modern foreign language is essential. To develop the necessary language proficiency, not less than 30 University credits in one language, or the equivalent in high school and University work combined, will be needed.

CURRICULUM IN PUBLIC ADMINISTRATION. Recommended courses are: Political Science 201, 202, 362, 412, 427, 450, 460, 470, 471, 472, and if possible, 370 or 451, 376, and 475; Accounting 150 (Fundamentals of Accounting); Economics 200 (Introduction to Economics), 201 (Principles of Economics), 301 (National Income Analysis), 350, and 451 (Public Finance and Taxation I and II); Business Statistics 201 (Statistical Analysis) or Mathematics 281 (Elements of Statistical Method); Psychology 100 (General Psychology); and History 241 (Survey of the History of the United States). 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.

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 courses included in degree programs must consist of those numbered 500 or above.

MASTER OF ARTS. A total of 45 credits is normally required, including 9 allowed for the thesis. In exceptional cases, a candidate's committee may reduce the total credits including thesis to as few as 36. The candidate must present a field of concentration and two supporting 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. The Institute of Public Affairs offers a two-year professional curriculum leading to this degree. The purpose is to prepare students for administrative positions in the public service rather than to train technical specialists, teachers, or research technicians. The program consists of instruction in six fields: the administrative process, the development of American institutions, the economics of public activity, public law, public management, and administrative problems. Three fields are studied each year, and students undertake the analysis of various problems in each field. Every student is expected to complete an approved internship during the summer between the first and second years.

The public administration curriculum is limited to a small group of graduate students who show special promise of success in the public service. A broad educational background in the social sciences is desirable.

DOCTOR OF PHILOSOPHY. 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)** **Gottfried, Hitchner**
The nature and function of political institutions in the major national systems.
- 202 American Government and Politics (5)** **Bone, Gottfried, Shipman**
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

- 362 Introduction to Public Law (5)** **Cole**
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 the major political concepts of the Western world, 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 in political thinking from the eighteenth century to the present, as a basis for contemporary philosophies of democracy, communism, and fascism. The background of 411 is recommended.
- 414 Oriental Political Thought (5)** **Staff**
Theories of the Oriental state as exhibited in the writings of statesmen and philosophers.
- 415 Analytical Political Theory (5)** **Harbold**
Analysis of the major concepts of political theory, such as state, authority, sovereignty, law, liberty, rights, and equality, from a nonhistorical viewpoint.
- 418 The Evolution of Western Political Institutions (5)** **Harbold**
The conflict between law and force in conditioning the character of modern government.
- 460 Introduction to Constitutional Law (5)** **Cole**
Growth and development of the United States Constitution as reflected in decisions of the Supreme Court; political, social, and economic effects.

GOVERNMENT, POLITICS, AND ADMINISTRATION

- 350 Government and Interest Groups (5)** **Bone**
Agrarian, labor, professional, business, and ethnic interests in politics; impact on representative institutions and governmental processes.
- 351 The American Democracy (5)** **Gottfried**
Nationalization and federalism; regionalism; the presidency; the representative system; judicial institutions; reconciliation of policy and administration.
- 353 Theory and Practice of Government in the State of Washington (3)** **Gore**
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 general business, public utilities, agriculture, banking, investments, and social welfare.
- 376 State and Local Government and Administration (5)** **Webster**
Structure, functions, procedures, and suggested reorganization, with special reference to the state of Washington and its units of local government.
- 378 Rural Government (5)** **Gore**
Structure of rural local government: nature and legal status of counties, townships, special districts, and other governmental units. Problems of metropolitan areas: powers and functions; relationship to state and federal governments; revenue; analysis of proposals for reform and reorganization.
- 450 Political Parties and Elections (5)** **Bone**
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 (3)** **Gottfried**
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)** **Gore**
Basic relationship of administration to other agencies of government.
- 471 Administrative Management (5)** **Gore**
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)** **Shipman**
Creation of administrative authorities, scope of limitations on their powers, remedies, and judicial control of administrative action.
- 475 Problems of Municipal Government and Administration (5)** **Webster**
The city charter; relationship to the state and other local units; municipal functions and services, with reference to municipalities in the state of Washington.

INTERNATIONAL LAW, ORGANIZATION, AND RELATIONS

- 321 American Foreign Policy (3)** **Gottfried**
Major policies as modified by recent developments; constitutional framework; principal factors in formulation and execution of foreign policy; major policies as modified by recent developments.
- 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.
- 324 Contemporary International Relations in Europe (5)** **Hitchner**
European diplomacy and international relations between the two world wars; recent and 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.
- 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-Prosperty 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)** **Ballis**
Nature and objectives of Soviet foreign policy; ideological and strategic factors; bolshevism versus fascism; Comintern and Cominform; League of Nations and United Nations; East-West conflict.
- 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**
Egypt, Turkey, and Afghanistan; mandates; critical problems today.
- 432 American Foreign Policy in the Far East (5)** **Michael**
Relationship to diplomacy, trade, and internal politics.

FOREIGN AND COMPARATIVE GOVERNMENT

- 343 Modern British Government (5)** **Hitchner**
Contemporary British government and politics; current problems of the parliamentary system.
- 344 Chinese Government (5)** **Staff**
Imperial government; transition period; national government; present forms of local government; constitutional draft; present political situation.
- 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)** **Hitchner**
Modern government and politics of France, Germany, and Switzerland.
- 347 Governments of Eastern Europe (5)** **Ballis**
Survey of the Soviet model and the East European satellites: Hungary, Rumania, Bulgaria, Albania, Czechoslovakia, Poland, Yugoslavia, and Eastern Germany.

- 441 Political Institutions of the Soviet Union (5)** **Ballis**
Dynamics of Soviet political theory; Leninism and Stalinism; forms and functions of governmental and party institutions; Soviet constitutionalism, federalism, and legal and administrative agencies.
- 445 Comparative Political Institutions (5)** **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)** **Staff**
Open to qualified majors in the last quarter of the senior year. Prerequisite, permission of Department.
- 499 Individual Conference and Research (2-5)** **Staff**
Open to qualified majors in the senior year. Prerequisite, permission of instructor.

COURSES FOR GRADUATES ONLY

- 506, 507, 508 Graduate Seminar (3,3,3)** **Martin**
Oral and written studies in contemporary problems, domestic and foreign.
- 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 (3-5)** **Harbold**
Selected topics, historical and conceptual, national, regional, and universal.
- 515 Methods and Research in Political Science (3-5)** **Harbold**
Political science and the social sciences; methods of research; bibliography of general and special fields.
- 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.
- 528, 530 Seminar in Regional Foreign Policy (3,3)** **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.
- 540J Seminar on the Soviet Union: Government and Diplomacy (4, maximum 8)** **Ballis**
Offered jointly with the Far Eastern and Russian Institute. Prerequisite, permission.
- 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**
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)** **Shipman**
Forms and characteristics of administrative activity, organization, and function; the executive; administrative discretion; administrative legislation and adjudication; responsibility and control.
- 573-574-575 Public Management (3-3-3)** **Shipman**
Methods and problems of managing public activities, emphasizing work supervision and control, management-staff problems, personnel administration, budgetary and fiscal administration, organization and methods analysis, reporting techniques, program planning and control. Prerequisite, admission to graduate curriculum in public administration or special approval.
- 576-577-578 Administrative Problems (3-3-3)** **Gore**
Supervised analysis of selected administrative problems in local, state, and national government and the preparation of action reports. Prerequisite, admission to graduate curriculum in public administration.
- 580 Seminar in State and Local Government (3)** **Webster**
Critical analysis of governmental structure: areas of administration, functions, limitations on state and local authority, regionalism, and forms of regional control.

581 Seminar in Public Policy in Planning (5)**Webster**

Planning theory; law and administration; legal basis of governmental planning, with emphasis upon state, local, and regional government; the planning agency in government; general scope and limitations of powers and functions; policy determination and public relations; coordination with administrative departments; drafting enabling legislation, planning regulations, and zoning and subdivision ordinances.

600 Research (*)**Staff****Thesis (*)****Staff****PSYCHOLOGY****Executive Officer: ROGER B. LOUCKS, 335 Savery Hall**

The Department of Psychology offers courses leading to the degrees of Bachelor of Science, Master of Science, and Doctor of Philosophy. In addition, it offers first and second teaching areas for students in the College of Education.

The Department includes the Institute of Child Development consisting of the Nursery School, Child Development Clinic, and Research Laboratory. Undergraduate courses are offered to those interested in the child area in general as well as those desiring to major in Nursery School and Child Study. Graduate courses are offered in child clinical psychology and related fields.

BACHELOR OF SCIENCE

In this elective curriculum, at least 36 credits in psychology are required. Courses must include: Psychology 100, 200, 301; one course from 400, 416, 427; one course from 406, 426, 441, 484, 499; and 11 credits in psychology electives, preferably chosen from 308, 345, 346, 401, 402, 407-408. Students majoring in psychology are required to maintain a grade-point average of 2.50 in all psychology courses.

ADVANCED DEGREES

Students who intend to work toward the degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School 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)****McKeever, Staff**

Introduction to the principles of human behavior.

101 Psychology of Adjustment (5)**Guthrie, Wilson**

Application of psychological principles to the problems of everyday life. Prerequisite, 100.

135 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.

200 Advanced General Psychology (5)**Hermans**

Fundamental principles and experimental methods of psychology, with laboratory demonstrations. For majors only. Prerequisite, 100.

245 Individual Differences (2)**Edwards**

The interrelationships and patternings of human traits and capacities. Prerequisite, 100.

301 Statistical Methods (5)**Edwards, 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. Prerequisite, 200 or permission.

305 Abnormal Psychology (5)**Strother**

Introduction to the field of psychopathology; analysis of the forms, nature, and causes of disorders of behavior and personality. Prerequisite, 15 credits in psychology, including 101.

306 Child Psychology (5)**Bijou, Katcher**

The psychological development of the child and the antecedent conditions from infancy to adolescence. Prerequisite, 100.

- 307 Psychology of Adolescence (3)** **Katcher**
A survey of the physical and personality development of the adolescent. Prerequisite, 306.
- 308 Genetic Psychology (5)** **Bijou, Katcher**
A comparative approach to problems of psychological development with special emphasis on the effects of early childhood experience on later behavior. Prerequisites, 100 and a major in psychology or sociology.
- 309 Psychology of Exceptional Children (3)** **Bijou**
Behavior patterns of exceptional children, such as the mentally retarded, the physically handicapped, and superior children. Prerequisite, 306 or equivalent.
- 320 Directed Observation of Child Behavior in the Nursery School (2)** **Harris**
Analysis of developmental trends and age-level expectancies of the preschool-age child with interpretations of typical behavior manifestations. Prerequisite, 100 or equivalent.
- 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.
- 322 Practicum in the Nursery School (10)** **Staff**
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.
- 323 Advanced Practicum in Nursery School (10)** **Staff**
Program organization, teacher guidance of children in groups. Study of individual children through record-making. Use of research data in child development for oral presentation to adult groups. Attendance at monthly parent meetings, visits to day nurseries. Prerequisite, 322.
- 335 Industrial Psychology (3)** **Staff**
Applications of psychological principles and methods of investigation to problems of industrial relations, employee selection, training, and motivation; factors influencing morale and employee productivity; criteria of job proficiency. Prerequisite, 100.
- 336 Industrial Psychology for Engineers (3)** **Culbert**
Important psychological problems in business and industry, stressing awareness of psychological problems rather than techniques of solving them. Primarily for engineers.
- 337 Vocational Psychology (3)** **Staff**
Employment trends; analysis and classification of occupations and of worker characteristics; principles of personnel selection and individual guidance. Prerequisite, 100.
- 345 Social Psychology (3)** **Culbert, Edwards, Guthrie**
Psychology of human institutions. Prerequisite, 100.
- 346 Personality (5)** **Katcher**
A survey of personality theories and research, with special emphasis on Freud, Lewin, and Miller and Dollard. 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 the direction and efficiency of effort. Prerequisite, 400.
- 406 Experimental Psychology (5)** **Loucks**
Practice in planning, conducting, and reporting laboratory research. Prerequisite, 301.
- 407-408 History of Psychology (3-3)** **Esper**
Experimental and theoretical backgrounds of modern psychology, especially in the nineteenth century. Prerequisites, 100 and permission.
- 413 Tests and Measurements (5)** **Heathers**
Standard group psychological tests and their theoretical and statistical bases; practice in administering and scoring group tests. Prerequisite, 301.
- 416 Animal Behavior (3)** **Horton**
Principles of animal behavior in relation to human behavior, with special emphasis upon the principles underlying the organism's mode of adjusting to its environment. Prerequisite, permission.
- 421 The Neural Basis of Behavior (5)** **Esper**
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. Prerequisite, 200 or 421 or permission.

- 426 Animal Laboratory (5)** **Smith**
Supervised training in experimental work with animals. Prerequisite, 301.
- 427 Conditioning (5)** **Loucks**
Experimental work on conditioning, with emphasis on specific research techniques; significance for the several fields of psychology. Prerequisite, permission.
- 441 Perception (5)** **Culbert**
Lectures and supervised individual experiments. Prerequisites, 301 and permission.
- 446 Public Opinion Analysis (3)** **Edwards**
Nature and structure of public opinion. Propaganda and shifts in public opinion. Accuracy and validity of modern polling techniques. Construction of questionnaires for opinion surveys. Problems of interviewing and sampling in opinion research. Prerequisite, 301 or permission.
- 447 Psychology of Language (3)** **Esper**
Psychological principles applied to linguistic development and organization; relation of symbolism to human behavior. Prerequisite, permission.
- 448 Thinking and Problem Solving (3)** **Esper**
A survey of the experimental literature of concept formation and problem solving. Prerequisite, permission.
- 449 Psychology of Social Movements (3)** **Culbert**
The establishment of roles and stereotypes during the socialization of the individual; group organization, membership and leadership; social drift and control; conflict, crisis, change, and resistance to change. Prerequisite, 345.
- 462 Readings in Psychology (1-3, maximum 9)** **Staff**
Reading in special interest areas under supervision of staff members. Discussion of reading in conference with instructor. The name of the staff member with whom research will be done should be indicated in registration. Prerequisite, permission.
- 484 Laboratory in Child Behavior (5)** **Katcher**
Practice in designing experiments with children involving the use of a variety of measuring techniques; methods of analyzing and evaluating such data; handling of children as subjects for psychological research. Prerequisite, permission.
- 499 Undergraduate Research (1-3, maximum 9)** **Staff**
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 Theoretical Problems in Psychology (3)** **McKeever**
Analysis of the scientific method in the field of psychology and review of types of psychological constructs and major theoretical approaches. Prerequisite, permission.
- 507 Psychological Development of the Child (2)** **Katcher**
Sequences and factors in the psychological development of the average child from preschool through the adolescent ages. Prerequisite, permission.
- 509 Problems in Developmental Psychology (3)** **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 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. 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. 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. Prerequisite, 517 or permission.
- 520 Seminar (2)** **Staff**
May be repeated for credit. Prerequisite, permission.
- 522 Seminar in General Psychology (2)** **McKeever**
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**
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, 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)** Guthrie
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.
- 581 Individual Testing (Children) (5)** Bijou
Construction, administration, and scoring of individual mental tests used with children. Prerequisites, 306, 413, and permission.
- 582 Individual Testing (Adults) (5)** Heathers
Construction, administration, and scoring of clinical psychological tests used with adults. Prerequisites, 305, 413, and permission.
- 587 Clinical Pro-seminar I: Personality Theory (5)** Katcher
The theories of personality development relating to the psychodynamics of personality organization. Prerequisite, permission.
- 588 Clinical Pro-seminar II: Psychopathology (5)** Bijou
Major historical and contemporary theories of psychopathology and research in the main categories of the behavior disorders. Prerequisite, 587.
- 589 Clinical Pro-seminar III: Theories and Systems of Psychotherapy (5)** Strother
A review of some of the principal theories and systems of psychotherapy. Prerequisite, 588.
- 591 Projective Personality Tests (3)** Strother
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 (5)** Strother
Training in interpretation of normal Rorschach records; review of literature on the use of the Rorschach in psychopathology. Prerequisite, 591 or 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 Graduate School of Social Work.
- 600 Research (*)** Staff
The name of the staff member with whom research will be done should be indicated in registration. Prerequisite, permission.
- Thesis (*)** Staff

PUBLIC HEALTH AND PREVENTIVE MEDICINE

Executive Officer: B506 Health Sciences Building

The Department of Public Health and Preventive Medicine, a part of the School of Medicine, offers professional courses 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 public health statistics, sanitary science, or health education.

For students in the College of Education, the Department offers a health education teaching area which may be combined with an area in physical education, a science, a social science, or other second area. For combinations with physical education, counseling is provided by the School of Physical and Health Education (see page 165); for other combinations, counseling is provided by the Department of Public Health and Preventive Medicine. Requirements for all teaching areas 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 *Schools of Medicine and Dentistry Bulletin*). For this program, the health education option is prescribed.

BACHELOR OF SCIENCE

A minimum of 36 credits in public health courses is necessary for the Bachelor of Science degree in any of the three options. 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.

OPTION A, PUBLIC HEALTH STATISTICS**First Year**

FIRST QUARTER	CREDITS
Engl. 101 Composition	3
Pol. Sci. 201 Mod. Gov.	5
Soc. 110 Survey	5
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	<hr/> 13-16

SECOND QUARTER	CREDITS
Chem. 101 General	5
Engl. 102 Composition	3
Speech 120 Public Speaking	5
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	<hr/> 15-18

THIRD QUARTER	CREDITS
Chem. 230 Organic	5
Engl. 103 Composition	3
Electives	5
Phys. Educ. 110 or 175	
Health	2
Phys. Educ. activity	1
ROTC	2-3
	<hr/> 15-18

Second Year

FIRST QUARTER	CREDITS
Biol. 101J- or Zool.	
111 General	5
Econ. 211 General	3
Math. 104 Plane Trig.	3
Electives	2
ROTC	2-3
	<hr/> 13-16

SECOND QUARTER	CREDITS
Biol. 102J or Zool.	
112 General	5
Math. 105 College Algebra	5
Electives	5
ROTC	2-3
	<hr/> 15-18

THIRD QUARTER	CREDITS
Math. 153 Anal. Geom.	
& Calc.	5
Psychol. 101 Adjustment	5
Sociol. 223 Social Stat.	5
ROTC	2-3
	<hr/> 15-18

Third Year

FIRST QUARTER	CREDITS
Public Health 330	
Environ. San.	3
Public Health 461 School	
& Comm. Health	5
Electives	7
	<hr/> 15

SECOND QUARTER	CREDITS
Micro. 301 General	5
Electives	10
	<hr/> 15

THIRD QUARTER	CREDITS
Public Health 402	
Comm. Disease	3
Public Health 412 Public	
Health Org. & Services	3
Electives	9
	<hr/> 15

Fourth Year

FIRST QUARTER	CREDITS
Public Health 470	
Statistics	2
Public Health 472 Applied	
Statistics	4
Electives	8
	<hr/> 14

SECOND QUARTER	CREDITS
Public Health 464 Educ.	
Techniques	3
Biol. 351 Human Genetics	3
Electives	9
	<hr/> 15

THIRD QUARTER	CREDITS
Public Health 476 Adv.	
Statistics	5
Public Health 477 Biol.	
Assay	3
Sociol. 331 Population	
Problems	5
Electives	2
	<hr/> 15

Summer

CREDITS
Public Health 482 Field Practice
5

OPTION B, SANITARY SCIENCE**First Year**

FIRST QUARTER	CREDITS
Chem. 111 or 115 General	5
Engl. 101 Composition	3
Physics 101 or 104 General	4
Physics 107 General Lab.	1
Phys. Educ. 110 or 175	
Health	2
Phys. Educ. activity	1
ROTC	2-3
	<hr/> 16-19

SECOND QUARTER	CREDITS
Chem. 112 or 116 General	5
Engl. 102 Composition	3
Physics 102 or 105 General	4
Physics 108 General Lab.	1
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	<hr/> 16-19

THIRD QUARTER	CREDITS
Chem. 113 Elem. Qual.	5
Engl. 103 Composition	3
Physics 103 or 106 General	4
Physics 109 General Lab.	1
Math. 104 Plane Trig.	3
Phys. Educ. activity	1
ROTC	2-3
	<hr/> 17-20

Second Year

FIRST QUARTER	CREDITS
Chem. 221 Quant. Anal.	5
Zool. 111 General	5
Speech 120 Public Speaking . . .	5
ROTC	2-3
	<hr/> 15-18

SECOND QUARTER	CREDITS
Chem. 230 Organic	5
*Chem. 231 Organic and (3)	
Chem. 241 Organic Lab. (2)	
Sociol. 110 Survey	5
Zool. 112 General	5
ROTC	2-3
	<hr/> 15-18

THIRD QUARTER	CREDITS
*Chem. 232 Organic	3
*Chem. 242 Organic Lab.	2
Psychol. 100 General	5
*Zool. 456 Vert. Embryol.	5
ROTC	2-3
	<hr/> 15-18

Third Year

FIRST QUARTER	CREDITS
Public Health 412 Public	
Health Org. & Services	3
Civil Engr. 350 Intro.	
San. Engr.	3
Pol. Sci. 201 Mod. Gov.	5
Bus. Law 307 Bus. Law	3
Electives	2
	<hr/> 16

SECOND QUARTER	CREDITS
Public Health 470	
Statistics	2
Econ. 211 General	3
Geology 310 Engr.	5
Electives or Speech	5
	<hr/> 15

THIRD QUARTER	CREDITS
Public Health 402 Comm.	
Disease	3
Educ. 180 Mech. Draw.	3
Micro. 301 General	5
Electives	5
	<hr/> 16

Fourth Year

FIRST QUARTER	CREDITS
Public Health 432 Food	
San.	3
Public Health 438 Fac.	
Design	3
Arch. 235 Mech. Equip.	
of Bldgs.	2
Electives	8
	<hr/> 16

SECOND QUARTER	CREDITS
Public Health 434 Milk	
San.	3
Public Health 439 Environ.	
Utilities	2
Public Health 453 Indust.	
Hyg. Tech.	3
Public Health 464 Educ.	
Techniques	3
Public Health 480	
Problems	2-6
Arch. 236 Mech. Equip.	
of Bldgs.	2
	<hr/> 15-19

THIRD QUARTER	CREDITS
Public Health 435 Vector	
Control	3
Public Health 480 Problems	
Arch. 237 Mech. Equip.	
of Bldgs.	2
Micro. 204 Parasitol.	4
Electives	5
	<hr/> 16

Summer

CREDITS

Public Health 482, 483, 484 Field Practice . . . 15

*Optional for Public Health, Sanitary Science Curriculum.

OPTION C, HEALTH EDUCATION

First Year

FIRST QUARTER	CREDITS
Engl. 101 Composition	3
Pol. Sci. 201 Mod. Gov.	5
Sociol. 110 Survey	5
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	<hr/> 16-19

SECOND QUARTER	CREDITS
Chem. 101 General	5
Engl. 102 Composition	3
Speech 100 Basic Speech	
Improvement	5
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	<hr/> 16-19

THIRD QUARTER	CREDITS
Chem. 230 Organic	5
Engl. 103 Composition	3
Speech 120 Pub. Speaking . . .	5
Phys. Educ. 110 or 175	
Health	2
Phys. Educ. activity	1
ROTC	2-3
	<hr/> 16-19

Second Year

FIRST QUARTER	CREDITS
Biology 101J- or	
Zool. 111 General	5
Economics 211 General	3
Phys. Educ. 292 First	
Aid and Safety	3
Physics 100 Survey	5
ROTC	2-3
	<hr/> 16-19

SECOND QUARTER	CREDITS
Biology -102J or	
Zool. 112 General	5
Phys. Educ. 291 Hygiene . . .	3
Psychol. 101 General	5
Electives	2
ROTC	2-3
	<hr/> 15-18

THIRD QUARTER	CREDITS
Anatomy 301 General	4
Psychol. 101 Adjustment	5
Zool. 208 Elem. Human	
Physiol.	5
Electives	1
ROTC	2-3
	<hr/> 15-18

Third Year

FIRST QUARTER	CREDITS
Public Health 330 Environ.	
San.	3
Public Health 461 School	
& Comm. Health	5
Speech 332 Group	
Discussion	3
Electives	5
	<hr/> 16

SECOND QUARTER	CREDITS
Home Ec. 300 Nutrition	2
Micro. 301 General	5
Electives	8
	<hr/> 15

THIRD QUARTER	CREDITS
Public Health 402 Comm.	
Disease	3
Public Health 412 Public	
Health Org. and Services . . .	3
Conjoint 496 Concept of	
Child	3
Electives	6
	<hr/> 15

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Public Health 470 Statistics	2	Public Health 451 Indust. Hyg.	3	Public Health 482, 483, 484 Field Practice	15
Public Health 492J Internal Health	2	Public Health 463 Comm. Org. for Health Educ.	3		
Psychiatry 450 Personality Develop.	2	Public Health 464 Health Educ. Techniques	3		
Electives	9	Electives	6		
	15		15		

COURSES FOR UNDERGRADUATES

- Conjoint 295 Introduction to Normal Growth and Development (2)** **Deisher, Staff**
Study of the child from the standpoint of normal growth and development and nutritional and emotional needs. Offered jointly by the Departments of Pediatrics and Public Health and Preventive Medicine. Prerequisite, permission.
- Conjoint 296 Introduction to Normal Growth and Development (2)** **Deisher, Staff**
This course is an introduction to normal growth and development of children from school age through adolescence, including presentation of case material. Offered jointly by the Departments of Pediatrics and Public Health and Preventive Medicine. Prerequisite, Conjoint 295.
- 301 Causes and Control of Communicable Diseases (3)** **Staff**
Introductory course for students without laboratory training. Prerequisite, junior standing or permission.
- 330 Introduction to Environmental Sanitation (3)** **Hatlen**
Environmental control of disease transmission.
- 402 Communicable Disease Control (3)** **Staff**
Public health methods for the control of common communicable diseases. For science majors. Prerequisite, Microbiology 301 or equivalent.
- 412 Public Health Organizations and Services (3)** **Staff**
Study of local, national, and international public health services. Prerequisites, 301, 402, or permission.
- 432 Food Sanitation (3)** **Hatlen**
Public health methods of preventing transmission of disease through food. Prerequisite, 412.
- 434 Milk Sanitation (3)** **Hatlen**
Methods of preventing transmission of disease through dairy products. Prerequisite, 412.
- 435 Vector Control (3)** **Hatlen**
Current practical techniques of controlling rodent and insect factors in disease transmission. Prerequisite, 412.
- 438 Sanitation Facility Design (3)** **Dunn**
Mechanical design of public health facilities and equipment for sanitation. Prerequisite, 412 or permission.
- 439 Environmental Utilities (2)** **Dunn**
Plumbing, water, sewage, heating, ventilating, and light utilities in buildings, their design and operation for health and comfort. Prerequisite, 438.
- 451 Industrial Hygiene (3)** **McGill**
Methods of preventing industrial and occupational diseases and accidents. Prerequisite, permission.
- 453 Industrial Hygiene Techniques (3)** **Kusian, Staff**
Field and industrial-laboratory testing procedures employed by industrial health workers. Prerequisite, permission.
- 460J Field Training in Health Education (5)** **Vavra**
Five 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. Prerequisite, permission.
- 461 School and Community Health Programs (5)** **Mills, Vavra**
Organizational structure, function, and services of official and nonofficial community and school health agencies, with particular attention to the interrelated roles of teachers, physicians, nurses, and sanitarians. Prerequisite, junior standing.
- 463 Community Organization for Health Education (3)** **Vavra**
Trends and problems in community health education, including community organization. Prerequisite, 412 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, 412 or permission.
- 470 Introduction to Public Health Statistics (2)** **Bennett**
Statistical methods used in the compilation, interpretation, and presentation of vital data. Prerequisite, 412 or permission.

- 472 Applied Statistics in Health Sciences (4)** **Bennett**
Application of statistical techniques to biological and medical research; design and interpretation of experiments. Prerequisite, permission.
- 476 Advanced Public Health Statistics (5)** **Bennett**
Medical and public health record systems; life-table techniques and their application to chronic diseases; population studies and estimates; statistical methods in epidemiology; sample surveys. (Offered when demand is sufficient.) Prerequisites, 470 and 472.
- 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 (2-6)** **Staff**
Special assignments in the field of public health for interested students. (Offered by arrangement.) Prerequisite, permission.
- 482 Field Practice in Public Health (2-6)** **Staff**
An assignment to a local health department for supervised application of public health practices. Prerequisite, permission.
- 483 Field Practice in Public Health (6)** **Staff**
An assignment to a local health department for practice in program planning. Prerequisite, permission.
- 484 Field Practice in Public Health (3)** **Staff**
An assignment to a local health department for training in the utilization of community resources. Prerequisite, permission.
- 492J Problems in International Health (2)** **Leahy**
Conference and discussion based on a survey of international health organizations and services offered, by regions and countries. Offered jointly with the School of Nursing. Prerequisite, permission.
- Conjoint 496 Concept of the Child (3)** **Deisher, Baldwin, Staff**
An advanced course for students who desire a more complete understanding of the child from the standpoints of pediatrics, public health, psychiatry, psychology, nutrition, social work, and nursery education. Offered by the Departments of Pediatrics and Public Health and Preventive Medicine. Prerequisite, permission.
- 498 Undergraduate Thesis (*)** **Staff**
Prerequisite, permission.
- 499 Undergraduate Research (*)** **Staff**
Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 502J Applied Group Development Principles (3)** **Burke, Vavra**
A study of the factors that contribute to productive group-effort development in public health. Offered jointly with the School of Nursing. Prerequisites, permission, Speech 332 or equivalent, graduate standing, background in health field.

RADIO-TELEVISION

(See Communications, page 76.)

ROMANCE LANGUAGES AND LITERATURE

Executive Officer: **HOWARD L. NOSTRAND, 202 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, it offers a major program in French, Spanish, or Italian, as well as courses in Portuguese and literature courses in English translation. It also offers first and second teaching areas in French and Spanish for students in the College of Education. Curricula in Latin American studies and in an area study of France are provided by the Division of General Studies (see page 109).

The first two high school years of French or Spanish correspond to courses 101-102 and 103; the third high school year corresponds to courses 201, 202, and 203; and a fourth high school year, if devoted to advanced composition and conversation, corresponds to courses 301, 302, and 303. After one high school semester of French, the student normally should enter 101-; after two semesters

with a grade of C or D, -102 (for which only 2½ credits in this case will be granted), or with grade of A or B, 103; after three semesters, 103; after four semesters, 201. After one high school semester of Spanish, the student normally should enter 101-; after two semesters with grade of C or D, 121-201; or with grade of A or B, 103; after three semesters, 103; after four semesters, 201.

Any of the prerequisites for courses may be waived at the instructor's discretion, and students with A or high B standing are encouraged to skip one or more quarters between 101- and 301. Students who are uncertain about proper placement should consult an adviser in the Department.

Petitions for terminal credit in courses 101- should be addressed to the Department with the recommendation of the student's major adviser; petitions concerning Spanish 121- to the Graduation Committee.

BACHELOR OF ARTS

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.

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.

The Department recommends that students majoring in a Romance language elect the natural and social science sequences in the General Education program to fulfill group requirements, and the art and philosophy sequences in that program to acquire a background for literature courses. First-year students are required to attend three half-hour sessions weekly in the language laboratory.

FRENCH MAJOR. Forty-three credits (or equivalent) in French beyond 103; 201, 202, and 203 (or a third high school year of French); 301, 302, and 303 (or a fourth high school year); 304, 305, and 306; 327 or 328 or 329 or 330; 341; 358; 12 elective credits in courses numbered above 400, with some additional directed reading, and Romance 401.

SPANISH MAJOR. Forty-three credits (or equivalent) in Spanish beyond 103 are required: 201, 202, and 203 (or a third high school year of Spanish); 212; 301, 302, and 303 (or a fourth high school year); 304, 305, and 306; 327 or 328 or 329; 358; 15 elective credits in courses numbered above 400, with some additional directed reading; and Romance 401.

ITALIAN MAJOR. Individual programs of studies, similar to those in French and Spanish but including more supervised study, reading and conferences in Italian, and exercises in the language laboratory.

ADVANCED DEGREES

The Department offers both the Master of Arts and the Doctor of Philosophy. For Graduate School and departmental requirements, see the *Graduate School Bulletin*.

COURSES FOR UNDERGRADUATES

FRENCH

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

Prerequisites, for -102, 101- or second high school semester with grade of C or D; for 103, -102, or second high school semester with A or B, or third high school semester. **Staff**

105-106 Elementary (5-5)

Designed for the rapid acquisition of a reading knowledge of French. No auditors. 207 normally follows -106. Prerequisite, graduate standing or permission. **Staff**

130 Conversational French (2½-4, maximum 8)

For participants in the living-language group programs only. (Offered Summer Quarter only.) Prerequisite, 103. **Staff**

- 201, 202, 203 Intermediate (3,3,3)** **Staff**
Readings in French literature. Prerequisite for 201 is 103, or four high school semesters, or equivalent.
- 207 Reading in the Humanities and Social Sciences (3)** **Creore**
Class reading in contemporary French periodicals and books, with individual reading and conferences. No auditors. Prerequisite, -106 and graduate standing, or permission.
- 210, 211 Elementary French Conversation (2,2)** **Staff**
Prerequisites, 103 or equivalent for 210; 210 or permission for 211.
- 237, 238 Lower-Division Scientific French (3,3)** **Staff**
Class reading with emphasis on constructions and scientific terms. Prerequisite, 201 or equivalent.
- 301, 302, 303 Advanced Composition and Conversation (2,2,2)** **Staff**
The first half of 301 is an intensive review of grammar at the intermediate level. Prerequisite, 203 or equivalent.
- 304, 305, 306 Survey of French Literature (3,3,3)** **Staff**
Masterpieces from the seventeenth century to the present. Lectures in French on French literature and civilization from the beginning. Prerequisite, 203 or equivalent.
- 307, 308 Themes (2,2)** **Staff**
Writing of original compositions. Prerequisite, 302 or equivalent.
- 327, 328, 329 Advanced Conversation (2,2,2)** **Staff**
Prerequisite, 301 or equivalent, or permission.
- 330 Conversational French (2½-4, maximum 12)** **Staff**
For participants in the living-language group programs only. (Offered Summer Quarter only.) Prerequisite, 203.
- 337, 338, 339 Upper-Division Scientific French (2,2,2)** **Staff**
Individual conferences; students read material in their own fields. Prerequisites, 237, 238 with grade of B, or permission.
- 341 Phonetics (3)** **Creore, David**
Analysis of sounds, intonation, rhythm; training in correct and natural pronunciation. Prerequisite, 103 or equivalent.
- 358, 359 Advanced Syntax (2,2)** **Staff**
Syntax from the teacher's standpoint. Should precede Education 329. Prerequisite, 303 or 307.
- 390 Supervised Study (2-5, maximum 20)** **Staff**
Prerequisite, permission of Executive Officer.
- 421, 422, 423 Prose (3,3,3)** **David, Keller, C. Wilson**
421: classical prose. (Offered 1955-56.)
422: eighteenth-century and romantic prose. (Offered 1955-56.)
423: contemporary prose. (Offered when demand is sufficient.)
- 424, 425, 426 Modern Prose Fiction (3,3,3)** **David, Weiner, C. Wilson**
424: the novel, 1800-50. (Offered when demand is sufficient.)
425: the novel, 1850-1900. (Offered 1956-57.)
426: the novel, 1900-50. (Offered 1955-56.)
- 431, 432, 433 Lyric Poetry (3,3,3)** **Creore, Nostrand, Weiner**
431: Renaissance poetry. (Offered 1956-57.)
432: romantic poetry. (Offered when demand is sufficient.)
433: Parnassians, symbolists, and contemporary poetry. (Offered 1956-57.)
- 441, 442, 443 Drama (3,3,3)** **Chessex**
441: classical tragedy. (Offered 1955-56.)
442: romantic drama. (Offered 1955-56.)
443: modern drama. (Offered 1956-57.)
- 444, 445, 446 Drama (3,3,3)** **Chessex**
444: Molière. (Offered 1956-57.)
445: eighteenth-century comedy. (Offered when demand is sufficient.)
446: modern comedy. (Offered when demand is sufficient.)
- 451, 452, 453 Moralists and Essayists (3,3,3)** **David, Keller, Nostrand**
451: Montaigne. (Offered when demand is sufficient.)
452: from Montesquieu to Comte. (Offered when demand is sufficient.)
453: essayists of the twentieth century. (Offered 1956-57.)
- 482 French Literary Criticism (2)** **Nostrand**
(Offered 1956-57.)

ITALIAN

- 101-102, 103 Elementary (5-5,5)** **Staff**
- 210, 211 Elementary Italian Conversation (2,2)** **Staff**
Prerequisites, 103 or permission for 210; 210 for 211.
- 311, 312, 313 Modern Italian Literature (2-3,2-3,2-3)** **Staff**
Prose and poetry of the eighteenth and nineteenth centuries; composition. (Offered alternate years; offered 1956-57.) Prerequisite, 103 or -102 with a grade of B, or permission.

- 321, 322, 323 Masterpieces of Italian Literature (2,2,2)** **Staff**
Reading and discussion of selected literary works representative of each century; composition. May be counted in lieu of 103 toward the fulfillment of a language entrance requirement. (Offered alternate years; offered 1955-56.) Prerequisite, -102 or permission.
- 390 Supervised Study (2-5, maximum 20)** **Staff**
Prerequisite, permission of Executive Officer.

PORTUGUESE

- 101-102, 103 Elementary (5-5,5)** **C. Wilson**
- 390 Supervised Study (2-5, maximum 20)** **C. Wilson**
Prerequisite, permission of Executive Officer.

ROMANCE LINGUISTICS AND LITERATURE

- 401, 402 Introduction to Romance Linguistics (2,2)** **Staff**
The main principles of linguistics as applied in the Romance languages. Prerequisite, junior standing or the equivalent of one college year of a Romance language or Latin.

SPANISH

- 101-102, 103 Elementary (5-5,5)** **Staff**
Prerequisites, for -102, 101- or equivalent; for 103, a grade of A or B in -102 or in the second high school semester, or any passing grade in the third high school semester. See 121-.
- 105-106 Elementary (5-5)** **Staff**
Designed for the rapid acquisition of a reading knowledge of Spanish. No auditors. (Offered alternate years; offered 1956-57.) Prerequisite, graduate standing or permission.
- 121- Basic Grammar Review (5-)** **Staff**
Refresher course; should be taken instead of 103 by students who received a grade of C or D in -102 or 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)** **Staff**
For participants in the living-language group program only. (Offered Summer Quarter only.) Prerequisite, 103.
- 201, 202, 203 Intermediate (3,3,3)** **Staff**
Modern texts, composition, and functional grammar. Prerequisite, for 201, Spanish 103 or 121-, or four high school semesters, or equivalent.
- 210, 211 Elementary Spanish Conversation (2,2)** **Staff**
Prerequisites, 103 or 121- or equivalent for 210; 210 or permission for 211.
- 212, 213, 214 Modern Readings (2,2,2)** **Staff**
Reading for the acquisition of an extensive vocabulary. It is recommended that this series be taken concurrently with the 304, 305, 306 series. Prerequisite, 203 or equivalent.
- 301, 302, 303 Advanced Composition and Conversation (3,3,3)** **Staff**
Prerequisite, 203 or equivalent.
- 304, 305, 306 Survey of Spanish Literature (2,2,2)** **Staff**
From early times to the present. It is recommended that this series be taken concurrently with 212, 213, 214. Prerequisite, 203 or equivalent.
- 327, 328, 329 Advanced Conversation (2,2,2)** **Staff**
Prerequisite, 302 or equivalent or permission.
- 330 Conversational Spanish (2½-4, maximum 12)** **Staff**
For participants in the living-language group program only. (Offered Summer Quarter only.) Prerequisite, 203 or equivalent.
- 358, 359 Advanced Syntax (2,2)** **Staff**
Elementary principles of philology and their application to teaching; difficulties of Spanish grammar from the teacher's point of view. Prerequisite, 302 or equivalent.
- 390 Supervised Study (2-5, maximum 20)** **Staff**
Prerequisite, permission of Executive Officer.
- 441, 442, 443 Drama (3,3,3)** **W. Wilson**
Historical development of the drama in Spain from its beginnings down to the present time. Selected texts; collateral reading and reports. (Offered alternate years; offered 1956-57.) Prerequisite, 203 or equivalent.
- 451, 452, 453 Spanish Literature since 1700 (3,3,3)** **W. Wilson**
(Offered alternate years; offered 1955-56.) Prerequisite, 203 or equivalent.
- 461, 462, 463 Spanish Literature of the Golden Era (3,3,3)** **W. Wilson**
Poetry, drama, historical narrative, prose fiction. (Offered alternate years; offered 1955-56.) Prerequisite, 203 or equivalent.
- 471, 472, 473 Individual Spanish Authors (3,3,3)** **Staff**
Each course is devoted to one representative Spanish author of any period, according to the needs of the students. (Offered alternate years; offered 1956-57.) Prerequisite, 203 or equivalent.

- 481, 482, 483 Spanish-American Literature (3,3,3)** **Garcia-Prada, Vargas-Baron**
 General survey of the literature of Spanish America.
 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 1955-56.) Prerequisite, 203 or equivalent.
- 484 The Colonial Period in Spanish-American Literature (3)** **Garcia-Prada**
 A study of colonial authors in the fields of the chronicle, poetry, and drama (1500-1810).
 (Offered alternate years; offered 1956-57.) Prerequisite, 203 or equivalent.
- 485 The Romantic and Costumbrista Movements in Spanish-American Literature (3)**
Garcia-Prada
 A study of leading romantic and Costumbrista authors (1810-90). (Offered alternate years; offered 1958-59.) Prerequisite, 203 or equivalent.
- 486 The Modernista Movement in Spanish-American Literature (3)** **Garcia-Prada**
 A study of the leading poets, essayists, and novelists of South America (1890-1920).
 (Offered alternate years; offered 1956-57.) Prerequisite, 203 or equivalent.
- 487 The Contemporary Spanish-American Novel (3)** **Garcia-Prada**
 (Offered alternate years; offered 1956-57.) Prerequisite, 203 or equivalent.

COURSES IN ENGLISH

French

- 318, 319, 320 French Literature in English (2,2,2)** **Chessex**
 A study of the evolution of ideas in France through the reading of outstanding French masterpieces.

Italian

- 218 Italian Literature in English (5)** **Staff**
 A study of the evolution of ideas in Italy through the reading of outstanding Italian masterpieces.
- 384 Renaissance Literature of Italy in English (2)** **Staff**
 Lectures and collateral reading. May be counted as an elective in an English major or minor. (Offered 1955-56.)
- 481, 482 Dante in English (2,2)** **Staff**
 The thought and expression of the *Divine Comedy* against its background of medieval philosophy and art. May be counted as an elective in an English major or minor.

Spanish

- 218 Spanish Literature in English (5)** **Vargas-Baron**
 A study of several masterpieces of Spanish literature through reading, discussion, and lectures.
- 315 Spanish-American Authors in English (5)** **Vargas-Baron**
 An approach to Spanish-American civilization and its characteristic values, through lectures and the reading and discussion of several outstanding literary works in translation.

Romance Linguistics and Literature

- 360 The Literature of the Renaissance in English (5)** **Keller**
 The place of the Renaissance in the formation of modern attitudes and values. The principal intellectual trends are studied through the literature, particularly the writings of Erasmus, Castiglione, Vives, Rabelais, Montaigne, and Bacon. (Offered 1955-56.)

COURSES FOR GRADUATES ONLY

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 1955-56.)

FRENCH

- 501 Studies in Renaissance Prose (5)** **Keller**
 Rabelais and Montaigne. (Offered 1956-57.)
- 502 Studies in Renaissance Poetry (5)** **Creore**
 The *Pléiade*. (Offered 1955-56.)
- 504 Contemporary French Literature (5)** **David**
 Special emphasis will be laid on "intelligence" and related concepts such as the "heart" and "honor." Parties and schools of thought after World War I. (Offered 1956-57.)
- 513 Old French Literature (3)** **Simpson**
 Literary backgrounds; reading and discussion of selected texts. (Offered 1955-56.)

- 531 Literary Problems (2-5, maximum 20)** **Staff**
 Work to be done through conference. Field must be indicated in registration.
 A. Middle ages D. Eighteenth century
 B. Renaissance E. Nineteenth century
 C. Classic period F. Twentieth century

- 541, 542, 543 History of the French Language (2,2,2)** **Staff**
 541: historical study of phonology.
 542: historical morphology.
 543: historical word formation and syntax.
 (Offered 1956-57.)

- 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 1955-56.)

- 600 Research (2-5, maximum 20)** **Staff**
Thesis (*) **Staff**

ITALIAN

- 512 Old Italian Reading (3)** **Staff**
 Reading of material illustrative of phonological and morphological principles.

- 521, 522, 523 Italian Literature of the Twelfth to Fifteenth Centuries (2-5,2-5,2-5)** **Staff**
 (Offered alternate years; offered 1956-57.)

- 531, 532, 533 History of Old Italian Literature (2-5,2-5,2-5)** **Staff**
 (Offered alternate years; offered 1955-56.)

- 600 Research (2-5, maximum 20)** **Staff**
Thesis (*) **Staff**

PROVENÇAL

- 534 Old Provençal (3)** **Simpson**
 (Offered when demand is sufficient.)

ROMANCE LINGUISTICS AND LITERATURE

- 505, 506, 507 Romance Linguistics (2,2,2)** **Staff**
 Linguistics as a physical and social science. Brief history of the Romance languages and present-day problems of Romance linguistics. (Offered when demand is sufficient.)

- 531 Problems in Romance Linguistics (2-5, maximum 10)** **Staff**

- 581, 582, 583 Problems and Methods of Literary History (2,2,2)** **Nostrand**
 The philosophies of literary history and its relation to criticism; recurrent types of research problems and the accumulating methodology; standards of evidence; bibliographical resources for French and Hispanic literature.

- 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 alternate years; offered 1955-56.)

- 590 Research in Comparative Romance Literature (2-5, maximum 20)** **Staff**

- 599 Research in Romance Linguistics (2-5, maximum 20)** **Staff**

- Thesis (*)** **Staff**

ROMANIAN

- 536 Rumanian Language (5)** **Staff**
 Rumanian grammar; readings in the language and lectures on its history. (Not offered 1955-56.)

- 537 Rumanian Literature (5)** **Juillard**
 History of Rumanian literature from the sixteenth century; the contemporary novel; the poetry of Mihail Eminescu. (Not offered 1955-56.)

SPANISH

- 511 The Poema de Mio Cid (3)** **W. Wilson**
 (Offered 1955-56.)

- 512 Epic Poetry (3)** **W. Wilson**
 The epic material in old Spanish literature and its later treatment in poetry and drama. Special investigations and reports. (Offered alternate years; offered 1955-56.)

- 513 The Spanish Ballad (3)** **Staff**
 The origin and evolution of the Spanish ballad. (Offered 1956-57.)

- 521 The Renaissance in Spain (5)** **Staff**
 (Offered alternate years; offered 1955-56.)

- 531 Literary Problems (2-5, maximum 20)** **Staff**
 Work to be done through conference. Field must be indicated in registration. Maximum credits 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 (Only field offered 1956-57.)
- 541, 542, 543 History of the Spanish Language (2,2,2)** **Staff**
 541: historical study of phonology.
 542: historical morphology.
 543: historical word formation and syntax.
 (Offered 1955-56.)
- 600 Research (2-5, maximum 20)** **Staff**
Thesis (*) **Staff**

SCANDINAVIAN LANGUAGES AND LITERATURE

Executive Officer: SVERRE ARESTAD, 210 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 Icelandic 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 36 credits in the major language are required, of which 15 must be in upper-division courses.

NORWEGIAN MAJOR. Required courses are: Norwegian 101-102, 103, 104-105, 106, 220, 221, 222, 300, 301, 302, 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, 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)** **Staff**
 Fundamentals of oral and written Danish.
- 104-105, 106 Danish Reading (2-2,2)** **Staff**
 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, permission.

MODERN ICELANDIC

- 101-102, 103 Elementary Modern Icelandic (3-3,3)** **Staff**
 Fundamentals of oral and written modern Icelandic. (Offered when demand is sufficient.)
- 104-105, 106 Reading Icelandic (2-2,2)** **Staff**
 (Offered when demand is sufficient.)

NORWEGIAN

- 101-102, 103 Elementary Norwegian (3-3,3)** **Arestad**
Fundamentals of oral and written Norwegian.
- 104-105, 106 Norwegian Reading (2-2,2)** **Staff**
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)** **Staff**
Prerequisite, -102 or equivalent.
- 226, 227, 228 Norwegian Composition (1,1,1)** **Staff**
Prerequisite, -102 or equivalent.
- 300, 301, 302 Modern Norwegian Literature (*, maximum 3 each)** **Arestad**
Reading of representative works of Ibsen, Bjørnson, Lie, Garborg, Hamsun, Undset, Bojer, Duun, and others. Prerequisite, 222 or equivalent.
- 303, 304, 305 Advanced Conversational Norwegian (2,2,2)** **Staff**
Prerequisite, 225 or equivalent.
- 306, 307, 308 Advanced Norwegian Composition (1,1,1)** **Staff**
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)** **Staff**
Should accompany 101-102, 103.
- 220, 221, 222 Introduction to Swedish Literature (2,2,2)** **Johnson**
Modern Swedish drama and prose fiction. Prerequisite, -102 or equivalent.
- 223, 224, 225 Conversational Swedish (2,2,2)** **Staff**
Prerequisite, -102 or equivalent.
- 226, 227, 228 Swedish Composition (1,1,1)** **Staff**
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)** **Staff**
Prerequisite, 225 or equivalent.
- 306, 307, 308 Advanced Swedish Composition (1,1,1)** **Staff**
Prerequisite, 228 or equivalent.
- 409 Recent Swedish Literature (2)** **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 5)** **Johnson**
Prerequisite, permission.

COURSES IN ENGLISH

- 230 Scandinavian Culture and Institutions (2)** **Arestad**
- 240 Scandinavian Literature, 1850-1950, in English (5)** **Arestad, Johnson**
An introduction to modern Scandinavian literature; reading and discussion of the best works of the outstanding writers of the last hundred years.
- 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, Duun, Gunnarsson, and Laxness.
- 380 Ibsen and His Major Plays in English (2)** **Arestad**
- 381 Strindberg and His Major Plays in English (2)** **Johnson**
- 382 Twentieth-Century Scandinavian Drama in English (2)** **Johnson**
Outstanding twentieth-century plays, with introductory consideration of Ibsen and Strindberg.

COURSES FOR GRADUATES ONLY

501 Old Icelandic (*, maximum 5)	Johnson
503 Problems in Scandinavian Literature (*, maximum 5)	Arestad, Johnson
507 Ibsen (*, maximum 5)	Arestad
508 The Scandinavian Novel (*, maximum 5)	Arestad
510 Strindberg (*, maximum 5)	Johnson
Thesis (*)	Staff

SOCIAL WORK, PREPROFESSIONAL PROGRAM

Adviser: VICTOR I. HOWERY, 500 Thomson Hall

Students planning to apply for admission to the Graduate School of Social Work should confer with the pre-social work adviser as soon as they have decided to prepare for this field. Prospective applicants should gain a well-rounded preparation in the social sciences, and it is recommended that a course in elementary statistical method and physiology be included in undergraduate work.

A number of social work courses are available to upper-division students. These courses are intended for students who have a general interest in the study of social welfare services as well as those who are interested in employment in social agencies.

Seniors planning to enter the School of Social Work should make application early in the spring preceding the autumn in which they wish to begin their professional training, because enrollment is limited (see the *Graduate School Bulletin* for a complete statement of admission requirements).

COURSES FOR UNDERGRADUATES

300 Field of Social Work (3)	Macdonald, Lecturers
Principles and practices in the field of social work, with a comprehensive picture of available services and future needs. Prerequisite, upper-division standing.	
302 Introduction to Child Welfare (2)	Staff
A survey of social welfare programs relating to the well-being of children, including standards and objectives of foster-home care, adoption, day care, institutional care, and special services for the exceptional child. Prerequisite, upper-division standing.	
303 Introduction to Case Work in Public Assistance (3)	Staff
Application of principles and policies in effective public assistance practice. Prerequisite, upper-division standing.	
304 Case Work Interviewing (2)	Reiss
The interview as a basic method in helping people. Analysis of interviews from case records with the objective of identifying the processes and techniques of skillful interviewing; ways in which the purpose and setting of the interview influence its nature and course. Prerequisite, upper-division standing.	
305 Health Aspects of Social Work (2)	Ferguson
The role of social work in collaboration with medicine in the approach to problems of illness from the physical, emotional, and social aspects. Emphasis is on social factors in health problems and the social worker's responsibility. Prerequisite, upper-division standing.	
306 Public Welfare Programs in the United States (3)	Braul
Origins, development, and present status of public welfare programs enacted by state and federal government since 1900. 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 first and second teaching areas for students in the College of Education.

The Washington Public Opinion Laboratory and the Office of Population

Research are both part of the Department of Sociology. The Public Opinion Laboratory is available to graduate students and faculty. Its projects are primarily in long-term basic research. Faculty advisers from various sections of the University participate in these projects. 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 Arts in Urban Planning (see the *Graduate School Bulletin*).

BACHELOR OF ARTS

In this elective curriculum, at least 40 credits in sociology are required. Courses must include: Sociology 110 or 310, 223, 230 or 430, 240, and 352 or 450. Students should choose sociology electives from among the following fields of specialization: sociological theory; research methods and social statistics; ecology and demography; social interaction; social institutions; social organization; and social disorganization.

A 2.00 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 admission to graduate courses.

Requirements for both advanced degrees include work in some of these fields of specialization: sociological theory; research methods and social statistics; ecology and demography; social interaction; social institutions; social organizations; and social disorganization.

MASTER OF ARTS. Candidates must complete an approved program in advanced sociology courses and a minor in a related field. At least 10 of the sociology credits must be in courses numbered 500 and above. Candidates must take a final examination in two fields of sociology and a separate examination in the minor given by the department in which the minor courses are taken. The master's thesis must be submitted seven weeks before the degree is to be granted.

The requirement for a minor for a master's degree is 36 graduate and undergraduate credits, of which at least half must be in advanced work, including 6 credits in courses numbered 500 and above.

DOCTOR OF PHILOSOPHY. Candidates must complete a program that includes a minimum of 60 credits in advanced sociology courses. The rest of the course work must include a minor in a related field, for which requirements are determined by the department in which the work is taken. At least 20 of the sociology credits must be in courses numbered 500 and above. The thesis must be submitted seven weeks before the degree is to be granted. Upon recommendation of the Department, another foreign language may be substituted for French or German, but these two languages are the usual requirement. The language requirement must be met at least nine months before the degree is to be granted.

Candidates take a preliminary written examination covering four fields of specialization, one of which must be research methods and social statistics. A preliminary oral examination may be given at the discretion of the major or minor department. A final oral examination is given on the thesis and related subjects.

COURSES FOR UNDERGRADUATES

- 110 Survey of Sociology (5)** **Larsen, Staff**
Basic principles of social relationships. Primarily for freshmen and sophomores. Not open to students who have taken 310.
- 223 Social Statistics (5)** **Bowerman, Camilleri, Miyamoto**
Methods and sources for quantitative investigation. Prerequisite, 110 or 310.
- 230 Introduction to Human Ecology (5)** **Cohen, Schmid**
Factors and forces which determine the distribution of people and institutions. Primarily for freshmen and sophomores. Not open to students who have taken 430. Prerequisite, 110 or 310.
- 240 Group Behavior (5)** **Miyamoto**
Socialization of the individual; social processes; and interactions of persons in groups. Prerequisites, 110 or 310, and Psychology 100.
- 255 American Housing Problems (5)** **Cohen**
Housing needs, conditions, production, problems, and policies, with emphasis upon the relationship between the house, the neighborhood, and the community.
- 270 Survey of Contemporary Social Problems (5)** **Schrag, Staff**
Analysis of the processes of social and personal disorganization and reorganization in relation to poverty, crime, suicide, family disorganization, mental disorders, and similar social problems. Prerequisite, 110 or 310.
- 310 General Sociology (5)** **Larsen, Staff**
Major concepts and the scientific point of view in dealing with social phenomena. Primarily for juniors and seniors. Not open to students who have taken 110.
- 324 Machine Techniques in Research (3)** **Staff**
Theory and practice of mechanical and electronic tabulating and calculating machines in statistics and research. Prerequisite, 10 credits in statistics.
- 331 Population Problems (5)** **Staff**
Major quantitative and qualitative problems of population in contemporary society. Prerequisite, 110 or 310.
- 352 The Family (5)** **Bowerman, Larson**
The family as a social institution; personality development within the family; marriage adjustment; changing family patterns; disorganization and reorganization. Prerequisite, 110 or 310.
- 353 Social Factors in Marriage (3)** **Bowerman**
Courtship and marriage; marital adjustments; specific problems of marriage and family life. Prerequisite, 352.
- 362 Race Relations (5)** **Barth**
Interracial contacts and conflicts. Prerequisite, 10 credits in social science.
- 364 Rural Community (5)** **Staff**
Social and economic problems. Prerequisite, 110 or 310.
- 365 Urban Community (5)** **Cohen**
Comparative and analytic study of organization and activities of urban groups. Prerequisite, 110.
- 371 Criminology (5)** **Hayner, Schrag**
Individual and social factors in delinquency; history and methods of criminal justice. Field trips to local penal institutions. Prerequisite, 110 or 310.
- 389 Reading in Selected Fields (2-5, maximum 15)** **Staff**
Open only to qualified undergraduate students by consent of instructor.
- 410 History of Sociological Thought (5)** **Staff**
Background and trends in sociological thought from Comte to the present. Prerequisite, 110 or 310.
- 411, 412, 413 Systematic Sociology (3,3,3)** **Dodd**
- 414 Sociological Theory (5)** **Lundberg**
Modern scientific theory applied to social behavior; sociology as a natural science. Prerequisite, 20 credits in social science.
- 415 Theory of Social Organization (5)** **Staff**
Prerequisite, 110 or 310.
- 420 Methods of Sociological Research (5)** **Faris**
Investigation of communities, institutions, and social conditions. Field and laboratory work. Prerequisite, 223 or equivalent.
- 421 Methodology: Case Studies and Interviewing (3)** **Camilleri**
- 423 Advanced Social Statistics (5)** **Bowerman, Camilleri**
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)** **Bowerman**
Measures of relationships among variables and among attributes; calculation techniques; application to typical sociological problems; interpretation. Prerequisites, 223 and 420 or 423, or equivalents.
- 427 Statistical Classification and Measurement (3)** **Camilleri**
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)** **Camilleri**
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.
- 432 Human Migration (5)** **Staff**
Determining factors and problems in human migration. Prerequisite, 110 or 310. (Not offered 1955-56.)
- 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, 240 or equivalent.
- 442 Public Opinion (3)** **Larsen, Miyamoto**
The nature of public opinion; formation and measurement of public opinion; the operation of public opinion polls. Prerequisite, 240 or equivalent.
- 443 Mass Communication (3)** **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.
- 446 Social Adjustment of the Worker (3)** **Miller**
Adjustments made during the span of work life; cultural background of work values; transition from school to work. Prerequisite, 240 or equivalent.
- 447 Social Control (5)** **Lundberg**
- 450 Contemporary American Institutions (5)** **Miller**
Origins and developments of major social institutions. Sociology of economic structure, political organization, religion, education, recreation, and other institutionalized patterns. Prerequisite, 110 or 310.
- 451 Social Change and Trends (5)** **Miller**
Forces causing social change; basic trends in American life. Prerequisite, 15 credits in social science.
- 455 Housing in the American Community (5)** **Cohen**
- 456 Latin-American Social Institutions (3)** **Hayner**
(Not offered 1955-56.)
- 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.
- 460 Social Differentiation (5)** **Staff**
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)** **Miller**
Analysis of work plants such as factory, office, and store; work group processes and applied problems. Laboratory practice. Prerequisite, 110 or 310.
- 467 Industry and the Community (3)** **Miller**
- 472 Juvenile Delinquency (5)** **Hayner, Schrag**
Family and community backgrounds; institutional treatment; juvenile court and probation; programs for prevention. Prerequisite, 371 or equivalent.
- 473 Penology (5)** **Hayner, Schrag**
Social treatment of adult offenders. Prerequisite, 371 or equivalent.
- 499 Undergraduate Research (2-5, maximum 15)** **Staff**
Open only to qualified undergraduate students by consent of instructor.

COURSES FOR GRADUATES ONLY

- N510, N511, N512 Departmental Seminar (0,0,0)** **Staff**
Monthly meetings with reports on independent research by graduate students and staff members.

517 Systematic Sociology Seminar (3)	Lundberg
521, 522, 523 Seminar in Methods of Sociological Research (3,3,3) Prerequisites, 223, 414, and 420, or equivalents.	Lundberg
528 Seminar in Selected Statistical Problems in Social Research (3)	Camilleri
530 Advanced Human Ecology (3) Prerequisites, 230 or 430, and 15 credits in social science.	Schmid
531 Demography (3) Research problems in population and vital statistics. Prerequisites, 331 and 15 credits in social science or permission.	Schmid
532 World Migration (2) (Not offered 1955-56.)	Staff
543 Communications Seminar (2)	Staff
550, 551, 552 Marriage and the Family (3,3,3) 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.	Bowerman
556 Seminar on Sociological Problems of Latin America (3)	Hayner
562 World Survey of Race Relations (3) Prerequisite, 25 credits in social science.	Staff
566, 567 Industrial Sociology Seminar (3,3) Research training in industrial sociology. Readings and field projects. Prerequisite, 466 or equivalent.	Miller
571 Correctional Institutions (3) Prerequisite, 371 or equivalent.	Hayner
572 Analysis of Criminal Careers (3) Personal and social factors in criminal maturation and reformation. Prerequisite, 371 or equivalent.	Hayner, Schrag
573 Crime Prevention (3) Prerequisite, 371 or equivalent.	Hayner
599 Reading in Selected Fields (2-5, maximum 5) Open only to qualified graduate students by consent of instructor.	Staff
600 Research (2-5) Original field projects carefully planned and adequately reported. Certain projects can be carried on in connection with the Public Opinion Laboratory or the Office of Population Research. Open only to qualified graduate students by consent of instructor.	Staff
Thesis (*)	Staff

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 first and second teaching areas and a basic academic field for students in the College of Education.

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 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 40 credits in approved courses are required. These must include: Speech 100, 120, 210, 230, 240, 400, and an approved workshop course in public performance or clinical practice such as 339, 349, 474, or 484. (By special permission, Radio-Television 350 (Laboratory Work on KUOW) or 485 (Television Workshop) may be taken for workshop credit in

speech.) In case of individual need, Speech 110 and/or 111 may also be required. The student must pass proficiency tests in speaking and oral reading. In addition, he 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.

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)** **Rahskopf in Charge**
Training in the fundamentals of good speech, such as orderly thinking, emotional adjustment, adequate voice, distinct articulation, and effective oral use of language. Speech as man's primary means of social interaction, with emphasis on the more informal uses of speech in daily life. Frequent conferences with instructor.
- 400 Backgrounds in Speech (5)** **Rahskopf**
The nature of speech as an activity of daily life and as a field of study.
- 499 Undergraduate Research (2-5)** **Staff**
Prerequisite, permission. Field must be indicated in registration.
A. Voice and phonetics C. Oral interpretation
B. Public address D. Radio speech
E. Speech correction and hearing

VOICE AND PHONETICS

- 110 Voice Improvement (2)** **Tiffany in Charge**
The study and improvement of factors influencing vocal quality, pitch, loudness, and duration as based on adequate breathing, phonation, and resonance.
- 111 Articulation Improvement (2)** **Tiffany in Charge**
A study of the sound system of American speech as applied to training in articulation and pronunciation.
- 210 Introduction to Phonetics (5)** **Tiffany**
A study of the basic physiological and acoustical backgrounds of the sound system of American speech, with an introduction to phonemic analysis and use of the phonetic alphabet. Not open to students who received credit for Speech 110 prior to Autumn Quarter, 1953.
- 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. (Offered alternate years; offered 1956-57.) Prerequisite, 5 credits in anatomy, physiology, or zoology.
- 415 Advanced Voice and Phonetics (5)** **Tiffany**
Continuation of 210 with introductory emphasis on research methods and findings. Not open to students who have credit for 410. Prerequisite, 210 or permission.

PUBLIC ADDRESS

- 120 Introduction to Public Speaking (5)** **Franzke in Charge**
Audience analysis, choice and organization of material, oral style, and delivery. Frequent speeches before the class, followed by conferences with instructor.
- 220 Public Speaking (5)** **Franzke**
Continuation of 120, with emphasis on organization and delivery. Practice in preparation and presentation of a variety of types of public speeches based on study of their structure and form. Prerequisite, 120.
- 327 Extempore Speaking (3)** **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 120.
- 420 Advanced Problems in Speaking (5)** **Baskerville**
Purposes, proof, organization, style, and delivery in public address, with emphasis on the speaker's personal problems. Prerequisite, 120.

- 425, 426 Public Speaking in America (5,5)** **Baskerville**
 Historical and critical study of principal speakers and speeches and of their relationship to American political, social, and intellectual life. 425: revolutionary period to late nineteenth century; 426: late nineteenth century to the present. (Offered alternate years; 425 offered 1956-57; 426 offered 1955-56.)

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)** **Crowell**
 Discussion as an everyday community activity, with emphasis on the informal cooperative problem-solving methods of committee, conference, and round-table groups. Prerequisite, 100, or 230, or permission.
- 339 Public Discussion Workshop (1-3, maximum 9)** **Richards**
 Discussion of selected public questions before audiences on and off campus. No more than 3 credits may be earned in one year. Prerequisite, permission.
- 430 Advanced Argument (5)** **Pence**
 Continuation of 230. Prerequisite, 230.
- 436 Methods of Public Discussion (5)** **Franzke**
 Various types of public discussion and practice in their use. Prerequisite, 120 or 230.

ORAL INTERPRETATION OF LITERATURE

- 240 Oral Interpretation (5)** **Staff**
 Development of fundamental techniques for analysis and reading aloud of prose and poetry.
- 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 1956-57.)
- 349 Oral Interpretation Workshop (2, maximum 6)** **Grimes**
 Selection, integration, and presentation of materials for specific occasions, purposes, and audiences, with performance before audiences on and off campus. No more than 2 credits may be earned in one year. Prerequisites, 240 and permission.
- 440 Advanced Oral Interpretation (5)** **Grimes**
 Problems of interpretation peculiar to various types of literature. Analysis, cutting, and interpretation of materials. Prerequisite, 240 or permission.

TEACHING OF SPEECH

- 352 Introduction to the Teaching of Speech (2)** **Nelson**
 Viewpoints, methodology, and curricula of speech education. Observation of teaching procedures.
- 357 Debate and Discussion Problems in High School (2½)** **Richards**
 Evaluation of debate and discussion in high school and consideration of methods of directing them; specific consideration of debate questions in current use; bibliographies, analyses, and briefs. (Offered Summer Quarter only.)
- 359 Speech in the Classroom (3)** **Grimes**
 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.

RADIO SPEECH

- 260 Radio Speech (3)** **Bird, Shepherd**
 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. Prerequisites, 110 and 111.
- 361 Advanced Radio Speech (3)** **Bird, Shepherd**
 Analysis of audience situations, group discussions, and audience participation programs. Prerequisite, 260.
- 462 Radio Production Methods (3)** **Bird, Shepherd**
 Sound effects, music in broadcasts, studio setup, timing, cutting of scripts, and direction of programs. Prerequisites, 260 and 361.
- 463 Radio Program Building (3)** **Bird, Shepherd**
 Adaptation of literary, informational, and persuasive material for radio. Prerequisites, 260 and 361.

SPEECH CORRECTION

- 79 Speech Clinic (0)** **Staff**
 A. Articulation problems
 B. Stuttering
 C. Voice problems
 D. Hearing problems

- 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 through extension; 5 in residence in 470.
- 473 Diagnostic Methods in Speech Correction (2)** **Holliday**
- 474 Clinical Practice in Speech Correction (1-5, maximum 15)** **Palmer, Staff**
 Total undergraduate credits in 474 and 484 together cannot exceed 20. Prerequisites, 471 and 473, which may be taken concurrently.
- 475 Stuttering (2)** **Carrell**
 Nature, etiology, and treatment of stuttering. Prerequisite, 470 or permission.

HEARING

- 480 Introduction to Hearing (3 or 5)** **Hanley**
 Description of normal audition; elementary structure and functioning of the hearing mechanism; types of deficient hearing and their effects on speech; considerations of hearing education. Only 3 credits can be obtained through extension; 5 in residence.
- 481 Methods in Aural Rehabilitation (5)** **Palmer**
 Prerequisite, 480.
- 484 Clinical Practice in Aural Rehabilitation (1-5, maximum 15)** **Palmer, Staff**
 Total undergraduate credits in 474 and 484 together cannot exceed 20. Prerequisites, 480 and 481.
- 485 Medical Background for Audiology (2)** **Phillips**
 Diseases and injuries of the ear resulting in reduced audition.
- 489 Audiometry (2)** **Hanley**
 Theory and practice of audiometry and other methods of measuring hearing.

COURSES FOR GRADUATES ONLY

- N500 Departmental Seminar (0)** **Staff**
 Reports of research by graduate students and staff members.
- 501 Introduction to Graduate Study in Speech (2)** **Crowell**
- 510 Experimental Phonetics (3)** **Tiffany**
 Application of experimental methods to research in voice and phonetics; critical review of research literature. 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. (Offered alternate years; offered 1956-57.)
- 522 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 1956-57.) Prerequisite, 521.
- 525 Rhetorical Criticism (3)** **Baskerville**
 The history and method of rhetorical criticism. Application of critical standards to notable British and American speeches. (Offered alternate years; offered 1955-56.) Prerequisite, 425 or 426.
- 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 1955-56.) Prerequisites, 430 and an approved course in statistics.
- 540 Studies in Oral Interpretation (3)** **Grimes**
 Critical analysis of writings by Sheridan, Walker, Rush, Delsarte, Bell, Curry, Emerson, and others. Prerequisite, 440.
- 550 Studies in Speech Education (3)** **Nelson**
 Philosophical, curricular, and methodological problems of speech instruction.
- 571, 572, 573, 574 Organic Disorders of Speech (3,3,3,3)** **Carrell**
 Etiology, diagnosis, and therapy. 571: dysarthria, especially cerebral palsy. (Offered alternate years; offered 1955-56.) 572: aphasia. (Offered alternate years; offered 1956-57.) 573: pathologic disorders of voice. (Offered alternate years; offered 1955-56.) 574: morphogenic disorders, especially cleft palate and dental malocclusions. (Offered alternate years; offered 1956-57.) Prerequisite for each course, 471 or permission.
- 580 Advanced Audiology (5)** **Hanley**
 Methods, techniques, and instruments used in the measurement of auditory function especially as related to perception of speech. Review of research literature. Prerequisite, 480 or permission.
- 600 Research (*)** **Staff**
- Thesis (*)** **Staff**

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 first teaching area in biology is offered for students in the College of Education, in addition to a second teaching area in zoology.

Biology 101J-102J and Zoology 114, 118, 118L, and 208 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 401 (Comparative Anatomy and Physiology of Fishes), 402 (Phylogeny of Fishes), and 403 (Identification of Fishes) 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: Zoology 111, 112, 400, 453-454 or 456, and Biology 451. Additional requirements are: a year of college chemistry; a year of college-grade foreign language; and 15 credits in social science.

BACHELOR OF SCIENCE

In the prescribed curriculum, at least 45 credits in zoology are required. Courses must include: Zoology 111, 112, 400, 433, 434, 453-454, and 456; Biology 451 (Genetics); Botany 112 (Elementary); a year of college physics; Chemistry 115, 116 (General), 231, 232, 241, 242 (Organic); and a year of college French or German. 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

BIOLOGY

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

Staff

Principles of biology applying to all living forms, illustrated by representatives of major plant and animal groups; man's place in nature. Offered jointly with the Department of Botany. Recommended for education students and those not majoring in the biological sciences.

401 Cytology (3)

Hsu

Structure and function of the cell. Prerequisites, 451 and permission.

401L Cytology Laboratory (2)

Hsu

Must be accompanied by 401.

451 Genetics (3 or 5)

Roman

The principles underlying inheritance in animals and plants. Prerequisite, 10 credits in biological science.

- 452 Cytogenetics (3 or 5)** **Roman**
Chromosomal behavior in relation to genetics. (Offered alternate years; offered 1955-56.) Prerequisites, 451 and permission.
- 453 Topics in Genetics (2, maximum 6)** **Roman**
Current problems and research methods. Prerequisites, 451, organic chemistry, and permission.
- 454 Evolutionary Mechanisms (3)** **Kruckeberg**
Mutation, isolation, and natural selection as determinants of evolutionary change; emphasis on plants. (Offered alternate years; offered 1955-56.) Prerequisites, 451 and permission.
- 472 Principles of Ecology (3)** **Edmondson**
Population biology, competition, predation, symbiosis, sociality, and relationship of community to environment. Prerequisites, Zoology or Botany 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, Zoology or Botany 112, one year of college chemistry, and upper-division standing.

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; prerequisite, 111.
- 114 Evolution (2)** **Hatch**
A general survey of the evolution of animals, including man. For nonmajors.
- 118 Survey of Physiology (5)** **Snyder**
Elementary human physiology. For nonmajors.
- 118L Elementary Physiology Laboratory (1)** **Snyder**
Must be accompanied by 118.
- 204 Forestry Zoology (5)** **Hatch, Svihla**
Evolution of animals to the level of the arthropods and chordates; emphasis on these as the groups of animals of greatest practical importance in the forest fauna. Prerequisites, Botany 114, 115, and 116.
- 208 Elementary Human Physiology (5)** **Passano**
Each organ system is described and its function illustrated in the laboratory. Prerequisite, freshman chemistry.
- 330 Natural History of Marine Invertebrates (5)** **Illg, Ray**
A field and laboratory course emphasizing the habits, habitats, identification, and interrelationships of marine animals. Prerequisites, 112 or 10 credits in biological sciences, and permission.
- 358 Vertebrate Physiology (6)** **Martin**
Introductory course in vertebrate physiology for majors in biological sciences. Prerequisites, 112 or Biology -102J, and high school or college chemistry.
- 362 Natural History of Vertebrates (5)** **Snyder**
A field and laboratory course on the natural history of fishes, amphibians, reptiles, birds, and mammals. (Offered Summer Quarter only.) Prerequisites, 112 or 10 credits in biological sciences.
- 381 Microtechnique (4)** **Hsu**
Critical evaluation of each step in microslide preparation. Prerequisites, 112 and permission.
- 383 Museum Technique (3)** **Flahaut**
Preparation of museum specimens. Prerequisite, permission.
- 400 General Physiology (5)** **Passano**
Cell environment, metabolism and growth, irritability, general phenomena of organ function. Prerequisites, Chemistry 232, Physics 106 and 109 (or high school physics) and 10 credits in biological sciences.
- 402 History of Zoology (3)** **Hatch**
Prerequisite, 20 credits in zoology or permission.
- 403 Comparative Vertebrate Histology (5)** **Hsu**
Microscopic anatomy of the tissues and organs of vertebrates. Prerequisite, 112.
- 423 General Protozoology (5)** **Osterud**
Introduction to the morphology, classification, and life histories of the Protozoa. Prerequisite, 112 or permission.
- 432 Marine Invertebrate Zoology (8)** **Staff**
Morphology and phylogeny of marine invertebrates. (Offered at Friday Harbor Summer Quarter only.) Not open to students who have had 433, 434. Prerequisite, 112.
- 433, 434 Invertebrate Zoology (5,5)** **Illg, Ray**
Morphology and phylogeny of invertebrates exclusive of terrestrial arthropods. Not open to students who have had 432. Prerequisites, 111 and 112.

- 435 Parasitology (5)** **Osterud**
A general course covering the principles of parasitism and the major groups of animal parasites. (Offered alternate years; offered 1955-56.) Prerequisite, 112, or permission.
- 444 Entomology (5)** **Hatch**
Structure, classification, and economic relationships of insects. Prerequisite, 112 or permission.
- 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)** **Fernald**
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**
Must be accompanied by 457. Prerequisite, permission.
- 463 Natural History of Amphibia and Reptiles (5)** **Svihla**
Systematics, distribution, and speciation. (Offered alternate years; offered 1955-56.) Prerequisites, 111 and 112.
- 464 Natural History of Birds (Ornithology) (5)** **Svihla**
(Offered alternate years; offered 1956-57.) Prerequisites, 111 and 112.
- 465 Natural History of Mammals (5)** **Svihla**
Methods of field observation; classification, behavior, ecology, and speciation. Prerequisites, 111 and 112.
- 475 Vertebrate Zoogeography (3)** **Svihla**
Principles governing animal distribution, morphology, and physiology. Prerequisite, 5 credits in natural history or permission.
- 498 Special Problems in Zoology (3 or 5)** **Staff**
Prerequisites, 30 credits in zoology and permission.

COURSES FOR GRADUATES ONLY

BIOLOGY

- 501 Advanced Cytology (5)** **Hsu**
(Offered alternate years; offered 1955-56.)
- 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.
- 551 Genetics of Microorganisms (3)** **Roman**
(Offered alternate years; offered 1956-57.) Prerequisite, 451 or permission.
- 573 Topics in Limnology (2)** **Edmondson**
May be repeated for credit.

ZOOLOGY

- 506 Topics in Experimental Embryology (6, maximum 12)** **Staff**
(Offered at Friday Harbor Summer Quarter only.) Prerequisite, permission.
- 516 Chemical Embryology (3)** **Whiteley**
Prerequisite, permission.
- 516L Chemical Embryology Laboratory (2)** **Whiteley**
Must be accompanied by 516.
- 517 Chemical Embryology (3)** **Whiteley**
Prerequisite, permission.
- 517L Chemical Embryology Laboratory (2)** **Whiteley**
Must be accompanied by 517.
- 520, 521, 522 Seminar (1,1,1)** **Staff**
- 528 Experimental Protozoology (6)** **Osterud**
Cultivation; identification; cytology; physiology and genetics; general literature and current research in protozoology. (Offered alternate years; offered 1956-57.) Prerequisite, 423 or equivalent.
- 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.

- 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)** **Passano**
Adaptation of animals to the physical properties of the environment and mechanisms of adjustment to changes in the environment. Prerequisites, 400 and 434.
- 537L Comparative Invertebrate Physiology Laboratory (2)** **Passano**
Must be accompanied by 537. Prerequisite, permission.
- 538 Advanced Invertebrate Physiology (6)** **Staff**
Physiological bases of ecology, evolution, and tolerance to stress, as illustrated by many diverse forms. (Offered at Friday Harbor 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. Prerequisite, 400 or equivalent.
- 581 Systematic Zoology (4)** **Illg**
History, principles, and procedures of zoological taxonomy; review of biological bases of phylogeny; history and principles of zoological nomenclature.
- 600 Research (*)** **Staff**
- Thesis (*)** **Staff**



RESERVE OFFICERS TRAINING PROGRAMS

RESERVE OFFICERS TRAINING PROGRAMS

THE DEPARTMENTS of Air Science, Military Science and Tactics, and Naval Science were established under the provisions of the National Defense Act of June 4, 1920, and function under directives from the United States Department of Defense. The Secretaries of the services are responsible for the operation of the ROTC programs. At the University, the programs are coordinated by the office of the Dean of the College of Engineering.

The Departments of Air Science and Military Science and Tactics provide two years of basic military training for male students and an additional two years of advanced training for a selected group of male students. The advanced programs prepare students to receive regular or reserve commissions in the United States Army and Air Force. The Department of Naval Science offers a four-year program which prepares selected male students for regular or reserve commissions in the United States Navy or Marine Corps. Students who take advanced training in the Air Force or Army ROTC program, and students in the Naval ROTC program, must agree in writing to accept a commission if offered, to serve on active duty, subject to the call of the Secretary of their service, for not less than two years, and to remain in the reserve of their service until the eighth anniversary of the date of their commission.

ROTC courses are included in the freshman and sophomore curricula of all male students (see page 50). The first six quarters of study in either of the three departments satisfy the military training requirements of the University, but students who attain junior or senior standing in the Naval ROTC program, and those who enter the advanced Air Force or Army ROTC program, must complete the program as a condition of graduation unless excused or released by authority of the Secretary of the service concerned.

AIR SCIENCE

Professor of Air Science: JACK R. BANKS, Air Science Building

Eligibility to enroll in the Basic Course, Air Force Reserve Officers Training Corps, is limited to students who are citizens of the United States and have not yet reached their twenty-third birthday at the time of initial enrollment. Students enrolled in the Air Force ROTC may be deferred from the draft within quota

limitations subject to the approval of the Professor of Air Science. One criterion for military deferment is good standing at the University, which means the student must: (1) maintain an acceptable grade-point average; (2) be registered for at least 15 academic credits per quarter, exclusive of required lower-division ROTC and physical education activity; and (3) earn at least 45 academic credits during each academic year.

Students who are given an ROTC deferment agree to complete four years of ROTC, accept a commission, then serve three years on active duty when called, unless sooner relieved, and five additional years in a reserve organization.

First-year Air Force ROTC students are given an introductory course in the theory of flight, followed by a study of fundamentals of global geography, international tensions and security organizations, and instruments of national military security. This sequence of courses requires classroom attendance two hours each week. First-year students are also introduced to the principles of leadership and command through practice of basic elements of drill one hour each week. In the second year of the basic program, the emphasis is moved to a study of aerial warfare and the Air Force itself. Practice in leadership, drill, and exercise of command extends throughout the two years of the basic program and continues two additional years for students in the advanced program.

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 are selected for the advanced program, and each student selected must:

1. Successfully complete the two-year Basic Air Force ROTC program or receive equivalent credit for active service in the military forces of the United States.

2. Execute a written agreement with the government to complete the advanced program, contingent upon remaining in the University, and to attend 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.

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, unless excused or dismissed from this requirement by authority of the Secretary of the Air Force.

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 relations of the Air Force commander and his staff, problem-solving techniques, communication, military instructional methods, military justice, navigation, weather, and Air Force base organization. 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 seminar on leadership and management, then study military aviation and the evolution of warfare, military aspects of global geography and are briefed for 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 both basic and advanced programs are furnished complete uniforms of the type worn by Air Force personnel. Students 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 is refunded in full when the uniform and textbooks are returned undamaged.

Inquiries about enrollment or other matters should be addressed to the Professor of Air Science.

COURSES FOR UNDERGRADUATES

- 131, 132, 133 Air Science I—Basic (2,2,2)** **Staff**
 Details of the Air Force ROTC program; the significance of the individual's obligations for military service; introduction to aviation; fundamentals of global geography; factors of world power; the nation's defense organization; drill.
- 231, 232, 233 Air Science II—Basic (2,2,2)** **Staff**
 The purpose, process, and primary elements of aerial warfare: targets, weapons, delivery aircraft, operations, and bases; purpose and provisions of the Air Force Officer Career Program; survey of occupational fields open to Air Force officers; opportunities for and obligations of a career in the Air Force as an officer or airman; cadet non-commissioned-officer training.
- 301, 302, 303 Air Science III—Advanced (3,3,3)** **Staff**
 Command and staff concepts; leadership laboratory; problem-solving techniques, communications processes; principles and techniques of learning and teaching; Air Force correspondence and publications; military law—courts and boards; applied air science, including principles of flight, aircraft engineering, aerial navigation, and weather; functions of the Air Force base.
- 304 Air Science III—Advanced Camp (3)** **Staff**
 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 IV—Advanced (3,3,3)** **Staff**
 Critique of summer camp; Air Force leadership and management; relationship of geographical factors to national strength and international power patterns; foundations of national power; military aviation and the art of war; career guidance; briefing for commissioned service.

MILITARY SCIENCE AND TACTICS

Professor of Military Science and Tactics: WALTER A. RUDE, Army ROTC Building

Qualifications for entrance to the Army Reserve Officers Training Corps are in accordance with University requirements and Department of the Army regulations. Participation in the Army ROTC program may permit deferment from the draft under the Universal Military Training and Service Act of 1951.

Courses in the first and second years of the basic program require classroom attendance two hours each week. First and second year students are introduced to American military history, organization of the Army, map reading, and individual and crew-served weapons. School of the soldier and exercise of command extends throughout the two years of the basic program and continues two additional years for students in the advanced program.

After completing the basic program, students are eligible for entrance to the advanced Army ROTC, which is designed to train professionally qualified officers. Students in the advanced course are chosen from the group of most highly qualified students who have completed the basic program of senior-division ROTC, or have had twelve months or more of honorable active service in the military forces of the United States. Each student accepted for the advanced program must:

1. Not have reached twenty-seven years of age at the time of initial enrollment in the advanced course.
2. Execute a written agreement with the government to complete the advanced course contingent upon remaining in the University.
3. Be selected by the Professor of Military Science and Tactics and the President of the University.
4. Successfully complete whatever general survey and screening tests are prescribed.

5. Complete the course as a prerequisite for graduation from the University, unless excused or dismissed from this requirement by authority of the Secretary of the Army.

Courses in the advanced program require classroom attendance four hours a week, plus one hour of practice in school of the soldier and exercise of command. Advanced students are given courses in small unit tactics and communications, organization and functions of various arms and services, logistics, operations, and military administration. In addition, a summer camp is attended for six weeks between the first and second years of the advanced program.

Advanced Army ROTC students are paid a monetary allowance at a daily rate equal to the value of the commuted ration, which currently is 90 cents a day. The allowance is in addition to benefits received through the G.I. Bill.

Regulation ROTC uniforms are issued to students in the basic program, and uniforms similar to those of Army officers are issued to students in the advanced program. Students are required to wear the uniform on drill days. At the time of registration, each student must make a \$25.00 deposit. This deposit is refunded in full to those who have completed more than one year of either the basic or the advanced Army ROTC courses when the uniform is returned complete and undamaged. Those withdrawing from either the basic or the advanced Army ROTC courses after completing one year or less will be charged one-half the Army list price for the shoes issued to them. The student may retain these shoes. A student who completes one year or less of either the advanced or basic courses at the end of the Spring Quarter will be required to leave on deposit with the University during the summer months an amount equal to one-half the Army list price of the shoes issued. This amount will be treated as a partial payment toward the \$25.00 deposit when the student enrolls in military science courses at the beginning of the Autumn Quarter. The Army furnishes all textbooks and equipment used in military science classes.

Inquiries about enrollment or other matters should be addressed to the Professor of Military Science and Tactics.

COURSES FOR UNDERGRADUATES

- | | |
|--|--------------|
| 101, 102, 103 Military Science I—Basic (2,2,2) | Staff |
| Organization of the Army and ROTC; American military history; individual weapons and marksmanship; school of the soldier and exercise of command. | |
| 201, 202, 203 Military Science II—Basic (2,2,2) | Staff |
| Crew-served weapons and gunnery; map and aerial photograph reading; school of the soldier and exercise of command. | |
| 301, 302, 303 Military Science III—Advanced (3,3,3) | Staff |
| Small unit tactics and communications; organization, function, and mission of the arms and services; military teaching methods (objective and scope); leadership; school of the soldier and exercise of command. | |
| 360 Military Science III—Advanced Camp (3) | Staff |
| 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) | Staff |
| 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; the role of the United States in world affairs and the present situation; leadership; officer indoctrination; school of the soldier and exercise of command. | |

NAVAL SCIENCE

Professor of Naval Science: JOHN G. FOSTER, JR., 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 seventy 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 sixteen and twenty-one on July 1 of the year of entrance.
3. Meet physical requirements, which include vision of 20/20 uncorrected, no cavities in teeth, and height between 65½ and 76 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.

Students with not more than one year of previous attendance in college are eligible if they meet the qualifications and agree to finish the four-year program.

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 or deserve 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 Educational Testing

Service, Box 592, Princeton, New Jersey, 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)** **Staff**
Naval courtesy and customs; leadership; naval history; naval regulations; ship construction and characteristics; standard ship organization; orientation in underseas, amphibious, logistics, communications, security, intelligence, seamanship, and rules-of-the-road phases of the naval service.
- 211 Naval Weapons (3)** **Staff**
Principles of gun construction; ammunition components; gun assemblies; automatic guns; mines; introduction to fire control; aviation ordnance.
- 212 Fire Control (3)** **Staff**
Surface fire control; battery alignment; antiaircraft fire control.
- 213 Applied Naval Electronics (3)** **Staff**
Advanced fire control; radar, sonar; C.I.C.; shore bombardment; guided missiles; nuclear explosives; underwater ordnance; rockets.

LINE

- 312 Engineering and Navigation (3)** **Staff**
Combination of diesel engines and elements of stability with piloting aspects of navigation.
- 313 Navigation (3)** **Staff**
Nautical astronomy necessary for celestial navigation; daily work of the navigator at sea.
- 411 Naval Machinery (3)** **Staff**
Marine engineering installations: boilers, power plants, auxiliary machinery, turbines, distillers, refrigeration plants.
- 412 Engineering and Administration (3)** **Staff**
Combination of diesel engines and elements of stability and naval administration.
- 413 Military Justice and Leadership (3)** **Staff**
Uniform code of military justice; practical application of leadership principles; duties and responsibilities of naval officers.

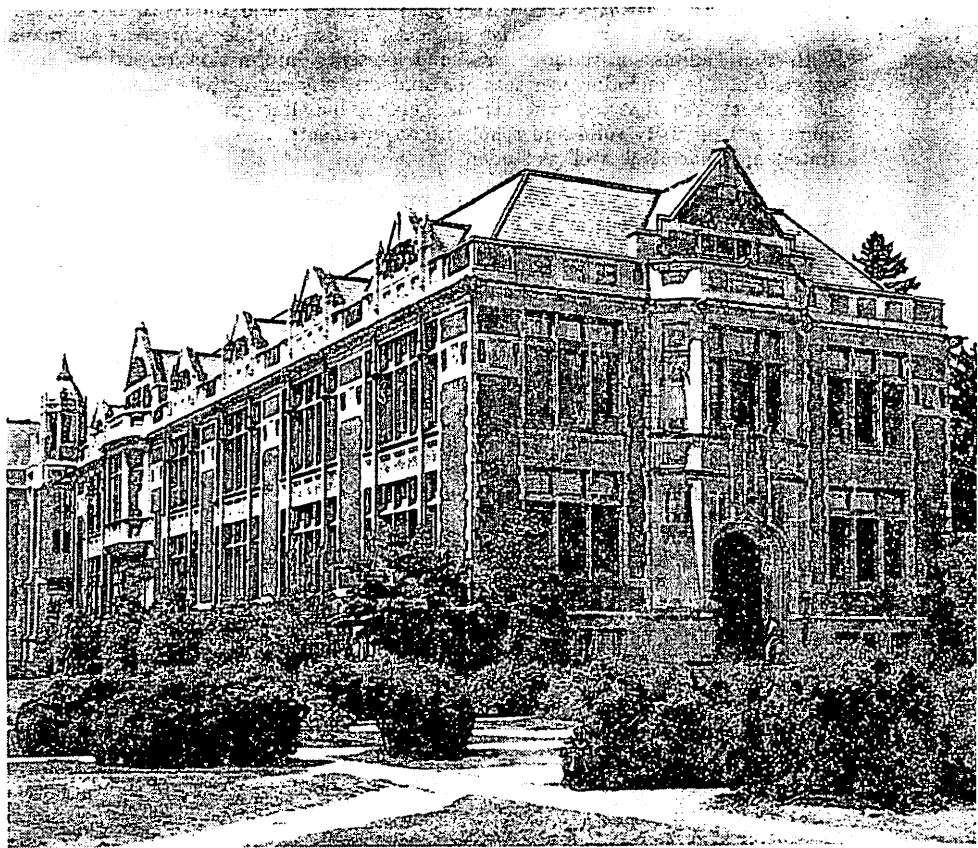
MARINE CORPS

- 311M Evolution of the Art of War (3)** **Staff**
Introduction; the development of tactics and weapons as illustrated by specific battles of ancient and European history; a historical study of the causes and effects of war through 1864.
- 312M Evolution of the Art of War (3)** **Staff**
Tactics and strategy from the rise of Germany through World War II; comparisons with modern basic strategy and tactics; foreign policy of the United States.
- 313M Modern Basic Strategy and Tactics (3)** **Staff**
Tactics of the platoon and company; jungle warfare, river crossings; fortified positions. Strategy of the United States and Germany during World War II.
- 411M, 412M Amphibious Warfare (3,3)** **Staff**
411M: a brief history of amphibious warfare development; a detailed study of the principles of amphibious warfare techniques. 412M: continued study of amphibious warfare, logistics, and operation orders; the Gallipoli campaign and the amphibious campaigns of World War II.
- 413M Leadership and Uniform Code of Military Justice (3)** **Staff**
Military law; practical application of leadership principles; duties and responsibilities of Marine officers.

SUPPLY CORPS

- 311S Introduction to Supply, Naval Finance, and Basic Naval Accounting (4)** **Staff**
Introduction to Supply Corps and accounting principles; national security organization; naval finance; appropriations; cost and fidelity accounting.
- 312S Advanced Naval Accounting, Basic Supply Afloat (4)** **Staff**
Reports and returns; property and stores accounting; organization and administration of supply afloat; material identification, classification, and allowance.
- 313S Supply Afloat, Intermediate (4)** **Staff**
Procedure and purchasing, receipt, surveys, and expenditure of special and regular naval materials.
- 411S Advanced Supply Afloat and Basic Ships' Stores (4)** **Staff**
Records, reports, and returns for supply afloat, and ships' stores operating procedure.
- 412S Advanced Ships' Stores, Commissary, Clothing, and Small Stores (4)** **Staff**
Records, reports, and returns for ships' stores, commissary, clothing, and small stores.

BULLETIN • UNIVERSITY OF WASHINGTON



COLLEGE OF
BUSINESS ADMINISTRATION
1955-1957

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes two general bulletins; bulletins of the colleges and schools; two Summer Quarter announcements, and publications of the Division of Adult Education and Extension Services; the correspondence study and extension class announcements.

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 REGULATIONS**, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as students.

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

UNIVERSITY REGULATIONS (FOR REGISTERED STUDENTS ONLY)
INTRODUCTION TO THE UNIVERSITY

Bulletins of the Colleges and Schools

COLLEGE OF ARTS AND SCIENCES
COLLEGE OF BUSINESS ADMINISTRATION
COLLEGE OF EDUCATION
COLLEGE OF ENGINEERING
COLLEGE OF FORESTRY
GRADUATE SCHOOL
SCHOOL OF LAW
COLLEGE OF PHARMACY
SCHOOLS OF MEDICINE AND DENTISTRY
SCHOOL OF NURSING

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT
SUMMER QUARTER ANNOUNCEMENT
CORRESPONDENCE STUDY
EXTENSION CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 885
November, 1954

Published monthly at Seattle, Washington, by the University of Washington from October to July, inclusive. No issues in August and September. Entered as second-class matter December 18, 1947, at the post office at Seattle, Washington, under the Act of August 24, 1912.

CONTENTS

CALENDAR	4
ADMINISTRATION	9
Board of Regents	
Officers of Administration	
College of Business Administration Executive Officers	
College of Business Administration Faculty	
GENERAL INFORMATION	15
College Facilities	
Admission	
Registration	
Tuition and Fees	
Estimate of Yearly Expenses	
Student Activities and Services	
THE DEPARTMENTAL PROGRAMS	29
Accounting	
Business Education	
Business Law	
Business Statistics	
Business Writing	
Finance	
Foreign Trade	
General Business	
Human Relations in Business	
Insurance	
Law, Preprofessional Program	
Marketing	
Office Management	
Personnel	
Policy and Administration	
Production	
Real Estate	
Secretarial Training	
Transportation	
Other Courses in Business Administration Programs	
RESERVE OFFICERS TRAINING PROGRAMS	57

CALENDAR

All fees must be paid at the time of registration. Registration is by appointment only.

SPRING QUARTER, 1955

REGISTRATION PERIOD

FEB. 23-MAR. 11	Registration for students in residence Winter Quarter, 1955. (<i>Registration appointments will be issued on presentation of ASUW cards beginning January 21.</i>)
MAR. 23-MAR. 25	Registration for former students not in residence Winter Quarter, 1955. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 17.</i>)
MAR. 23-MAR. 25	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

MAR. 28-MONDAY	Instruction begins
APR. 1-FRIDAY	Last day to add a course
MAY 20-FRIDAY	Governor's Day
MAY 30-MONDAY	Memorial Day holiday
JUNE 5-SUNDAY	Baccalaureate Sunday
JUNE 10-FRIDAY	Instruction ends
JUNE 11-SATURDAY	Commencement

SUMMER QUARTER, 1955

REGISTRATION PERIOD

JUNE 1-JUNE 3	Registration for all students. (<i>Registration appointments for students in residence Spring Quarter, 1955, and for former students not in residence Spring Quarter, 1955, may be obtained from the Registrar's Office beginning April 18. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.</i>)
JUNE 13-JUNE 17	

ACADEMIC PERIOD

JUNE 20-MONDAY	Instruction begins
JUNE 21-TUESDAY	Last day to add a course for the first term
JUNE 24-FRIDAY	Last day to add a course for the full quarter
JULY 4-MONDAY	Independence Day holiday
JULY 20-WEDNESDAY	First term ends
JULY 21-THURSDAY	Second term begins
JULY 22-FRIDAY	Last day to add a course for the second term
AUG. 19-FRIDAY	Instruction ends

AUTUMN QUARTER, 1955

REGISTRATION PERIOD

SEPT. 6-SEPT. 27	Registration for students in residence Spring Quarter, 1955. (<i>Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 23, but no later than September 16.</i>)
SEPT. 9-SEPT. 27	Registration for former students not in residence Spring Quarter, 1955. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 23, but no later than September 16.</i>)
SEPT. 12-SEPT. 23	Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (<i>August 26 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.</i>)
SEPT. 12-SEPT. 27	Registration for new transfer students with at least full sophomore standing. (<i>August 26 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

SEPT. 26-MONDAY	Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing.
SEPT. 28-WEDNESDAY	Instruction begins (8 a.m.) for all other students
SEPT. 30-FRIDAY	President's Convocation (11 a.m.)
OCT. 4-TUESDAY	Last day to add a course
NOV. 11-FRIDAY	State Admission Day holiday
NOV. 23-NOV. 28	Thanksgiving recess
DEC. 16-FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1956

REGISTRATION PERIOD

NOV. 21-DEC. 9	Registration for students in residence Autumn Quarter, 1955. (<i>Registration appointments will be issued on presentation of ASUW cards beginning October 21.</i>)
DEC. 28-DEC. 30	Registration for former students not in residence Autumn Quarter, 1955. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 21.</i>)
DEC. 28-DEC. 30	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Winter Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

JAN. 3—TUESDAY	Instruction begins
JAN. 9—MONDAY	Last day to add a course
FEB. 22—WEDNESDAY	Washington's Birthday and Founder's Day holiday
MAR. 16—FRIDAY	Instruction ends

SPRING QUARTER, 1956

REGISTRATION PERIOD

FEB. 23-MAR. 9	Registration for students in residence Winter Quarter, 1956. (<i>Registration appointments will be issued on presentation of ASUW cards beginning January 20.</i>)
MAR. 21-MAR. 23	Registration for former students not in residence Winter Quarter, 1956. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 20.</i>)
MAR. 21-MAR. 23	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

MAR. 26—MONDAY	Instruction begins
MAR. 30—FRIDAY	Last day to add a course
MAY 18—FRIDAY	Governor's Day
MAY 30—WEDNESDAY	Memorial Day holiday
JUNE 3—SUNDAY	Baccalaureate Sunday
JUNE 8—FRIDAY	Instruction ends
JUNE 9—SATURDAY	Commencement

SUMMER QUARTER, 1956

REGISTRATION PERIOD

MAY 29-JUNE 1	Registration for all students. (<i>Registration appointments for students in residence Spring Quarter, 1956, and for former students not in residence Spring Quarter, 1956, may be obtained from the Registrar's Office beginning April 16. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.</i>)
JUNE 11-JUNE 15	

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
JULY 4—WEDNESDAY	Independence Day holiday
JULY 18—WEDNESDAY	First term ends
JULY 19—THURSDAY	Second term begins
JULY 20—FRIDAY	Last day to add a course for the second term
AUG. 17—FRIDAY	Instruction ends

AUTUMN QUARTER, 1956

REGISTRATION PERIOD

- SEPT. 11-OCT. 2 Registration for students in residence Spring Quarter, 1956. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 21, but no later than September 21.*)
- SEPT. 14-OCT. 2 Registration for former students not in residence Spring Quarter, 1956. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 21, but no later than September 21.*)
- SEPT. 17-SEPT. 28 Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (*August 31 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)
- SEPT. 17-OCT. 2 Registration for new transfer students with at least full sophomore standing. (*August 31 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

- OCT. 1—MONDAY Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing.
- OCT. 3—WEDNESDAY Instruction begins (8 a.m.) for all other students
- OCT. 5—FRIDAY President's Convocation (11 a.m.)
- OCT. 9—TUESDAY Last day to add a course
- NOV. 12—MONDAY State Admission Day holiday
- NOV. 21-NOV. 26 Thanksgiving recess
- DEC. 21—FRIDAY Instruction ends (6 p.m.)

WINTER QUARTER, 1957

REGISTRATION PERIOD

- NOV. 26-DEC. 14 Registration for students in residence Autumn Quarter, 1956. (*Registration appointments will be issued on presentation of ASUW cards beginning October 26.*)
- JAN. 2-JAN. 4 Registration for former students not in residence Autumn Quarter, 1956. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 26.*)
- JAN. 2-JAN. 4 Registration for new students. (*New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Winter Quarter. Registration appointments will be mailed with notification of admission.*)

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. 22—FRIDAY	Instruction ends

SPRING QUARTER, 1957

REGISTRATION PERIOD

FEB. 27-MAR. 15	Registration for students in residence Winter Quarter, 1957. (<i>Registration appointments will be issued on presentation of ASUW cards beginning January 25.</i>)
MAR. 27-MAR. 29	Registration for former students not in residence Winter Quarter, 1957. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 25.</i>)
MAR. 27-MAR. 29	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

APR. 1—MONDAY	Instruction begins
APR. 5—FRIDAY	Last day to add a course
MAY 24—FRIDAY	Governor's Day
MAY 30—THURSDAY	Memorial Day holiday
JUNE 9—SUNDAY	Baccalaureate Sunday
JUNE 14—FRIDAY	Instruction ends
JUNE 15—SATURDAY	Commencement

ADMINISTRATION

BOARD OF REGENTS

CHARLES F. FRANKLAND, <i>President</i>	Seattle
MRS. J. HERBERT GARDNER, <i>Vice-President</i>	La Conner
GRANT ARMSTRONG	Chehalis
THOMAS BALMER	Seattle
DONALD G. CORBETT	Spokane
CHARLES M. HARRIS	Entiat
WINLOCK W. MILLER	Seattle
HELEN HOAGLAND, <i>Secretary</i>	

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HAROLD P. EVEREST, M.A.	<i>Vice-President of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
NELSON A. WAHLSTROM, B.B.A.	<i>Comptroller and Business Manager</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>
MARGARET P. FENN, M.B.A.	<i>Assistant to the Dean</i>
LOUISE L. MARTIN, B.A.	<i>Assistant to the Dean</i>

COLLEGE OF BUSINESS ADMINISTRATION EXECUTIVE COMMITTEE

AUSTIN GRIMSHAW, D.C.S.	<i>Dean of the College of Business Administration</i>
EDWARD G. BROWN, M.B.A.	<i>Executive Officer, Department of Policy, Personnel Relations, and Production</i>
JOSEPH DEMMERY, M.A.	<i>Executive Officer, Department of General Business</i>
DONALD H. MACKENZIE, M.B.A.	<i>Executive Officer, Department of Accounting, Finance, and Statistics</i>
CHARLES J. MILLER, M.B.A.	<i>Executive Officer, Department of Marketing, Transportation, and Foreign Trade</i>

COLLEGE OF BUSINESS ADMINISTRATION FACULTY

BARNOWE, THEODORE J., 1947 (1951).....	<i>Associate Professor of Human Relations</i>
B.A., 1939, Morningside College, Iowa; M.A., 1940,	<i>and Administration</i>
Ph.D., 1946, Washington	
BERG, KENNETH B., 1950	<i>Assistant Professor of Accounting</i>
B.S., 1939, North Dakota; M.S., 1941, Ph.D., 1952, University of Illinois;	
C.P.A., 1954, State of Washington	
BLYTHE, HARRY, 1949	<i>Instructor in Finance</i>
B.S., 1947, M.S., 1949, Columbia	
BOYNE, THOMAS W., 1949 (1953).....	<i>Lecturer in Marketing</i>
B.A., 1947, Hawaii; M.S., 1949, Columbia	
BREWER, STANLEY H., 1946 (1953).....	<i>Associate Professor of Transportation</i>
B.A., 1942, M.B.A., 1943, Washington; I.C.C. Practitioner, 1948;	
F.M.B. Practitioner, 1950	
BRIGGS, ROBERT, 1952 (1954).....	<i>Assistant Professor of Secretarial Training</i>
A.B., 1935, M.A., 1950, Washington; D.Ed., 1954, Stanford	

- BROWN, EDWARD G., 1948 (1949)..... *Professor of Business Policy; Executive
A.B., 1929, Washington; Officer, Department of Policy, Personnel
M.B.A., 1932, Harvard Relations, and Production*
- BROWN, FRANCES A., 1953..... *Instructor in Secretarial Training
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*
- BRYAN, STANLEY, 1952..... *Professor of Production and Business Policy
B.Ed., 1940, M.Ed., 1942, M.S., 1946, California; D.C.S., 1950, Indiana*
- BURRUS, MARY, 1943..... *Lecturer in Business Law
B.A., 1935, LL.B., 1937, Washington*
- BUSKIRK, RICHARD H., 1953..... *Instructor in Marketing
B.S., 1948, M.B.A., 1949, Indiana*
- BUTTERBAUGH, GRANT I., 1930 (1937)..... *Associate Professor of Statistics
A.B., 1916, Wisconsin; M.B.A., 1923, Washington; Ph.D., 1942, Chicago*
- CANNON, ARTHUR M., 1947 (1951)..... *Professor of Accounting and Finance
B.S., 1933, M.A., 1947, Oregon; C.P.A., 1936, State of Oregon (Washington)*
- COMISH, NEWEL W., 1949 (1953)..... *Assistant Professor of Marketing
B.S., 1947, M.S., 1948, Oregon; Ph.D., 1953, Ohio State*
- COURTNEY, JAMES R., 1954..... *Lecturer in Finance
B.S. 1949, Wichita; M.B.A., 1952, Washington; M.B.A., 1954, New York*
- COX, WILLIAM E., 1919 (1923)..... *Professor of Accounting and General Business
B.A., 1909, M.A., 1910, Texas*
- DELANEY, MARJORIE, 1950..... *Instructor in Secretarial Training
B.A., 1944, Washington State; M.A., 1946, Columbia*
- DEMMEY, JOSEPH, 1928 (1934)..... *Professor of General Business; Executive
Ph.B., 1920, M.A., 1924, Chicago Officer, Department of General Business*
- DOWD, LAURENCE P., 1950 (1954)..... *Assistant Professor of Foreign Trade
B.A., 1938, Washington; M.A., 1940, Hawaii; Ph.D., 1954, Michigan*
- DUNNINGTON, RICHARD A., 1950 (1954)..... *Acting Assistant Professor
B.A., 1943, M.A., 1950, Washington of Human Relations*
- ENGLE, NATHANAEEL H., 1941..... *Professor of Marketing;
B.A., 1925, M.A., 1926, Washington; Director, Bureau of
Ph.D., 1929, Michigan Business Research*
- ETCHESON, WARREN W., 1954..... *Acting Assistant Professor of Marketing
B.S., 1942, Indiana; M.A., 1951, State University of Iowa*
- FENN, MARGARET P., 1953..... *Instructor in Human Relations
B.S., 1942, LaCrosse State Teachers; M.B.A., 1950, Washington*
- GILLAM, CORNELIUS W., 1954..... *Assistant Professor of Business Law
B.A., 1945, Carleton College; M.A., 1946, Minnesota; J.D., 1950, Chicago*
- GOLDBERG, LEONARD D., 1947..... *Assistant Professor of Business Law
B.A., 1943, J.D., 1945, Chicago*
- GORDON, GUY, 1949 (1952)..... *Acting Assistant Professor of Marketing
B.A., 1949, M.B.A., 1950, Washington*
- HACKETT, CHARLES W., 1950 (1954)..... *Research Business Administrator
B.A., 1942, M.B.A., 1948, Texas*
- HAMACK, FRANK H., 1921 (1942)..... *Lecturer in Accounting
LL.B., 1916, Georgetown*
- HANSON, KERMIT O., 1948 (1954)..... *Professor of Accounting,
A.B., 1938, Luther College, Iowa; Finance, and Statistics
M.S., 1940, Ph.D., 1950, Iowa State*
- HARWOOD, DALE, 1951 (1954)..... *Instructor in Accounting
B.S. in B.A., 1948, Oregon State*
- HASSON, JOSEPH A., 1954..... *Assistant Professor of Finance
B.A., 1943, Washington; M.B.A., 1947, M.A., Ph.D., 1951, Chicago*
- HASTINGS, DELBERT C., 1951 (1954)..... *Assistant Professor of Statistics and
B.S., 1947, M.A., 1949, Ph.D., 1954 Industrial Analyst, Bureau of
Minnesota Business Research*

- HAYNE, DONALD F., 1950..... *Acting Assistant Professor of Insurance*
B.B.A., 1949, M.B.A., 1950, Wisconsin
- HENNESSEY, JOHN W., 1950..... *Instructor in Human Relations*
A.B., 1948, Princeton; M.B.A., 1950, Harvard
- HENNING, CHARLES N., 1948 (1953)..... *Associate Professor of Finance*
B.A., 1938, M.A., 1940, Ph.D., 1952, California (Los Angeles)
- JOHNSON, FLETCHER O., 1950..... *Lecturer in Accounting*
B.B.A., 1924, Washington; C.P.A., 1925, State of Washington (Pennsylvania, California, Illinois)
- KAST, FREMONT E., 1951 (1952)..... *Instructor in Production*
A.B., 1946, San Jose State College; M.B.A., 1949, Stanford
- KESTER, HENRY I., 1950..... *Acting Assistant Professor of Finance*
B.Ed., 1944, State Teachers College, Whitewater, Wisconsin; Ph.D., 1954, Northwestern
- KOLDE, ENDEL J., 1951 (1954)..... *Assistant Professor of Marketing and Foreign*
B.S., 1940, Estonia State Military Academy, Estonia; *Trade; Assistant*
D.H.S., 1947, Stockholm, Sweden; *Director, Bureau of*
M.A., 1951, D.B.A., 1954, Washington *Business Research*
- LITTLE, WALLACE I., 1954..... *Assistant Professor of Transportation*
B.S., 1943, M.S., 1947, Illinois; Ph.D., 1952, Wisconsin
- 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
- MACKENZIE, DONALD H., 1929 (1944)..... *Professor of Accounting, Finance, and*
B.B.A., 1925, M.B.A., 1925, Washington; *Statistics; Executive Officer,*
C.P.A., 1933, State of Washington *Department of Accounting, Finance,*
and Statistics
- MCGUIRE, JOSEPH W., 1950..... *Acting Assistant Professor of General Business*
Ph.B., 1948, Marquette; M.B.A., 1950, Columbia
- MILLER, CHARLES J., 1927 (1945)..... *Professor of Marketing;*
B.B.A., 1922, M.B.A., 1927, Washington *Executive Officer, Department*
of Marketing, Transportation, and Foreign Trade
- MURPHY, HERTA A., 1946..... *Lecturer in Business Writing*
B.B.A., 1930, M.A., 1942, Washington
- OVERHOLSER, OTHO V., 1953..... *Lecturer in Insurance*
A.B., 1923, LL.B., 1923, Ohio State; A.M., 1935, Colorado State; LL.B., 1937, Miami (Florida); C.L.U., 1941
- PECK, CHARLES E., 1951..... *Assistant Professor of Business Writing*
B.A., 1935, Wichita; M.A., 1947, Ph.D., 1950, Iowa
- PURDUE, ROBERT A., 1946..... *Lecturer in Business Law*
B.A., 1939, LL.B., 1942, Washington
- ROBINSON, DWIGHT E., 1950..... *Associate Professor of General Business*
B.A., 1936, Yale; M.A., 1938, Oxford; Ph.D., 1948, Columbia
- ROLLER, JULIUS A., 1945 (1950)..... *Associate Professor of Accounting*
B.B.A., 1934, Washington
- SCHRIEBER, ALBERT N., 1948 (1951)..... *Associate Professor of Production*
B.S. in M.E., 1938, Illinois Institute of Technology; *and Business*
M.B.A., 1947, Harvard *Policy*
- STANTON, WILLIAM J., 1948 (1951)..... *Associate Professor of Marketing*
B.S., 1940, Lewis Institute, Illinois; M.B.A., 1941, Ph.D., 1948, Northwestern
- SUTERMEISTER, ROBERT A., 1949 (1952)..... *Professor of Personnel*
A.B., 1934, Harvard; M.A., 1942, Washington
- WAGNER, LOUIS C., 1947..... *Associate Professor of Marketing*
B.B.A., 1938, Washington; M.A., 1940, Minnesota
- WALKER, LAUREN M., 1946 (1953)..... *Associate Professor of Accounting*
B.A., 1939, M.B.A., 1943, Washington; C.P.A., 1943, State of Washington
- WHEELER, BAYARD O., 1948 (1953)..... *Professor of General Business*
A.B., 1928, California; M.A., 1930, Washington; Ph.D., 1942, California

WILSING, WESTON C., 1953 (1954).....*Instructor in Secretarial Training*
 B.Ed., 1943, State Teachers College, Wisconsin; M.A., 1946, Columbia
 WOLF, WILLIAM B., 1954.....*Assistant Professor of Production*
 A.B., 1942, California; M.B.A., 1945, Northwestern; Ph.D., 1954, Chicago
 WRIGHT, LAURENCE A., 1954.....*Acting Assistant Professor of Finance*
 B.A., 1947, M.B.A., 1950, Washington
 ZOLL, ALLEN A., 1949.....*Instructor in Human Relations*
 B.B.A., 1948, Southern Methodist; M.S., 1949, Columbia

CHANGES IN UNIVERSITY REGULATIONS

The University and its colleges and schools reserve the right to change the rules regulating admission to, instruction in, and graduation from the University and its various divisions, and to change any other regulations affecting the student body. 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 and change fees at any time.



GENERAL INFORMATION

GENERAL INFORMATION

THE COLLEGE OF BUSINESS ADMINISTRATION was established in 1917, when increasing numbers of young men and women were seeking careers in business and when the growing complexity of business units was making it more difficult to achieve broad training by traditional apprenticeship methods.

The College was founded to help the student to understand the economic and business world. Its objective was then, as it is now, to give the student business training rooted in general knowledge and to develop in the student those qualities of mind and character that make useful, intelligent citizens and responsible members of the business community. Thus while many students prepare themselves specifically for professional careers in fields such as accounting, a number pursue courses in business education to prepare themselves for positions as teachers of business in secondary schools and colleges. Whatever the approach, the College places emphasis on broad individual development.

The growth of the College 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. It has a faculty of sixty members and in 1954 its student body included eighteen hundred undergraduate and one hundred graduate students.

While the College recognizes a primary vocational or professional interest in its undergraduates, it does not believe that success in business should be obtained at the sacrifice of personal growth. The College requires that 40 per cent of every student's work be taken outside the College curriculum, so that in each of his four years the student carries, in addition to his business subjects, courses in such subjects as English, mathematics, and history and in the laboratory and social sciences.

Specialization in a particular field is provided during the junior and senior years, with majors offered in accounting, business education, finance and banking, foreign trade, insurance, marketing, office management, personnel administration, production, real estate, secretarial training, and transportation. A major in general business is available to students who want a broad, nonspecialized training in business administration. In addition to these major fields, courses to integrate and supplement the specialized study are offered by the Departments of Business Communications, Business Law, Human Relations in Business, and Policy and Administration.

A preprofessional program in law is offered for students who wish to emphasize business subjects in their prelegal work. This program leads to the degree of

Bachelor of Arts in Business Administration after three years of study in the College and one year in the School of Law.

Many of the courses offered by the College are open to undergraduate and graduate students in other colleges and schools of the University.

COLLEGE FACILITIES

The College's activities are centered in Commerce Hall, which, in addition to regular classrooms and staff offices, contains accounting laboratories, a library, and seminar rooms. Many of the classrooms are arranged to fit the needs of particular types of instruction.

The Business Administration Annex is used for courses in secretarial training and houses a variety of office equipment.

THE LIBRARY

The new quarters of the Business Administration Library in Commerce Hall contain seating space for two hundred students. The library has current materials on all phases of business including books, newspapers, periodicals, pamphlets, government publications, corporation annual reports, indexes, bibliographies, and loose-leaf services in finance, trade regulations, accountancy, transportation, real estate, taxes, and insurance. A room for research and conferences has been provided for the use of faculty members and graduate students.

BUREAU OF BUSINESS RESEARCH

The College operates a Bureau of Business Research which is affiliated with the National 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, and the professions. Publications include studies of Pacific Northwest and Washington industries, Alaska, communities, tourist trade, trading areas, and income.

The Bureau publishes *Pacific Northwest Industry*, a monthly journal dealing with business and economic problems of interest to the people of Washington. The journal carries the Bureau's indexes of business activity for the Pacific Northwest, and the Puget Sound, Inland Empire, and Lower Columbia subdivisions of the area and publishes research reports of faculty members and the Bureau staff.

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.

TRANSPORTATION LABORATORY

The Transportation Laboratory provides a place for display of visual aids and other illustrative materials to supplement teaching materials. Demonstrations of principles and problems in transportation operations are given in the Laboratory. The Laboratory is used as a meeting place and workroom for University transportation clubs. Working tools and publications are provided for students to conduct research, to practice theoretical training, and to advance their knowledge of the field.

COOPERATIVE WORK IN INDUSTRY

The College encourages students to supplement classroom training by obtaining experience in actual business situations. Selected students in accounting, marketing, and production 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. 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. The Skyway Luggage Company Scholarship provides part-time work and training with that company, enabling students to study policies, methods, and techniques. The programs give college credit to qualified students for reports on work experience.

The Production Department allows credit to majors employed part time on a planned work program in an industrial organization. These students work in the various departments of the organization to observe and participate in its many operations. Reports of observations and a summary covering evaluations and recommendations are prepared at the end of the work period.

ADMISSION

The University Board of Admissions gives first preference to applications from legal residents of Washington and Alaska and to out-of-state applicants who are sons and daughters of University of Washington alumni. The College of Business Administration, like most colleges in the University, admits qualified out-of-state students and encourages those with good scholarship records to apply.

Applications for admission must be submitted by prescribed deadlines and must be substantiated by certain credentials and reports submitted in accordance with University rules and practices. It is important that the student's application be submitted by the proper time, for the University can accept no responsibility for applicants who come to the campus before their credentials have been forwarded or before they have been notified of acceptance.

Correspondence regarding requirements for admission to and graduation from any college or school of the University should be addressed to the Registrar.

It is the student's responsibility to make sure that complete credentials covering all his previous secondary and college education are submitted to the University. To be official they must be forwarded by the principal or registrar of the last school 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.

For admission in Autumn Quarter, the required credentials should be forwarded after high school graduation and before July 15. *The last day for new students to submit applications with complete credentials for admission in Autumn Quarter is August 26, 1955, or August 31, 1956.* For admission in the other quarters, applications and credentials should be submitted at least thirty days before the opening of the quarter. This applies to all new students seeking admission as graduates or undergraduates. *It is imperative that students observe this deadline in order to insure prompt attention to credentials and replies to correspondence.*

Before notice of admission is given, a medical questionnaire, on a form supplied by the Registrar, is issued to new out-of-state students. This should be completed by a doctor of medicine and returned by him to the Registrar's Office.

ADMISSION FROM ACCREDITED HIGH SCHOOLS

Graduates who earn diplomas of graduation from accredited high schools and who meet the University unit and scholarship requirements for entrance are eligible for admission as freshmen with regular standing.

No out-of-state student will be accepted for admission who would not be acceptable to the university of his own state (see Scholarship Requirements, page 18).

All entering freshmen are required to submit from an accredited high school an official application-for-admission blank (obtainable from any high school principal or from the Registrar) which includes all credits and grades and a statement that the student has completed his high school course with a diploma of graduation. A high school diploma may not be substituted for the official blank. Accredited high schools in Washington are those accredited by the State Department of

Public Instruction; in Alaska, by the Northwest Association of Secondary and Higher Schools; in other states, by the state university of the state or a regional accrediting association.

UNIT REQUIREMENT. The University unit¹ requirement is 16 high school units (or 15 units exclusive of activity credit in physical education, debate, etc.) with grades certifiable for university entrance. The 16 units should include at least 9 units in academic subjects (a unit equals two semester credits, or one full year of high school study). No unit which received lower than the lowest passing grade as defined by the high school itself may be included in the required total. The College of Business Administration requires that the 16 units include 3 units of English; 1 unit of social science; and 2 units of mathematics, including elementary algebra and either plane geometry or second-year algebra with some advanced algebra recommended. Students should make every possible effort to complete this list of required subjects before entering the College. Under certain circumstances, however, and with the approval of the Dean of the College, deficiencies in admission requirements may be removed after entrance.

SUBJECT MATTER DEFICIENCIES. Applicants with diplomas of graduation from accredited high schools who meet the scholarship requirement and have at least 3 units in English and 6 units in other academic subjects, but who cannot meet all the subject requirements of the College, may petition the Dean of the College for permission to enter with provisional standing. (Typical academic subjects are English, foreign languages, mathematics, science, history, and economics. Some nonacademic courses are those in commerce, manual training, home economics, and band.) Students who are permitted to enter with provisional standing must register each quarter for make-up courses in the subject they lack until the entrance deficiency is removed. Those deficient in both first-year algebra and plane geometry are seldom admitted on this basis. Provisional standing continues until the student has satisfied the entrance requirements of the college in which he is enrolled. *No application for a degree may be accepted until all entrance deficiencies have been removed.* Deficiencies may be made up with university credit if college courses covering the high school material are available; 10 college credits are considered the equivalent of 1 high school unit, except that for foreign languages 15 quarter credits of college work are considered the equivalent of 2 units (4 semesters) of high school credit. No student may receive credit for repetition of work at the same or at a more elementary level, if credit has been granted in the earlier course. This rule applies whether the earlier course was taken in high school or in college, and whether, in the latter case, course numbers are duplicated or not. First-year algebra and plane geometry are offered by the Division of Adult Education and Extension Services (fee \$15.00 per course) and do not carry University credit.

SCHOLARSHIP REQUIREMENT. The University scholarship requirement is a high school grade point of 2.00 (equivalent to a C average on the Washington State grading system.) Students from high schools in other states which use different grading systems will find their scholarship averages adjusted to the Washington four-point system. (See Admission from Accredited High Schools, second paragraph, page 17).

Graduates of accredited high schools in Washington and Alaska who cannot meet the 2.00 scholarship standard may petition the Board of Admissions for permission to enter on probation if they meet all unit requirements of the University and the College. A petition for admission on probation must be accompanied by evidence that the applicant is able to do better work than is indicated by his school record.

The student who is admitted on probation may continue his attendance at the University at the discretion of the dean of his college but may not (1) be pledged to or initiated into a fraternity or sorority, or engage in those other student activities in which his right to participate is restricted by the regulations of the Committee

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

on Student Welfare; (2) engage in those athletic activities in which his right to participate is restricted by the regulations of the University Athletic Committee. He will be removed from probation when he has earned a minimum of 12 credits exclusive of those in lower-division physical education activity and Army, Air Force, and Navy ROTC courses with a 2.00 grade average, except that if he carries less than 12 hours in one quarter, he may not be removed from probation unless he has earned at least a 2.00 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 then is subject to the regular scholarship rules.

ADMISSION BY EXAMINATION

Graduates of nonaccredited high schools in Washington and Alaska may petition the Board of Admissions for permission to enter if they meet other entrance requirements and are recommended by their high school principals. The Board may require these students to take special entrance examinations.

Prospective students who are not high school graduates must pass College Entrance Board Examinations and must meet without deficiency entrance requirements for admission to the University and the College. Those who plan to take entrance examinations should write for information to the Educational Testing Service, Box 592, Princeton, New Jersey, or Box 9896, Los Feliz Station, Los Angeles 27, California.

ADMISSION WITH ADVANCED UNDERGRADUATE STANDING

Applicants are admitted to the University and to the College of Business Administration by transfer from accredited colleges, universities, and junior colleges under the following conditions:

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

2. Applicants who have completed a year or more of college work must have a 2.00 grade-point average in their entire college records and in the last term. Those with less than a year of college work must have a 2.00 average in both their college and high school records.

3. Complete transcripts and letters of honorable dismissal must be sent directly to the University Registrar by the registrar of the former school.

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

5. A maximum of 45 credits earned in extension and correspondence courses at other institutions may be transferred, but none of these credits can apply toward the work of the senior year. Extension and correspondence credits from schools that are members of the National University Extension Association are accepted without examination; credits from schools that are not members are accepted only after examination.

6. Credits earned in extension 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 correspondence credits is acceptable; the 90 credits may include the 45

extension or correspondence credits allowable from other institutions or may consist entirely of courses taken in this University's Division of Adult Education. All credits earned by advanced-credit examination must be counted in the 90-credit maximum. Up to 10 extension or correspondence credits from this University can apply toward the work of the senior year.

7. The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted. Definite advanced standing is not determined until 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. No credit will be allowed in the senior year.

For work done 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.

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

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Students educated entirely or partially in foreign countries must meet the same general requirements as those educated in American schools and must demonstrate a satisfactory command of the English language. The official record of Canadian students is the matriculation certificate or university admission certificate of their province. A student who has graduated from a school system that provides less than twelve years of instruction may be required to take additional high school work. Students who have been in university attendance must have official transcripts forwarded (see Admission, page 17).

ADMISSION OF SPECIAL STUDENTS AND AUDITORS

Persons twenty-one or over who are legal residents of Washington or Alaska and are not eligible for admission as regular students may apply to the Board of Admissions for 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 requirements for admission to the College, special students may change their status to that of regular students and may receive degrees.

Persons twenty-one or over may register as auditors in nonlaboratory courses or the lecture parts 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. Students who have been dropped for low scholarship may not register as auditors until they have been reinstated in some college of the University.

ADMISSION WITH GRADUATE STANDING

Prospective graduate students must apply for admission to the Graduate School. Entrance requirements are described in the *Graduate School Bulletin*, which may be obtained from the Registrar.

WORLD WAR II AND KOREAN VETERANS

ADMISSION

The University welcomes veterans under the G.I. Bill, the Vocational Rehabilitation Act, and the Korean Bill, provided they can meet the University of Washington entrance requirements.

ENTITLEMENT TO EDUCATIONAL BENEFITS

Veterans who are accepted for entrance to the College of Business Administration and who expect to study under the provisions of Public Law 16 or Public Law 346 should apply to a Veterans Administration regional office for a Certificate of Eligibility at least one month prior to registration. This certificate should be presented at the Veterans Division, 1B Administration Building, the day of registration. Those who do not have this certificate at the time they register must pay all charges; they will receive refunds when authorization from the Veterans Administration is established.

Korean veterans entering under the provisions of Public Law 550 or Public Law 894 should apply to a Veterans Administration regional office for a Certificate for Education and Training at least one month prior to registration. This certificate should be presented at the Veterans Division, 1B Administration Building, the day of registration or during the first week of instruction. Under this law students receive an educational allowance and pay their own tuition and fees. Korean veterans should be prepared to meet all their own expenses as well as the cost of tuition, fees, and supplies for at least two months. Educational allowances are not paid until a full month's attendance has been established.

REGISTRATION

All students must have definite registration appointments each quarter. New students are given appointments when they are notified of admission and 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) may obtain registration appointments by writing or telephoning the Registrar's Office at the time specified in the Calendar (see page 4). Students in residence may obtain appointments at the time announced in the Calendar.

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 Dean's consent.

REGULAR STUDENTS

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

ADVISING

After notification of admission, and before registration, new students should visit or write to the College for help in planning their course programs. The College of Business Administration maintains a registration office in 214 Commerce Hall. Advisers are available at all times to help students plan their program of study both for college requirements and for the major sequence. Students may be referred by the advisers to faculty members.

APTITUDE AND ACHIEVEMENT TESTS

New freshman students (including transfer students with less than 45 quarter credits) are required as part of the registration process to take a battery of achievement tests selected on the basis of their proven value for the prediction of grades most likely to be earned by each student. Test results do not affect admission but are used in advising and in assigning students to appropriate sections of English, and other subjects. Special, foreign, and blind students and auditors are exempt.

MEDICAL EXAMINATIONS

All new students, and all former students who have not attended the University within the preceding calendar year, must take a medical examination, including

a chest X ray. For out-of-state students, this examination is in addition to the medical questionnaire required of them as part of the application for admission. An annual chest X ray is required of all students.

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 Announcement*.

Tuition

Resident students, per quarter \$25.00

A resident student is one who has been domiciled in Washington or Alaska for at least a year immediately before registration. The domicile of a minor is that of his parents.

Nonresident students, per quarter 75.00

Prospective students are classified as nonresidents when their credentials come from schools outside Washington and Alaska. If they believe they are residents, they may petition the Nonresident Tuition Office for a change of classification.

Auditors, per quarter 12.00

Veterans of World Wars I and 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 not entitled to educational benefits under Public Law 16 or 346, or (3) are United States citizens who served in the armed forces of governments associated with the United States during World War I and II and received honorable discharges. Proof of eligibility for this exemption should be presented to the Veterans Division, University Comptroller's Office. Nonresident students who meet one of these requirements pay one-half the nonresident tuition.

This exemption is not granted to Summer Quarter students.

Incidental Fee, per quarter

Full-time students 21.50

Part-time students (registered for 6 credits or less, exclusive of ROTC) 7.00

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), per year 5.00

Good for all athletic events in the school year; must be validated each quarter when fees are paid.

Military Uniform Deposit, per year 25.00

Paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition.

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 Sheet Fee .25

One grade sheet is furnished each quarter without charge; the fee is charged for each additional copy.

Transcript Fee .50

One transcript is furnished without charge; the fee is charged for each additional copy. Supplementary transcripts are 25 cents each.

Graduation Fee 10.00

SPECIAL FEES

From \$2.00 to \$5.00 is charged for late registration; \$2.00 for each change of registration; \$5.00 for a late medical examination; and \$1.00 for a late X ray. The

fee for a special examination is \$1.00; for an advanced-credit examination, \$2.00 per credit; and for removal of an Incomplete, \$2.00.

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.

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	\$165.00
Full-time nonresident student	315.00

<i>Athletic Admission Ticket</i> (optional)	5.00
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<i>Accident Insurance</i> (optional)	4.95
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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>	75.00
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Board and Room

Room and meals in Men's Residence Hall	570.00
Room and meals in Women's Residence Halls	525.00 to 600.00
Room and meals in student cooperative house	445.00 to 460.00
Room and meals in fraternity or sorority house	660.00 to 700.00

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

<i>Personal Expenses</i>	200.00
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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.

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 third-quarter sophomore business administration students who have an over-all grade-point average of 3.0 or better.

Beta Alpha Psi, national accounting fraternity, is composed of accounting majors with 20 credits in accounting subjects and a cumulative grade-point average of 3.0 in accounting and 2.5 in other subjects. Admission is limited to students who suc-

cessfully pass a five-hour competitive examination covering accounting law, theory, and problems.

Men and women with high scholarship and outstanding character in schools of commerce and business administration make up Beta Gamma Sigma, national honorary fraternity. Juniors and seniors with an over-all grade-point average of 3.3 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 and scholastic standing acceptable to the Society's executive committee.

An organization for all students interested in fields of management, the Management Club requires members to have a minimum of 75 credit hours and a cumulative grade-point average of 2.5 or better.

Marketing Club members must be marketing majors with junior standing.

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.

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.

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 in 212 Commerce Hall.

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 Dean of Students Office also provides current information on Selective Service regulations.

The Counselor for International Services, a member of the Dean of Students staff, offers 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 counselor. 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 offers vocational and personal counseling to students who need help in their adjustments to college living. The staff of the Center, which includes vocational counselors, psychiatric social workers, and clinical psychologists, works closely with other student services and supplements the academic advisory program.

HOUSING

Men students may obtain rooms in the Men's Residence Hall through the Office of Student Residences. Housing for women is available in the Women's Residence Halls on the campus. Interested students should write to the Director of Student Residences or the Business Manager of the Women's Residence Halls. The Student

Cooperative Association, 1114 East Forty-fifth Street, Seattle 5, provides housing for men and women students. Information about fraternities may be obtained from the Interfraternity Council; information about sororities from the Panhellenic Council.

It is expected that women students under twenty-one who are not living at home will live in approved group residences, such as the Women's Residence Halls, student cooperatives, Wesley House, and sorority houses. Other living arrangements must be approved by the Office of the Dean of Students.

The Office of Student Residences keeps listings of rooms, rooms with board, housekeeping rooms, and a few apartments and houses. These listings must be consulted in person. Married students who are veterans of World War II or Korea may apply to this office for accommodations in Union Bay Village, the University's family housing project. Since there is a long waiting list, new students should not rely on the possibility of immediate housing there.

HEALTH CENTER

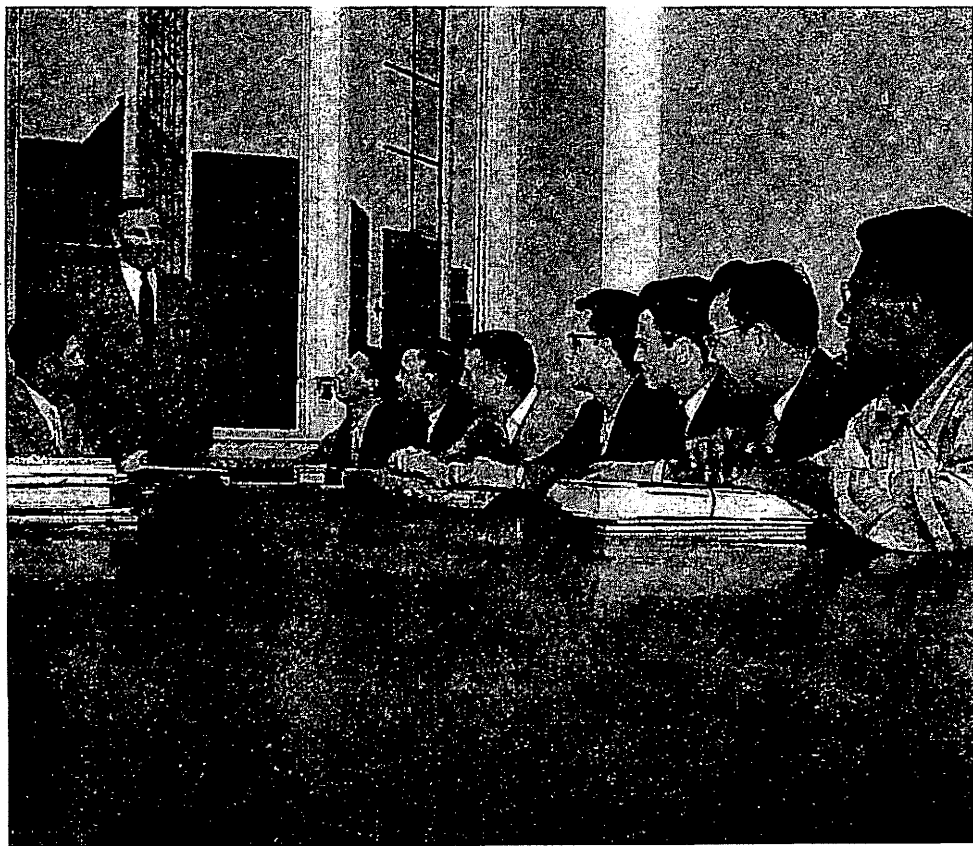
The University maintains a health center and infirmary which help to guard against infectious diseases and incipient ill health.

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 two dollars a day is made. At their own expense, infirmary patients may consult any licensed physician in good standing.

PLACEMENT

Information and assistance in obtaining full-time positions are given graduates by the Business Administration Placement Office, 212 Commerce Hall. This office also offers counseling service on job-hunting and interview procedures and provides opportunities for talks with representatives of national companies during their college-recruiting tours. Company brochures and general career information pamphlets are on display in this office. These services are available to students and graduates of the College.

Part- and full-time work off campus in other fields 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 Nonacademic Personnel Department and the ASUW Personnel Office.



THE DEPARTMENTAL PROGRAMS

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 Arts in 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 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. Every student has the privilege of graduating under the requirements in effect either the year he enters (provided that not more than ten years have elapsed since that date) or the year he receives his degree. No application for a degree can be accepted until all entrance deficiencies have been removed.

MILITARY TRAINING .

Male students who enter the University as freshmen or sophomores are required to complete six quarters of military training. Students should meet this requirement during the first two years they are in residence (registered in regular University classes).

Students may meet the military training requirement with courses in the Department of Air Science and Tactics, Military Science and Tactics, or Naval Science (see pages 57-62).

Exemptions from the requirement are granted to:

1. Students who are twenty-three or over at the time of original entrance.
2. Special students.
3. Part-time students, those registered for 6 credits or less.
4. Students who are not citizens of the United States.

5. Students who because of physical condition are exempted by the University Health Officer.

6. 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.

7. Students who are active members or reserve officers of the Armed Forces or Coast Guard, or commissioned officers of the National Guard.

8. Students who are active enlisted members of the National Guard or of the Organized Reserve of the Armed Forces or Coast Guard at the time of initial entrance.

9. 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.

10. 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.

Those who are exempted under paragraph 4, 8, or 10 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

ACTIVITY COURSES. Students who enter the University as freshmen or sophomores are required to complete one physical education activity course each quarter for the first six quarters of residence.

Men students must take one quarter of swimming. In the other five quarters, a student can elect any activity course he desires. Any freshman or varsity sport may be substituted for any activity course except swimming.

Women students must pass a swimming test and complete one quarter of an individual or dual activity and one quarter of a rhythmic activity during the six quarters.

Exemptions from the activity requirement are granted to:

1. Students who are twenty-five or older at the time of original entrance.

2. Special students.

3. Part-time students, those registered for 6 credits or less.

4. 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 School of Physical Education. All other students who are reported by the University Health Officer as unfitted to join regular classes will be assigned by the Executive Officer of the School of Physical Education to special programs adapted to their needs.

5. Students who are veterans of military service. Complete exemption is granted for a year or more of active service, and exemption from three quarters is granted for six months or more of active service. Veterans with less than six months of service receive no exemption.

6. 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 undergraduates are required to take Physical Education 175, a course in personal health, within the first three quarters of residence. Veterans with six months or more of active service are exempt from this requirement. Other exemptions are by examination and by transfer of credit for a similar course in an accredited college.

Women students who enter the University as freshmen are required to take Physical Education 110, a course in health education, within the first three quarters.

tors of residence. This requirement may be satisfied by a health-knowledge examination given during the Autumn Quarter registration period for women entering the University for the first time.

SCHOLARSHIP AND CREDITS

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 number of total 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:

1. All students, except freshmen, whose current grade-point average is below 2.00 in any quarter are placed on probation the following quarter, regardless of their cumulative average (except that probation for a student with a cumulative average of 2.50 or higher is left to administrative discretion).

2. Freshmen are not placed on probation until after the second quarter. In the case of second- and third-quarter freshmen, a 1.80 current average applies rather than a 2.00.

3. Any student on probation who fails to obtain a current grade average of at least 1.66 in the subsequent quarter is dismissed from the College.

4. Any student on probation whose current grade average falls below 2.00 in each of three consecutive quarters is dismissed from the College. In the case of second- and third-quarter freshmen, a grade average of 1.80 applies rather than 2.00.

5. Any student on probation whose current grade average in any subsequent quarter is 2.00 or above is taken off probation, so far as this College is concerned, regardless of his cumulative average.

6. Any senior entering his last quarter is put on probation if his cumulative grade average is below 2.00.

7. A student in any course in the College of Business Administration who withdraws after the first thirty calendar days of the quarter with a grade of D or E at the time of withdrawal is considered to be doing failing work and is given an EW.

8. A student previously dropped for low scholarship and later reinstated will be dismissed at the end of any quarter thereafter in which he fails to maintain a current grade average of 2.00.

9. Nothing in the above will prevent immediate dismissal of any student at the end of any quarter in which his work is of such unsatisfactory caliber that continuation in the College is unjustified.

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.

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.

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 applied toward graduation, except in the case of students in the Supply Corps.

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 Division of Adult Education and Extension Services.

REQUIREMENTS

The lower- and upper-division requirements leading to the degree of Bachelor of Arts in Business Administration are outlined below.

Lower-Division Requirements

	CREDITS
Gen. Bus. 101 Introduction to Business	5
Acctg. 150 Fundamentals of Accounting	4
Acctg. 151 Fundamentals of Accounting	3
Engl. 101 Composition	3
Engl. 102 Composition	3
Engl. 103 Composition	3
Econ. 160 American Economic History	5
Phys. Educ. 110 or 175 Personal Health	2
Electives (10 credits approved in humanities)	10
Acctg. 255 Basic Accounting Analysis	3
Bus. Law 201 Business Law	5
Bus. Stat. 201 Statistical Analysis	5
Fin. 201 Banking and Business	5
Econ. 200 Introduction to Economics	5
Econ. 201 Principles of Economics	5
Geog. 207 Introductory Economic Geography	5
Electives (10 credits approved in social sciences and 10 credits approved in the sciences)	20
	<hr/> 91

Plus required physical education activity and military science.

Upper-Division Requirements

	CREDITS
Fin. 301 Corporation Finance	5
Mktg. 301 Principles of Marketing	5
Prod. 301 Principles of Production	5
Gen. Bus. 439 Business Fluctuations	5
Hum. Rel. 460 Human Relations in Industry and Business	5
Major requirements and approved electives	64
	<hr/> 89

SENIOR-YEAR RESIDENCE

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

ADVANCED DEGREES

Students who intend to work toward advanced degrees must enroll in the Graduate School (see the *Graduate School Bulletin*).

The College of Business Administration offers a wide range of courses for graduate students covering all major fields of business.

The candidate for a graduate degree in the College of Business Administration must (1) have a bachelor's degree in business administration from an approved college or (2) present not less than 45 quarter credits in accounting, business fluctuations, business law, business statistics, corporation finance, economics, human relations, marketing, and production. Candidates for the degrees of Master of Business Administration and Doctor of Business Administration must include at least 9 credits in accounting and at least one course in business statistics, corporation finance, human relations, marketing, and production.

A student must have a 3.00 (B) average in the last quarter of his senior year to be eligible for graduate courses in the first quarter of graduate work. He must maintain a 3.00 average in his first quarter of graduate work or he cannot take graduate courses in his second quarter. A student who fails to maintain a 3.00 average during the first two quarters of his graduate work will have his case reviewed by the Graduate Study Committee to determine whether or not he will be permitted to continue his work toward an advanced degree.

MASTER'S DEGREES

Two options are offered for the master's degree, the Master of Business Administration and the Master of Arts in business.

Master of Business Administration. The student must complete a minimum of 36 credits including the thesis. At least 24 credits must be in business administration courses. The following courses or alternatives are required:

	CREDITS
Policy and Administration 560 or 561	3
Policy and Administration 590, 591, or 596	3
Accounting 591 or 592	3
Thesis or General Business 570 and Business Writing 571	9
Electives (at least six in 500 series other than policy administration and accounting controls)	18
	<hr/> 36

Master of Arts. The student must complete a minimum of 36 credits 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 15 credits must be earned in courses for graduates (500 and 600 series), and the remaining course credits must be in courses approved for graduate credit. The student must have a reading knowledge of an acceptable foreign language, as determined by examination.

The student's entire program must receive the approval of his advisory committee.

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.

Master of Arts in Urban Planning. The curriculum for a master's degree in urban planning is administered by the Colleges of Business Administration and Engineering; the School of Architecture; and the Departments of Geography, Political Science, and Sociology. Requirements for candidacy are described in the *Graduate School Bulletin*.

DOCTOR OF BUSINESS ADMINISTRATION

Graduate students seeking the D.B.A. degree must first file an application for admission to the Graduate School of the University. The Graduate School passes upon the application and, if found satisfactory, forwards it to the College of Business Administration. Special application forms for the College of Business Administration must then be filed with the Graduate Committee of the College, accompanied by a photograph, a sample of writing ability, and letters of recommendation.

The requirement for consideration for the D.B.A. program is a grade-point average during the senior year of at least 3.25 and the necessary prerequisites for work in the College of Business Administration. The student must maintain a 3.25 or better average in his graduate work.

Residence requirement for the D.B.A. is three years, two of which must be spent at the University of Washington with at least one year in continuous full-time residence. Residence may include any course work taken after the bachelor's degree for which graduate credit is given and also thesis registration. Enrollment in a summer session is acceptable.

The doctoral program is designed to further advanced study in business administration for persons preparing for positions in teaching, business, and government. In addition to the general requirements of the Graduate School, the candidate for the doctoral degree must demonstrate competence in four areas of study, at least three of which must be in the College of Business Administration. The candidate

must also complete a minimum of 15 credits in courses numbered 500 or above in the fields of business and its environment, economics, or other social sciences; concentration of study in any of these areas may be used to satisfy one of the four area requirements. In addition, the candidate must show evidence of competency in business research and must understand administrative functions of management. He must also demonstrate a knowledge of economics pertinent to his fields.

Under the rules of the Graduate School, all work taken for the doctor's degree must be completed within a period of ten years. This includes work transferred from another institution.

The qualifying examination consists of written and oral examinations, all of which are to be taken in one quarter and scheduled by the Graduate Study Committee.

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 from the Library.

The final examination is oral and will normally be taken not less than two quarters after the qualifying examination. It is primarily on the thesis and the field of the thesis and will not be given until after the thesis has been read and approved.

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. 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 quarterly *Time Schedule and Room Assignments*.

ACCOUNTING

Executive Officer: DONALD H. MACKENZIE, 203 Commerce Hall

Students who major in accounting can choose one of two options: professional or public accounting, and administrative or general accounting. The professional option is more complete, since it provides background not only for public accounting and the C.P.A. examination but for almost any accounting career. The major in general accounting is for students who intend to obtain accounting positions with business firms or in government service, and for those who take accounting simply as general training for business.

PROFESSIONAL OR PUBLIC ACCOUNTING OPTION. The requirements are: Accounting 310, 320, 330, 360, 420, 470, 480, 485, 486; and Business Law 202 and 420 (Law in Accounting Practice). One additional course must be taken if the student wishes to qualify for the minimum C.P.A. experience requirement.

GENERAL ACCOUNTING. The requirements are: Accounting 310, 320, 330, 350, 360; plus 6 credits elected in upper-division accounting courses, excluding 305.

COURSES FOR UNDERGRADUATES

150 Fundamentals of Accounting (4)

Basic principles, financial statements, double-entry principles, capital and revenue expenditures, depreciation, etc.

Cannon, Mackenzie

- 151 Fundamentals of Accounting (3)** Walker
Elements of manufacturing, partnership, and corporation accounting. Prerequisite, 150.
- 250 Accounting Techniques (3)** Harwood
Special journals and ledgers, voucher register, payrolls, social security taxes. For majors. Prerequisite, 150.
- 255 Basic Accounting Analysis (3)** Mackenzie
Financial and cost analysis and interpretation. For nonmajors. Prerequisite, 150.
- 305 Office Management (5)** Hamack
Office organization; supervision of office functions; office personnel problems. Prerequisite, Production 301.
- 310 Intermediate Accounting (5)** Berg
Advanced theory on inventory valuation, depreciation, etc.; analysis of profit variations. Prerequisite, 250 or 255.
- 320 Income Tax I (3)** Roller
Federal revenue acts and their application to tax returns. Prerequisite, 310.
- 330 Cost Accounting (5)** Berg, Walker
Economics of cost accounting; industrial analysis; production control through costs; types of cost systems; burden application. Prerequisite, 250 or 255.
- 340 Accounting Systems (3)** Cannon, Hamack
System design and installation, with special emphasis upon internal control. Prerequisite, 310.
- 350 Budgetary Control (2)** Cannon, Hanson, Mackenzie
Revenue and expense planning and control for business enterprises. Prerequisite, 255 or 250.
- 351 Distribution Cost Analysis (2)** Cannon, Hanson, Mackenzie
Analysis of selling expenses as a basis for managerial decisions and control. Prerequisite, 255 or 250.
- 360 Advanced Accounting (5)** Hamack
Continuation of 310. Prerequisite, 310.
- 371 Auditing Internship (2)** Mackenzie
One quarter's work with a certified public accounting firm. Prerequisite, 470.
- 420 Income Tax II (3)** Roller
Special problems in income tax, including fiduciaries and corporate reorganizations; appeals; estate and gift taxes. Prerequisite, 320.
- 470 Auditing I (5)** Cox, Johnson
Auditing procedures and techniques, including practice set. Prerequisites, 340 and 360.
- 471 Auditing II (3)** Johnson
Releases of the American Institute of Accountants and the Securities and Exchange Commission; special problems and theory in professional auditing. Prerequisite, 470.
- 480 Government Accounting I (3)** Lorig
Principles of fund accounting. Prerequisite, 360.
- 485 Consolidations and Mergers (3)** Johnson, Mackenzie
Consolidated balance sheets; statements of profit and loss; domestic and foreign branches. Prerequisite, 360.
- 486 Fiduciary Accounting (2)** Hamack, Johnson
Estates, trusts, and bankruptcies. Prerequisite, 360.
- 490 C. P. A. Problems (3)** Lorig, Mackenzie
Problems from the American Institute of Accountants and state C. P. A. examinations. Prerequisites, 320, 330, 480, 485, and 486.
- 499 Undergraduate Research (3, maximum 9)** Staff
Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 520, 521, 522 Seminar (3,3,3)** Berg, Cannon, Lorig
Critical examination of accounting theories, concepts and standards, and study of current problems: 520, general principles, measurement, historical costs versus current values, current assets and liabilities, and the fund theory of accounting; 521, fixed items in the balance sheet and the related expenses and incomes, including fixed investments and liabilities, plant assets and depreciation, wasting assets and depletion, intangible assets and their amortization, capital stock, dividends, capital surplus, and reserves; 522, income matters such as accounting period convention, realization of income, matching costs and revenues, joint costs, and trends in accounting and reporting. Each course is a separate unit, and need not be taken in order. Prerequisite, permission.
- 591, 592 Seminar in Administrative Controls (3,3)** Cannon, Hanson, Mackenzie
Accounting and statistical controls employed by management: 591, major administrative control techniques including the accounting plan, budgets, standard costs, cost analyses, inventory control, and profit planning; 592, major aspects of budgetary control, principles, and application. Prerequisite, 255 or 330. (591 not a prerequisite for 592.)
- 604 Research (*, maximum 10)** Staff
- Thesis (*)** Staff

BUSINESS EDUCATION

Executive Officer: JOSEPH DEMMERY, 209 Commerce Hall

A major in business education prepares students for teaching positions in high schools and junior colleges. Students who choose this major are expected to complete the course requirements of the College of Business Administration (except Finance 301 and General Business 439) and the course requirements for the provisional general teaching certificate, which is issued by the College of Education (see the *College of Education Bulletin* for complete certification requirements).

Additional requirements for a major in business education are: Secretarial Training 10 (Typewriting), 111, 112 (Secretarial Training), 115 (Office Machines), 120-121 (Gregg Shorthand), and 122 (Advanced Gregg Shorthand), 320 (Secretarial Practice); and 10 credits in approved electives in secretarial training, accounting, or marketing.

A student may qualify for a Washington State teaching certificate with a teaching field in business education through the College of Education. A student is advised to earn his baccalaureate degree in the College of Business Administration if he plans to work toward the Master of Business Administration; if, on the other hand, he plans to work toward the Master of Education, he is advised to take his degree in education.

BUSINESS LAW

Executive Officer: JOSEPH DEMMERY, 209 Commerce Hall

The Department of Business Law does not offer a major, but provides courses in the essentials of business law for business administration students and students in other colleges.

COURSES FOR UNDERGRADUATES

- 201 **Business Law (5)** **Brown, Goldberg, Staff**
Introduction to law, its origin and development; formation and performance of contracts; fraud, mistake, duress and undue influence; rights of third parties and remedies available at law and in equity; the law of agency as affecting the rights and duties of the principal, the agent, and the third parties. Prerequisite, English 103.
- 202 **Business Law (5)** **Brown, Goldberg, Staff**
Real and personal property, security transactions, sales, and negotiable instruments. Prerequisite, 201.
- 307 **Business Law (3)** **Botzer, Burrus**
For engineering students and others unable to take more than 3 credits in business law. May not be substituted for 201. Not open for credit to business administration students. Prerequisite, permission.
- 420 **Law in Accounting Practice (3)** **Brown**
Advanced business law problems for C. P. A. candidates. Prerequisite, 202. (Autumn and Spring Quarters the course meets two hours per day prior to C. P. A. exam.)

BUSINESS STATISTICS

Executive Officer: DONALD H. MACKENZIE, 203 Commerce Hall

The Department of Business Statistics gives training in collecting, recording, analyzing, presenting, and interpreting the statistical data required for the management of business. The requirements for a major are: Business Statistics 340, 341, 342, and 443; Accounting 310 (Intermediate Accounting) and 341 (Systems for Mass Production); Mechanical Engineering 415 (Quality Control) and 417 (Methods Analysis); and Mathematics 105 (College Algebra).

COURSES FOR UNDERGRADUATES

- 201 **Statistical Analysis (5)** **Butterbaugh, Hanson, Hastings**
Basic statistical measures and methods in the solution of business problems. A nonmathe-

matical course in the elements of descriptive statistics. Misuses of statistical measures; fallacies in methods of collecting and interpreting data. Prerequisite, General Business 101.

- 340 Advanced Statistical Analysis (5)** **Butterbaugh**
Application of statistical techniques to practical problems of business, with emphasis on the interpretation of final results; problems involving the construction of index numbers; simple correlation, and measurement of and adjustment for trend and seasonal variation. Prerequisite, 201.
- 341 Sampling (3)** **Butterbaugh**
Theory and practice of sampling as applied to business problems; effect of biases on accuracy of results; precision and its cost. Tests of reliability of measures and the significance of differences in results obtained in sampling. Acceptance sampling. Prerequisite, 201.
- 342 Correlation (3)** **Butterbaugh**
Theory and practice of simple and multiple correlation techniques as applied to business problems. Validity tests of correlation results; short-cut technique; use of graphic multiple correlation in commercial outlook forecasting; application of correlation in managerial control. Prerequisite, 201. Recommended to follow 340.
- 443 Statistical Problems (3)** **Butterbaugh**
Application of various types of analyses to practical business administration problems. The use of the analysis of variance technique; contingency tables, various types of control charts; sequential sampling; analysis of variations in labor, materials, and sales revenue. Prerequisite, 341.

COURSES FOR GRADUATES ONLY

- 520 Seminar (5)** **Butterbaugh**
Administrative use of modern statistical techniques available for solution of problems in industrial, commercial, governmental, and non-profit organizations. Emphasis on the utilization of statistical methods in administrative control. Group discussion, lecture, and reading groups. Prerequisite, permission.
- 604 Research (*, maximum 10)** **Staff**
Prerequisite, permission.
- Thesis (*)** **Butterbaugh**

BUSINESS WRITING

Executive Officer: CHARLES J. MILLER, 300C Commerce Hall

The Department of Business Writing offers both required and elective courses for students majoring in other departments of the College. In this Department students learn to compile research data and to write effective business letters and reports.

COURSES FOR UNDERGRADUATES

- 310 Business Correspondence (5)** **Murphy, Peck**
Analysis of principles, including psychological factors, and actual business letters in terms of fundamentals. Prerequisite, English 103.
- 410 Business Reports (5)** **Peck**
Analysis of problems, preparation of written reports. Prerequisite, junior standing.

COURSES FOR GRADUATES ONLY

- 571 Business Studies (5)** **Henning**
Independent study in the field of business administration; critical evaluation of business analysis and research methods. Topics, methods, and content of independent research studies are subjected to critical evaluation in seminar discussion. Effective communication of ideas is emphasized. Prerequisite, permission.

FINANCE

Executive Officer: DONALD H. MACKENZIE, 203 Commerce Hall

Students majoring in finance choose one of two options: banking and credit, which prepares students for careers in banks and related financial institutions and as credit managers; and corporation finance and investments, which prepares students for careers in investment banking, investment management, and financial administration in business enterprises.

BANKING OPTION. The requirements are: Finance 423, 426, 428, and 444; plus 13 credits elected from Finance 334, 340, 367, 410, and 446; Insurance 301 (Principles); Accounting 310 (Intermediate Accounting); Economics 350 (Public Finance

and Taxation I); Economics 421 (Money, Credit, and the Economy); Economics 423 (Monetary, Banking, and Cycle Policies); and Real Estate 301 (Principles of Urban Real Estate).

INVESTMENTS OPTION. The requirements are: Finance 423 (or 426), 444, and 446; Accounting 310 (Intermediate Accounting); plus 13 credits from Finance 334, 340, 367, 410, 428, and 450; Insurance 301 (Principles); Economics 350 (Public Finance and Taxation I); and Real Estate 301 (Principles of Urban Real Estate).

COURSES FOR UNDERGRADUATES

- 201 Banking and Business (5)** **Hassen, Wright, Staff**
Functions of the important financial institutions, including commercial banks and the banking system of the United States; investment banking, security markets, savings institutions, consumer credit agencies, governmental credit agencies, and international financial relationships. The role each institution plays in meeting the short-, intermediate-, and long-term credit needs of business and individuals is emphasized. Prerequisites, Accounting 151 and Economics 200 and 201.
- 301 Corporation Finance (5)** **Cannon, Kester, Wright, Staff**
Formation and financial organization of the business enterprise; corporate securities; promotion; long-term financing of various types of businesses; marketing of securities; working capital analysis; sources of short-term funds; income determination; reserve and dividend policies; financing expansion; failure and reorganization. Prerequisite, 201.
- 334 Credits and Collections (5)** **Blythe**
Credit as a factor in the production and distribution of commodities; retail credit and mercantile credit; mercantile credit as a basis for bank credit; organization and functions of the credit department; sources of credit information; credit limits; collection systems and procedures; creditors' legal remedies. Prerequisite, 201.
- 340 Securities Markets (3)** **Blythe, Henning**
Examination of the economic functions of securities markets; investment banking, direct placements, securities exchanges, and the over-the-counter market. Special attention is given to relationship of customer with brokers and dealers, transactions made through brokers, trading techniques, and government regulation of securities trading. Prerequisites, 201 and 301.
- 367 Foreign Exchange (5)** **Henning**
Principles of international exchange; financing imports and exports; foreign exchange markets; foreign banking by American institutions; current status of foreign exchange. Prerequisite, 201.
- 410 Mortgage Banking (3)** **Blythe, Henning**
Organization and operation of credit and auxiliary agencies, private and governmental, in the urban and rural mortgage banking fields. Credit and management problems of savings and loan associations, mutual savings banks, and related institutions. Prerequisites, 201 and Real Estate 301.
- 423 Bank Organization and Administration (5)** **Blythe, Henning**
Problems of bank organization and departmental functions; appraisal of responsibilities of officers and directors; analysis of relationships with correspondents, branches, government agencies, and the money market; bank personnel and public relations policies; mergers and consolidations. Prerequisite, 201.
- 426 Management of Bank Funds (5)** **Blythe, Henning**
Principles of management of bank funds; credit policies; credit analysis; commercial, consumer, agricultural, real estate, and security loans; handling of distressed loans; investment procedures; portfolio policies; bank earnings and expenses; bank dividend policies. Prerequisite, 201.
- 428 Bank Credit Administration (3)** **Staff**
Selected cases of loans to Pacific Northwest industries and agriculture. Prerequisites, 301 and Accounting 250 or 255.
- 444 Principles of Investment (5)** **Kester, Wright**
Designed both for students who expect to enter financial work and for those who desire a knowledge of investment for personal use. Basic principles in the selection of investment media; determination of individual and institutional investment policies; fundamental analysis of industries and securities. Prerequisite, 301.
- 446 Investment Analysis (5)** **Kester**
An advanced course primarily for students who want preparation for investment banking or for professional investment work. Principles and techniques applicable to the analysis of securities, both corporate and governmental, and workable criteria for the selection or rejection of issues are emphasized. Prerequisites, 444 and Accounting 310.
- 450 Problems in Corporation Finance (5)** **Kester**
Case study of financial problems of private business corporations. Includes special problems in promotion, financing current operations, financing long-run needs, reserve and dividend policies, expansion, combination, and reorganization, as well as comprehensive financial problems, from the management point of view. Prerequisite, 301 or permission.
- 499 Undergraduate Research (3, maximum 6)** **Staff**
Current problems in credit administration, international finance, banking, corporation finance, and investments. Prerequisites, 301 and permission.

COURSES FOR GRADUATES ONLY

- 520 Seminar in Banking Problems (3)** **Blythe**
Selected problems of contemporary and permanent significance in domestic and international banking and finance. Prerequisite, permission.
- 521 Seminar in Money Markets (3)** **Honning**
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. Integrating corporation finance and banking, 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)** **Kester, Wright**
Emphasizes selected contemporary problems and methods used, internal and external, in financing business corporations; sources of information useful for research 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.
- Thesis (*)** **Staff**

FOREIGN TRADE

Executive Officer: CHARLES J. MILLER, 300C Commerce Hall

The Department of Foreign Trade prepares students for careers in importing and exporting houses, import and export departments of manufacturing and mercantile establishments, and related foreign trade activities. The requirements for a major are: Foreign Trade 301, 380, and 450 or 461; Finance 367 (Foreign Exchange); Marketing 371 (Wholesaling) or Transportation 435 (Industrial Transportation Problems); and a minimum of 10 upper-division credits from two of these fields: international economics, geography, political science, and Far Eastern.

COURSES FOR UNDERGRADUATES

- 301 Principles of Foreign Trade (5)** **Dowd, Kolde**
Principles and importance of foreign trade marketing; analytical survey of institutions, functions, and business policies. Prerequisite, Marketing 301.
- 380 Foreign Trade Practices (5)** **Dowd**
Use of techniques and instruments of foreign trade; practices of pricing, merchandising, packaging, packing, and shipping; foreign market analysis. Prerequisite, 301.
- 450 Far East Foreign Trade Problems (5)** **Dowd**
Export, import, and investment problems involved in trading with the Far East. Prerequisite, 301.
- 461 Problems in Foreign Trade (5)** **Dowd**
Analysis of foreign trade problems at the management level. Prerequisite, 380.

COURSES FOR GRADUATES ONLY

- 520, 521 Seminar (3,3)** **Dowd**
Research in problems and policies of exporting and related activities; effects of governmental policies on the conduct of trade. Prerequisite, permission.
- 604 Research (*, maximum 10)** **Staff**
Prerequisite, permission.
- Thesis (*)** **Dowd**

GENERAL BUSINESS

Executive Officer: JOSEPH DEMMERY, 209 Commerce Hall

The Department of General Business is designed for students who want a balanced training in several fields of business administration or who have not decided upon a specialized field of study. The requirements for a major are: 30 credits in approved upper-division courses in business, of which no more than 10 may be in any one major field, and 10 of which must be in courses numbered 400.

COURSES FOR UNDERGRADUATES

- 101 Introduction to Business (5)** **Cox, Wheeler**
The nature of business problems; various types of ownership; physical factors in location of business; personnel aspects; marketing problems, devices for long- and short-term financ-

ing; managerial controls, such as accounting, statistics, and budgets; and the relation of business to government.

- 439 Business Fluctuations (5)** **McGuire, Robinson**
Analysis of the basic variations affecting general business conditions as a background for business and investment decisions; appraisal of proposals for controlling cycles and of forecasting techniques. Prerequisites, Finance 301, Marketing 301, Production 301, and Business Statistics 201.
- 499 Undergraduate Research (3, maximum 9)** **Demmery, Wheeler**
Prerequisites, 439 and permission.

COURSES FOR GRADUATES ONLY

- 570 Seminar in Business Research (5)** **Engle**
Business research methods and techniques. Emphasis is placed on what business research is; how it is done; and who does it. Instruction in planning research projects and budgets. The place of business research in business management is an important part of the seminar. The student learns through doing as well as reading and discussion. Prerequisites, graduate standing and permission of instructor.
- 590 Business History (3)** **Wheeler**
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.
- 593 Seminar in Business Fluctuations (3)** **Robinson**
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.
- 594 Seminar in Business Forecasting (3)** **Demmery, Robinson**
Problems of business forecasting and their setting; study and appraisal or 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.
- 598 Current Problems in Business (3)** **Engle**
Current problems of business in the American economy. Timely topics are selected covering relationship of business to government in general and in specific fields, such as antitrust and government controls in wartime. Small business, in relation to big business, big labor, and big government may be included. The student is expected to familiarize himself with the assigned subjects, and to discuss the problems raised. Prerequisites, graduate standing and permission of instructor.
- 604 Research (*, maximum 10)** **Staff**
Prerequisite, permission.
- Thesis (*)** **Staff**

HUMAN RELATIONS IN BUSINESS

Executive Officer: EDWARD G. BROWN, 263B Miller Hall

The purpose of the Department of Human Relations in Business is to help each student develop an understanding of human relations that will make him a more responsible member of a business organization. Both courses offered by the Department are useful to students in other colleges of the University, and course 460 is required for all business administration students.

COURSES FOR UNDERGRADUATES

- 365 Industrial Relations for Engineers (3)** **Staff**
Actual cases are used to develop useful ways of dealing with human situations, making administrative decisions, supervising people, and building effective industrial and personnel relations. Not open to business administration students.
- 460 Human Relations in Business and Industry (5)** **Staff**
Actual cases are used to develop an understanding of human situations in business and industry. Useful methods and concepts are developed as aids in diagnosing and taking action. Prerequisite, junior standing.

INSURANCE

Executive Officer: JOSEPH DEMMERY, 209 Commerce Hall

The Department of Insurance has two primary aims: to give students information which will make them more intelligent purchasers of both personal and business insurance, and to train students who expect to enter some branch of the insur-

ance business or the insurance department of a banking, commercial, or industrial organization. The requirements for a major are: Insurance 301, 360, 370, and 375; plus 10 or more credits from the following: Accounting 310 (Intermediate Accounting); Business Writing 410 (Business Reports); Finance 334 (Credit and Collections); Finance 444 (Principles of Investment); Law 231 (Taxation); Law 307 (Insurance); Marketing 351 (Principles of Salesmanship); Policy and Administration 470 (Business Policy); and Transportation 452 (Transportation Insurance).

COURSES FOR UNDERGRADUATES

- 301 Principles of Insurance (5)** **Staff**
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.
- 360 Life Insurance for the Individual (5)** **Hayne**
Recognizing individual needs for life insurance; policy provisions; settlement options; programming; rates and reserves; prospecting. The viewpoint is that of the insurance company. Prerequisite, 301.
- 370 Property Insurance (5)** **Hayne**
Contracts and benefits under fire insurance and its allied lines of coverage; inland marine insurance; ocean marine insurance. The viewpoint is that of the insurance company. Prerequisite, 301.
- 375 Casualty Insurance (5)** **Hayne**
Contracts, benefits, and premiums in the fields of automobile, liability, burglary, robbery, and theft insurance, and fidelity and surety bonding. The viewpoint is that of the insurance company. Prerequisite, 301.
- 460 Life Insurance for Business (5)** **Hayne**
Methods of meeting the life contingency risks of economic enterprises, including key-man and liquidation insurance, group insurance, and employee benefit plans which are susceptible to funding by insurance. The viewpoint is that of the insurance company. Prerequisite, 360.
- 480 Insurance Programming for Business Enterprise (3)** **Hayne**
The insurance industry from the viewpoint of the business buyer; kinds and amounts of insurance to carry; how to evaluate the program. A case-study approach. Prerequisites, 301 and permission.
- 499 Undergraduate Research (3, maximum 6)** **Hayne**
Open only to qualified insurance students. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 520 Seminar (3)** **Hayne**
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.
- Thesis (*)** **Staff**

LAW, PREPROFESSIONAL PROGRAM

Adviser: S. D. BROWN, 223A Commerce Hall

Students at the University who plan to enter the University of Washington School of Law may qualify for entrance by obtaining a bachelor's degree before entrance; or by taking a special three-year course of prelegal training which leads to a bachelor's degree at the successful completion of the first year in the Law School.

Students who take the three-year course leading to a bachelor's degree after one year in the Law School have a choice of three curricula. The College of Arts and Sciences provides an arts-law and a science-law curriculum (see 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 2.5 grade-point average, and the required quarters in physical education activity and/or military training, if a degree is to be conferred by the college at the end of a year in the Law School.

These three-year curricula are open to students from other institutions who enter the University with advanced standing, provided that they earn at least 45 approved credits in the University before entering the Law School. This privilege is not extended to normal school graduates attempting to graduate in two years nor to transfer students who enter the University with the rank of senior.

Students must satisfy all the specific requirements for a Bachelor of Arts in Business Administration degree with the exception of Business Law 201 (Business Law) and must have accumulated a total of 135 credits before entering the Law School.

MARKETING

Executive Officer: CHARLES J. MILLER, 300C Commerce Hall

Students who major in marketing study the principles and policies governing the distribution of goods from producers to consumers and the functions performed by the various types of distributive agencies. Courses are designed to prepare students to enter industrial marketing organizations, wholesaling institutions, retail stores, advertising, and research agencies.

Students who plan to major in marketing should take 301 the last quarter of their sophomore year.

Requirements for a major include 371, 381, 391, 421; a problems course (451, 461, or 471); and 5 credits recommended by the faculty adviser.

COURSES FOR UNDERGRADUATES

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|--|-------------------------------|
| 301 Principles of Marketing (5) | Etcheson, Staff |
| Analytical survey of institutions, functions, problems, and policies in the distribution of goods from producer to consumer; pricing, costs, and governmental regulations. Should be taken in sophomore year by marketing majors. | |
| 351 Principles of Salesmanship (2) | Boyne |
| Psychological, economic, and marketing foundations of sales activities. Effective sales techniques demonstrated by students in realistic situations. Prerequisite, 301. | |
| 361 Cooperative Marketing (3) | Gordon |
| Principles, organization, and methods of operation of both producer and consumer cooperatives. Comparison with other marketing methods. Prerequisite, 301. | |
| 371 Wholesaling (5) | Gordon, Kolde |
| Principles and functions of wholesaling consumer, industrial, and agricultural goods. Practical aspects of managing wholesaling establishments. Prerequisite, 301. | |
| 381 Retailing (5) | Comish, Gordon, Miller |
| 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. | |
| 391 Advertising (5) | Wagner |
| Planning the program: analysis of media, budgets, research; utilization by business; advertising institutions; economic and social aspects. Prerequisite, 301. | |
| 401 Sales Management (5) | Stanton |
| Analysis of sales methods, policies, and costs from the point of view of management. Sales organization; management of the sales force (selection, training, compensation, and supervision); sales planning; sales and distribution policies, problems. Prerequisite, 301. | |
| 421 Marketing Research (5) | Wagner |
| Uses, methods, and techniques of marketing research. A class research project provides practical application of methods studied. Prerequisites, 391 and Business Statistics 201. | |
| 431 Retail Merchandising Problems (3) | Comish |
| Buying, pricing, inventories, stock turnover and stock-sales ratios, stock control, and operating statements. Prerequisite, 381. | |
| 441 Retail Sales Promotion (3) | Comish |
| Store design and layout, display, advertising, publicity, personal salesmanship, promotional budget, and coordination of promotional activities. | |
| 451 Wholesale and Industrial Marketing Problems (5) | Miller |
| Analysis of wholesale and industrial marketing problems at the management level. Prerequisite, 371. | |
| 461 Retail Management Problems (5) | Comish |
| Analysis of retail problems from the point of view of management. Prerequisite, 381. | |
| 471 Advertising Problems (5) | Wagner |
| Analysis of advertising problems from the point of view of management. Prerequisite, 391. | |

- 481 Field Work (2, maximum 8)**
Open to scholarship students only. Prerequisite, permission.

Comish

COURSES FOR GRADUATES ONLY

- 520, 521, 522 Seminar (3,3,3)** **Staff**
Social, economic, and business implications of marketing operations, institutions, and policies. Each quarter is concerned with different aspects of the problem. Prerequisite, one marketing course and permission.
- 604 Research (*, maximum 10)** **Staff**
Prerequisite, permission.
- Thesis (*)** **Staff**

OFFICE MANAGEMENT**Executive Officer: DONALD H. MACKENZIE, 203 Commerce Hall**

Office management may be chosen as a major by students who want to arrange a program in office organization, supervision of office functions, office personnel problems, and the techniques and procedures involved in efficient office management. The requirements for a major are: Accounting 305 (Office Management), 310 (Intermediate Accounting), 340 (Accounting Systems) and 499 (Undergraduate Research); Business Writing 310 (Business Correspondence); Finance 334 (Credit and Collections); and Personnel 310 (Personnel Management).

PERSONNEL**Executive Officer: EDWARD G. BROWN, 263B Miller Hall**

The Department of Personnel provides training in the policies and procedures used in developing and maintaining an efficient work force. The requirements for a major are: Personnel 310, 345, 346, and 450; Policy and Administration 463 (Administrative Practices); Sociology 466 (Industrial); Economics 340 (Labor in the Economy); Mechanical Engineering 417 (Methods Analysis); and one course recommended by the adviser from: Psychology 101 (Psychology of Adjustment); Psychology 135 (Applied); Psychology 335 or 336 (Industrial); Psychology 337 (Vocational); Psychology 345 (Social); Psychology 346 (Personality); Psychology 413 (Tests and Measurements); Economics 441 (Union-Management Relations); and Economics 442 (American Labor History).

COURSES FOR UNDERGRADUATES

- 310 Personnel Management (5)** **Staff**
Procedures in obtaining and maintaining an efficient work force, with emphasis on the methods of initiating and carrying out an effective personnel program.
- 345 Personnel Management Techniques (3)** **Staff**
Practice in using the tools of a personnel administrator: job analysis and description, job evaluation, application blanks, reference letters, employment interviews, employee handbooks, counseling and correction interviews. Prerequisite, 310.
- 346 Personnel Management Techniques (3)** **Staff**
Practice in using the tools of a personnel administrator: job instruction and job methods, efficiency ratings, safety, and suggestion systems. Prerequisite, 316.
- 450 Industrial Relations Administration (5)** **Wolf**
Nature of unions, institutional forces, collective bargaining practices, methods and techniques used by management in dealing with unions, process of negotiating a labor agreement, contents of the agreement, implications to management, and problems involved in operating under a labor agreement.

COURSES FOR GRADUATES ONLY

- 520 Seminar in Personnel Management (3)** **Sutermeister**
By case discussion and brief written reports, analysis of the problems and policies in personnel administration in the following areas are 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.
- 604 Research (*, maximum 10)** **Staff**
- Thesis (*)** **Sutermeister**

POLICY AND ADMINISTRATION

Executive Officer: EDWARD G. BROWN, 263B Miller Hall

The Department of Policy and Administration provides courses 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. Policy and administration courses emphasize the administrative viewpoint and the general unity of business administration and encourage the habit of thinking about business problems in an over-all context.

COURSES FOR UNDERGRADUATES

- 463 Administrative Practices (3)** **Barnowe, Hennessy**
Administrative behavior and the administrative function in business and industry, studied through selected reading and the use of actual cases. Emphasis is on the development of skill in diagnosing concrete situations. Prerequisite, Human Relations 460.
- 470 Business Policy (5)** **Brown, Schrieber**
Problems of policy formulation at upper levels of management, requiring the over-all integration of the various aspects of business. Prerequisites, Finance 301, Marketing 301, and Production 301.
- 471 Problems of the Independent Businessman (5)** **Brown**
Case studies of problems faced by independent owner-managers of small business enterprises. Prerequisites, Finance 301, Marketing 301, and Production 301.

COURSES FOR GRADUATES ONLY

- 560, 561 Policy Determination and Administration (3,3)** **Brown, Bryan, Schrieber**
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 seminar. Prerequisites, Master of Business Administration candidacy and permission for 560; 560 for 561.
- 562 Responsibilities of Business Leadership (5)** **Brown**
Examination of a wide range of domestic and international forces, social and economic, which influence the policy making decisions of executives. Emphasis is on problems of top business executives in their relationships with employees, customers, stockholders, competitors, government, and the public in matters of social responsibility. Prerequisite, permission.
- 590, 591 Seminar in Administration (3,3)** **Barnowe**
An examination of present-day thinking, points of view, and developing research in the field of administration. Various areas are developed by extensive reading, case discussion, and individual reports on special projects and research. Prerequisite, permission.
- 596 Seminar in Administrative Organization (3)** **Bryan**
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.
- 604 Research (*, maximum 10)** **Staff**
- Thesis (*)** **Staff**

PRODUCTION

Executive Officer: EDWARD G. BROWN, 263B Miller Hall

The Department of Production is concerned with the proper use of materials, machines, manpower, methods, and standards in manufacturing as well as the industrial 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 the major are: Production 351, 355, and 460; Accounting 330 (Cost Accounting); Personnel 310 (Personnel Management); Mechanical Engineering 201 (Metal Castings), 202 (Welding), 203 (Metal Machining) and 417 (Methods Analysis); and one of the following: Production

470; Policy and Administration 470 (Business Policy); or Policy and Administration 471 (Problems of the Independent Businessman). Suitable substitutes may be arranged with faculty permission for Mechanical Engineering 201, 202, and 203 for those students who have had corresponding experience or who desire training in other technical specialties.

COURSES FOR UNDERGRADUATES

- 301 Principles of Production (5)** **Staff**
Principles and procedures of a manufacturing enterprise; organization and administration; product development; plant location, layout, and equipment; planning and control of production, materials, quality, personnel, and wages; methods analysis and time standards; industrial budget control; the background of scientific management.
- 351 Production Planning and Control (5)** **Kast**
Principles, procedures, and techniques in organizing, planning, and controlling production in various types of manufacturing. The functions of production control in continuous and intermittent types of production. The processes of production routing, scheduling, dispatching, and follow-up. Prerequisite, 301.
- 355 Purchasing and Material Management (5)** **Bryan**
Principles and techniques of industrial and institutional purchasing, including organization of the purchasing department and its relationship to other departments; policies and procedures on negotiation with vendors; determination of proper quality, quantity, source, and price; value analysis; inventory control; materials management. Prerequisite, advanced junior standing.
- 380 Field Work in Production (2, maximum 6)** **Kast**
Open only to students majoring in production. A program of part-time employment planned in advance with the instructor to provide on-the-job training correlated with current reading, periodic reports, and evaluation of experience. Prerequisites, 301 and permission.
- 460 Manufacturing Administration (5)** **Bryan, Wolf**
Administration of the production activities of a manufacturing enterprise. Particular attention is given to production decisions and other executive responsibilities at the management level. Prerequisites, 301 and 351.
- 470 Industrial Analysis of the Pacific Northwest (5)** **Schrieber**
Analysis of the production base of the Pacific Northwest; evaluation of industrial potential of area. Special attention is given to production methods and problem analysis for selected industries. Prerequisite, 301.
- 499 Undergraduate Research (3, maximum 9)** **Wolf**
Individual study or special project in production field. Open only to qualified students majoring in production. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 520, 521 Seminar (3,3)** **Bryan, Schrieber**
Advanced study in policies and problems of production management. Research, reading, and reports on current problems of manufacturing administration. 520 is concerned with decisions normally requiring frequent review, such as product research and development, quality control, production planning and control, materials purchasing and management, cost analysis and control, manpower and wage administration, government regulation of production. 521 is concerned with long-term decisions which are not readily changed, such as plant location, industrial power, industrial buildings and facilities, machinery and equipment, automation and mechanized materials handling, plant layout. Each course is a separate unit, and need not be taken in order. Prerequisite, permission.
- 604 Research (*, maximum 10)** **Bryan**
Prerequisite, permission.
- Thesis (*)** **Staff**

REAL ESTATE

Executive Officer: JOSEPH DEMMERY, 209 Commerce Hall

The Department of Real Estate provides training that is useful in a general business career and also prepares students who plan to enter the field of real estate. The requirements for a major are: Real Estate 301, 410, 495, and 496; Insurance 301 (Principles of Insurance); Architecture 105 (The House); and 7 or more credits from Finance 410 (Mortgage Banking); Finance 444 (Principles of Investment); Marketing 351 (Principles of Salesmanship); and Architecture 100 and 101 (Architectural Appreciation).

COURSES FOR UNDERGRADUATES

- 301 Principles of Urban Real Estate (5)** **Demmery, Wheeler**
Economic principles underlying the utilization of land; determining factors in the location

and development of residential, commercial, industrial, and financial districts; public control. Prerequisite, General Business 101.

- 410 Real Estate Appraisals, Brokerage, and Management (5)** **Demmery**
Types of real estate uses and their characteristics; appraisals of farm and urban land improvements; property rights, real estate finance; management of property; leases. Prerequisite, 301.

- 495, 496 Research in Real Estate (3,3)** **Demmery**
Open to qualified undergraduate and graduate students. Prerequisites, 301 and permission for 495; 495 for 496.

COURSES FOR GRADUATES ONLY

- 604 Research (*, maximum 10)** **Staff**
Prerequisite, permission.
- Thesis (*)** **Demmery**

SECRETARIAL TRAINING

Executive Officer: JOSEPH DEMMERY, 209 Commerce Hall

The Department of Secretarial Training is designed to meet the needs of students who are preparing for positions as secretaries to the executives of business concerns and other institutions. The requirements for a major are: Secretarial Training 310, 311, and 320; Business Writing 310 (Business Correspondence); Accounting 305 (Office Management); and English 387 (English Grammar).

COURSES FOR UNDERGRADUATES

- 10 Typewriting (1)** **Staff**
Familiarization with keyboard; development of speed and accuracy; introduction to basic typewriting problems. No credit toward graduation.
- 111, 112 Secretarial Training (2,2)** **Staff**
Further development of typewriting speed and accuracy; emphasis on business letters and other business forms; personal typewriting problems. Prerequisites, 10 or one or two semesters of high school typewriting, for 111; or three or four semesters of high school typewriting for 112.
- 115 Office Machines (3)** **Dolaney, Staff**
Laboratory instruction and practice in the operation of selected office machines, exclusive of secretarial machines.
- 120-121 Gregg Shorthand (3-3)** **Staff**
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)** **Staff**
New matter dictation and introduction to transcription. Prerequisite, -121 or permission.
- 310, 311 Advanced Secretarial Training (5,5)** **Staff**
Advanced shorthand dictation and transcription; general office practice and procedures. Prerequisites, 122 or permission for 310; 310 for 311.
- 320 Secretary Practice (5)** **Staff**
Application of skills acquired in shorthand, typewriting, office machines, business letter writing; machine transcription, electric typewriting, duplicating processes, filing systems; office procedures. Prerequisites, 112, 115, 122.

TRANSPORTATION

Executive Officer: CHARLES J. MILLER, 300C Commerce Hall

The Department of Transportation provides training for students who are planning careers in the field of transportation and for other business administration students who need an understanding of the methods of transportation and of industrial traffic management. The requirements for a major are: Business Law 202 (Business Law); Transportation 301, 440; and at least 20 credits from Transportation 311, 313, 315, 317, 450, 452 and 455.

COURSES FOR UNDERGRADUATES

- 301 Principles of Transportation (5)** **Brewer, Little**
Survey of air, water, highway, and railroad transportation. The relation of transportation to business activities and the movement of passengers, raw materials, and finished products.

Business practices and policies of transportation companies. Federal regulation of transportation industries.

- 311 Railroad Transportation (5)** **Brewer, Staff**
Business policies and practices of railroad operating companies. Studies in financing equipment, labor management, pricing considerations, and practices. Control of the movement of equipment. National policy and regulatory control of the railroad industry. Prerequisite, 301.
- 313 Air Transportation (5)** **Brewer, Little**
Management and administrative policies in commercial air transportation. Considerations in the finance and purchase of equipment. Utilization of aircraft in movement of passengers and freight. Pricing theory and practice. National policy and regulation of air carriers. Prerequisite, 301.
- 315 Highway Transportation (5)** **Brewer**
Business methods and practices in operation and management of common, contract, and private motor carriers in intra- and interstate transportation; state and federal regulation of these carriers; highway freight rates. Prerequisite, 301.
- 317 Water Transportation (5)** **Little**
Problems of ocean and inland water carriage relating to routes, rates, services, traffic, operation, and regulation. Prerequisite, 301.
- 435 Industrial Transportation Problems (5)** **Brewer**
Plant location with respect to transportation costs, relative time in transit, considerations in industry location; handling, warehousing, and distribution problems; transportation pricing and claim procedure; liability relationships between carriers. Not open to transportation majors.
- 440 Industrial Traffic Management (5)** **Brewer**
Transportation buying; problems in keeping tariff files, obtaining and quoting rates; routing, expediting, and tracing shipments; making claims; and auditing freight bills. Prerequisite, 301.
- 450 Air Law and Regulation (3)** **Brewer**
National and international control of air transportation, with emphasis on sovereignty of the air, carrier liability, the International Civil Aviation Organization, and procedures and practices before the Civil Aeronautics Board. Prerequisite, 313.
- 452 Transportation Insurance (5)** **Hayne**
Contracts of affreightment, marine insurance, general and particular average, salvage, limited liability, and marine collision law.
- 455 Airport Management (3)** **Brewer**
Aspects of airport planning, financing, operation, and management.
- 499 Undergraduate Research (3, maximum 6)** **Staff**
Individual study and special projects in transportation fields. Open only to qualified students majoring in transportation. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 520, 521 Seminar (3,3)** **Brewer, Staff**
Advanced analysis and research on current transportation problems and practices. Study and discussion of techniques employed in the evaluation of an industrial firm's transportation problem. Relationship and effect of changing national policies and regulations on transportation businesses. Prerequisite, permission.
- 604 Research (*, maximum 10)** **Staff**
Prerequisite, permission.
- Thesis (*)** **Staff**

OTHER COURSES IN BUSINESS ADMINISTRATION PROGRAMS

ANTHROPOLOGY

- 101 Principles of Anthropology: Race (5)** **Staff**
Evolution and heredity as applied to man; racial classification and its significance.
- 102 Principles of Anthropology: Social Customs (5)** **Staff**
Man's social customs, political institutions, religion, art, literature, and language.
- 103 Principles of Anthropology: Prehistory (5)** **Staff**
Man's cultural development as revealed by archaeology and carried to the beginning of history.
- 280 Theories of Race (2)** **Staff**
Survey of human heredity; racial history; race differences. Not open to students who have had 101, 380, or 390.

ARCHITECTURE

- 100, 101 Architectural Appreciation (2,2)** **Staff**
Survey of architectural design from a historical viewpoint.
- 105 The House (2)** **Staff**
Analysis of domestic architecture.

ART

- 100 Introduction to Art (5)** **Staff**
Lectures and studio work. For nonmajors.

ASTRONOMY

- 101 Astronomy (5)** **Staff**
Star finding, solar system, sidereal universe.

BIOLOGY

- 101J-102J General Biology (5-5)** **Staff**
Principles of biology applying to all living forms, illustrated by representatives of major plant and animal groups; man's place in nature. Offered jointly with the Department of Zoology. Recommended for education students and those not majoring in the biological sciences.

BOTANY

- 111 Elementary Botany (5)** **Staff**
Structure, physiology, and reproduction of seed plants.
- 112 Elementary Botany (5)** **Staff**
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

- 111 General Chemistry (5)** **Staff**
Open only to students without high school chemistry. Primarily for those who expect to continue through 113 or beyond. Periodic system; some families of elements; laws of chemical combination; gases; atomic, kinetic, and ionic theories; electrolysis.
- 112 General Chemistry (5)** **Staff**
Atomic and molecular structure, chemical bonding, oxidation-reduction, electro-chemistry, nonmetals, solutions, equilibria. Prerequisite, 111 or 115.
- 115 General Chemistry (5)** **Staff**
For students who have had high school chemistry. Primarily for those who expect to continue through 113 or 116. Chemistry advisers should be consulted as to whether this course should be followed by 112 or 116. Content similar to that of 111.

CLASSICAL COURSES IN ENGLISH

- 101 Latin and Greek in Current Use (3)** **Staff**
Designed to increase English vocabulary through study of the principles of word building and of Greek and Latin derivatives, with emphasis on words in literary and scientific use. No knowledge of Latin or Greek required.

DRAMA

- 101, 102, 103 Introduction to the Theatre (2,2,2)** **Staff**
Significant aspects of the modern theatre.

ECONOMICS

- 160 American Economic History (5)** **Staff**
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)** **Staff**
Organization and operation of the American economy; consideration of contemporary economic problems of money, banking, labor, international trade, and employment, and proposals for promoting social welfare. Open to freshmen. Prerequisite to 201 and all upper-division economics courses.
- 201 Principles of Economics (5)** **Staff**
Operation of the American economy, with special emphasis on prices, wages, production, and distribution of income and wealth; problems of the world economy; alternative economic systems—communism, socialism, fascism, and mixed economies. Prerequisite, 200.
- 340 Labor in the Economy (5)** **Staff**
Employment, unemployment, wages, working conditions, trade-unionism, collective bargaining, labor-management relations, and public policy. Prerequisite, 200 or 211.
- 441 Union-Management Relations (5)** **Staff**
The collective-bargaining process, with special reference to economic implications. Prerequisite, 340; 201 recommended.
- 442 American Labor History (5)** **Staff**
Analysis in historical perspective of the American labor movement, its organizational structure, ideology, policy, and practices. Prerequisite, 340.

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.

- 257 Introduction to Poetry (5)** **Staff**
Poetry as an art; its relationship to other arts and to the creative mind. No verse writing required.
- 258 Introduction to Fiction (5)** **Staff**
Analysis of short stories and novels.
- 267, 269 Survey of American Literature (3,3)** **Staff**
267: ideas in American literature; 269: American fiction.
- 272, 273 Introduction to Modern Literature (3,3)** **Staff**
Essays, poetry, novels, and plays. No credit to students who have taken 404, 406, or 466.

FAR EASTERN AND RUSSIAN

- 110 Survey, Problems of the Pacific (5)** **Staff**
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.
- 310 Problems of the Pacific (5)** **Staff**
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 Language, Intensive A (10)** **Staff**
Introduction to the sounds and structure of modern Chinese (Mandarin) by inductive method. After a certain familiarity with the language is acquired the students are introduced to the Chinese writing.
- 206 Chinese Language, Intensive B (10)** **Staff**
Continuation of 101. Prerequisite, 101.

JAPANESE

- 101-102, 103 First-Year Conversational Japanese (5-5,5)** **Staff**
Introduction to conversation, pronunciation, oral composition, and grammar; reading of romanized Japanese; conversation, composition, and grammar; introduction to *kana* syllabaries and Chinese characters. 101-102 not open to students who have taken 101, Japanese Language, Intensive A; 103 not open to students who have taken 206, Japanese Language, Intensive B.

KOREAN

- 302-303 Elementary Spoken Korean Language (5-5)** **Staff**

RUSSIAN

- 101 Russian Language, Intensive A (10)** **Staff**
Elementary.
- 102-103 Elementary Russian Language (5-5)** **Staff**

GENERAL EDUCATION**HUMANITIES**

- 101 Literature (5)** **Staff**
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)** **Staff**
Painting, sculpture, music, architecture, the dance, and drama studied through example, discussion, and criticism.
- 103 Philosophy (5)** **Staff**
Methods of reflective thinking and the use of them in considering such essential questions as the existence and nature of God, the meaning of a good life and a good social order, the nature and limits of human knowledge, the relationship between mind and body, and the nature of the universe. This course may be offered in partial fulfillment of the requirements for a major in philosophy.
- 201 Literature (5)** **Staff**
Reading and critical discussion of some of the greatest works in world literature.
- 202 Masterpieces of Art (5)** **Staff**
- 203 Philosophy (5)** **Staff**
Reading and critical discussion of some of the world's greatest philosophical systems. This course may be offered in partial fulfillment of the requirements for a major in philosophy.

PHYSICAL SCIENCE**101, 102 The Physical Universe (5,5)****Staff**

Part I: The universe as a unit; the stars; the solar system; the earth; the basic process; the atom. Part II: The nature of matter; the structure and behavior of the atom; relations between atoms; the elements; combinations of inorganic and organic elements.

SOCIAL SCIENCE**101 History of Civilization: The Great Cultural Traditions (5)****Staff**

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)**Staff**

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)**Staff**

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.

201, 202, 203 Modern Society (5,5,5)**Staff**

Part I: The various forms of society in the world today; the so-called "primitive" societies; the patterns of culture; the historical beginnings of industrial society in the West. Part II: The major social, economic, and political "regions" of the contemporary world: the Far East; the industrial West; the impact of western industrialism upon the East. Part III: Economic, social, and political interrelationships of the modern regions and states; theories of society; the United Nations.

GEOGRAPHY**207 Introductory Economic Geography (5)****Staff**

A world survey of major occupations; their distribution, resources used, and commodities produced.

GEOLOGY**101 Survey of Geology (5)****Staff****102 Geology in World Affairs (5)****Staff**

Geological occurrence, world distribution, and production of coal, petroleum, and the important industrial materials. Prerequisite, 101 or 205.

103 Earth History (5)**Staff**

Geology from a chronological standpoint, including the elements of stratigraphy and paleontology. Prerequisite, 101 or 205.

GERMANIC LANGUAGES AND LITERATURE**GERMAN****101-102, 103 First-Year Speaking German (5-5,5)****Staff**

Recommended for prospective majors and minors and those who wish to work toward a speaking knowledge. The methods and objectives are primarily oral-aural.

110-111 First-Year German (5-5)**Staff**

A beginning course devoted primarily to the reading objective. Not open to those who have taken 101-102.

JOURNALISM**100 Journalism Today (2)****Staff**

A survey of the fields of communication: newspaper, magazine, radio, advertising, public relations, propaganda, and photo journalism. Objectives and responsibilities of the various areas of journalistic communications. Review of career opportunities in these fields. Open to nonmajors.

220 Fundamentals of Advertising (3)**Staff**

Survey, fundamentals of strategy, layout, attention devices, appeals, copy, and media. Open to nonmajors in Autumn Quarter only.

303 Public Relations (3)**Staff**

Principles and practice of public relations in business, industry, government, and social agencies; policy and conduct as fundamentals in good relationships. Prerequisite, upper-division standing or permission. Open to nonmajors in Autumn Quarter only.

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. Prerequisite, one year of high school algebra.

- 105 College Algebra (5)** **Staff**
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.
- 112 Mathematics of Business (5)** **Staff**
Discounts, simple interest, installment buying, binomial theorem, annuities, bonds, probability, and insurance mathematics. Does not count toward a mathematics major. Prerequisites, one and one-half years of high school algebra and qualifying test or 101.

MUSIC

- 107 Survey of Music (5)** **Staff**
Illustrated lectures with supplementary readings to provide the general student with background for the understanding of common musical forms, idioms, and styles. For nonmajors.
- 108 The Orchestra (2)** **Staff**
The development of the orchestra and its literature. For nonmajors.
- 117 Music Appreciation: Symphonic Music, Nineteenth Century (2)** **Staff**
Illustrated studies to increase the understanding and enjoyment of symphonic music of the nineteenth century. For nonmajors. Prerequisite, 107 or 108.
- 118 Music Appreciation: Symphonic Music, Seventeenth and Eighteenth Centuries (2)** **Staff**
For nonmajors. Prerequisite, 107 or 108.
- 119 Music Appreciation: Symphonic Music, Contemporary (2)** **Staff**
For nonmajors. Prerequisite, 107 or 108.

OCEANOGRAPHY

- 101 Survey of Oceanography (5)** **Staff**
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.

PHILOSOPHY

- 100 Introduction to Philosophy (5)** **Staff**
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.
- 120 Introduction to Logic (5)** **Staff**
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.

PHYSICAL EDUCATION

- 106 through 150; 206 through 250 Physical Education Activities (Men) (1 each)** **Staff**
106, 206, handball; 107, 207, basketball; 108, 208, tennis; 109, 209, softball; 110, 210, golf (fee \$3 per quarter); 111, 211, track; 112, 212, crew (class), prerequisite, swimming; 113, 213, fencing; 114, 214, boxing; 115, 215, tumbling and apparatus; 117, 217, wrestling; 118, 218, volleyball; 119, 219, swimming; 120, 220, Rugby; 121, 221, touch football; 122, 222, badminton; 123, 223, archery; 125, 225, skiing (fee); 126, 226, speedball; 127, 227, bowling (fee, \$3 per quarter); 128, 228, weight training; 129, 229, sailing; 231, beginning; 234, intermediate folk and square dancing; 141, freshman, 241, varsity basketball; 142, freshman, 242, varsity crew, prerequisite, swimming; 143, freshman, 243, varsity football; 144, freshman, 244, varsity track; 145, freshman, 245, varsity swimming; 146, freshman, 246, varsity baseball; 147, freshman, 247, varsity tennis; 148, freshman, 248, varsity golf; 149, freshman, 249, varsity skiing; 150, freshman, 250, varsity volleyball.
- 110 Health Education (Women) (2)** **Staff**
Health problems of freshman women. Required of all freshmen.
- 111 through 170; 211 through 268 Physical Education Activities (Women) (1 each)** **Staff**
111, adapted activities; 113-114, basic activities; 115, archery; 118, badminton; 121, bowling (fee, \$3 per quarter); 124, fencing; 126, golf (fee, \$3 per quarter); 128, riding (fee); 131, dry skiing; 132, elementary skiing (fee); 133, stunts and tumbling; 135, tennis; 141, basketball; 142, field sports; 143, hockey; 144, softball; 145, volleyball; 148, folk and square dancing; 149, European folk dance; 151, modern dance; 154, social dance; 155, tap and clog; 157, canoeing (fee, \$2.50 per quarter); 160, adapted swimming; 161, beginning swimming; 162, elementary swimming; 215, intermediate archery; 218, intermediate badminton; 221, intermediate bowling (fee, \$3 per quarter); 222, advanced bowling (fee, \$3 per quarter); 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 dancing; 251, intermediate modern dance; 252, advanced modern dance; 257, intermediate canoeing (fee, \$2.50 per quarter); 263, intermediate swimming; 264, advanced swimming; 265, rhythmic swimming; 266, diving; 267, lifesaving; 268, water safety instruction.

- 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 by examination.

PHYSICS

- 100 Survey of Physics (5)** **Staff**
A nontechnical treatment of the various fields in physics.
- 101, 102, 103 General Physics (5,5,5)** **Staff**
101: mechanics and sound. Prerequisite, one year of high school physics. 102: electricity and magnetism. Prerequisite, 101. 103: heat and light. Prerequisite, 101.
- 104, 105, 106 General Physics (5,5,5)** **Staff**
Prerequisite, plane geometry; 104 for 105 and 106.

POLITICAL SCIENCE

- 201 Modern Government (5)** **Staff**
The nature and function of political institutions in the major national systems.
- 202 American Government and Politics (5)** **Staff**
Popular government in the United States; the theory and practice of national institutions.
- 203 International Relations (5)** **Staff**
An analysis of the world community, its politics and government.

PSYCHOLOGY

- 100 General Psychology (5)** **Staff**
Introduction to the principles of human behavior.
- 101 Psychology of Adjustment (5)** **Staff**
Application of psychological principles to the problems of everyday life. Prerequisite, 100.

ROMANCE LANGUAGES AND LITERATURE

FRENCH

- 101-102, 103 Elementary (5-5, 5)** **Staff**
Prerequisite for 103 is -102 with a grade of not less than C, or three high school semesters, or equivalent.

ITALIAN

- 101-102, 103 Elementary (5-5,5)** **Staff**

SPANISH

- 101-102, 103 Elementary (5-5,5)** **Staff**
Prerequisite for 103 is -102 with a grade of not less than C, or three high school semesters, or equivalent.

SCANDINAVIAN LANGUAGES AND LITERATURE

NORWEGIAN

- 101-102, 103 Elementary Norwegian (3-3,3)** **Staff**
Fundamentals of oral and written Norwegian.

SWEDISH

- 101-102, 103 Elementary Swedish (3-3,3)** **Staff**
Fundamentals of oral and written Swedish.

SOCIOLOGY

- 110 Survey of Sociology (5)** **Staff**
Basic principles of social relationships. Primarily for freshmen and sophomores. Not open to students who have taken 310.
- 240 Group Behavior (5)** **Staff**
Socialization of the individual; social processes; and interactions of persons in groups. Prerequisites, 110 or 310, and Psychology 100.
- 270 Survey of Contemporary Social Problems (5)** **Staff**
Analysis of the processes of social and personal disorganization and reorganization in relation to poverty, crime, suicide, family disorganization, mental disorders, and similar social problems. Prerequisite, 110 or 310.

SPEECH

- 100 Basic Speech Improvement (5)** **Staff**
Training in the fundamentals of good speech, such as orderly thinking, emotional adjustment, adequate voice, distinct articulation, and effective oral use of language. Speech as

man's primary means of social interaction, with emphasis on the more informal uses of speech in daily life. Frequent conferences with instructor.

110 Voice and Articulation Improvement (3)

Staff

Training in voice and articulation.

120 Introduction to Public Speaking (5)

Staff

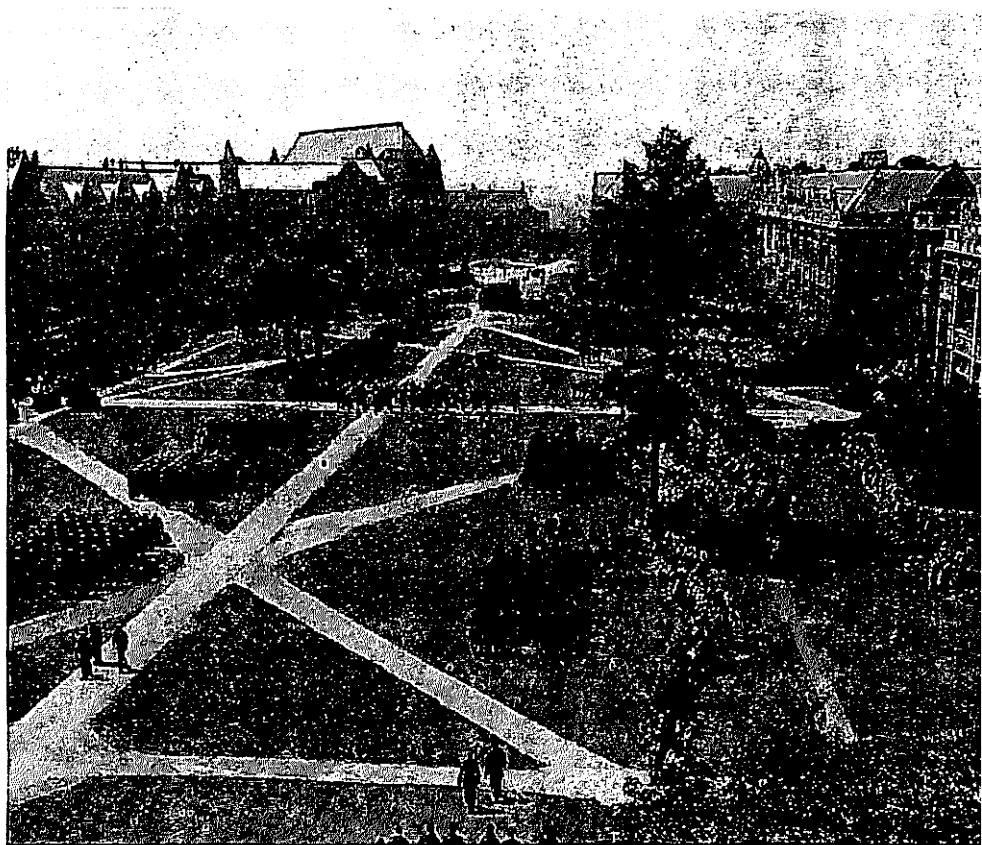
Audience analysis, choice and organization of material, oral style, and delivery. Frequent speeches before the class, followed by conferences with instructor.

ZOOLOGY

111, 112 General Zoology (5,5)

Staff

Physical basis of life; structure, function, inheritance, evolution, and ecology of animals. 111: cellular biology, invertebrate phyla through molluscs. 112: annelids, arthropods, echinoderms, chordates. Prerequisite, 111 or equivalent.



RESERVE OFFICERS TRAINING PROGRAMS

RESERVE OFFICERS TRAINING PROGRAMS

THE DEPARTMENTS of Air Science and Tactics, Military Science and Tactics, and Naval Science were established under the provisions of the National Defense Act of June 4, 1920, and function under directives from the United States Department of Defense. The Secretaries of the services are responsible for the operation of the ROTC programs. At the University, the programs are coordinated by the office of the Dean of the College of Engineering.

The Departments of Air Science and Tactics and Military Science and Tactics provide two years of basic military training for male students and an additional two years of advanced training for a selected group of male students. The advanced programs prepare students to receive regular or reserve commissions in the United States Army and Air Force. The Department of Naval Science offers a four-year program which prepares selected male students for regular or reserve commissions in the United States Navy or Marine Corps. Students who take advanced training in the Air Force or Army ROTC program, and students in the Naval ROTC program, must agree in writing to accept a commission if offered, to serve on active duty, subject to the call of the Secretary of their service, for not less than two years, and to remain in the reserve of their service until the eighth anniversary of the date of their commission.

ROTC courses are included in the freshman and sophomore curricula of all male students (see page 29). The first six quarters of study in either of the three departments satisfy the military training requirements of the University, but students who attain junior or senior standing in the Naval ROTC program, and those who enter the advanced Air Force or Army ROTC program, must complete the program as a condition of graduation unless excused or released by authority of the Secretary of the service concerned.

AIR SCIENCE AND TACTICS

Professor of Air Science and Tactics: GEORGE H. DIETZ, Air Science Building

Eligibility to enroll in the Basic Course, Air Force Reserve Officers Training Corps, is limited to students who are citizens of the United States and have not yet reached their twenty-third birthday at the time of initial enrollment. Students

enrolled in the Air Force ROTC may be deferred from the draft within quota limitations subject to the approval of the Professor of Air Science and Tactics. One criterion for military deferment is good standing at the University, which means the student must: (1) maintain an acceptable grade-point average; (2) be registered for at least 15 academic credits per quarter, exclusive of required lower-division ROTC and physical education activity; and (3) earn at least 45 academic credits during each academic year.

Students who are given an ROTC deferment agree to complete four years of ROTC, accept a commission, if offered, then serve three years on active duty when called, unless sooner relieved, and five additional years in a reserve organization.

First-year Air Force ROTC students are given an introductory course in the theory of flight, followed by a study of fundamentals of global geography, international tensions and security organizations, and instruments of national military security. This sequence of courses requires classroom attendance two hours each week. First-year students are also introduced to the principles of leadership and command through practice of basic elements of drill one hour each week. In the second year of the basic program the emphasis is moved to a study of aerial warfare and the Air Force itself. Practice in leadership, drill, and exercise of command extends throughout the two years of the basic program and continues two additional years for students in the advanced program.

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 are selected for the advanced program, and each student selected must:

1. Successfully complete the two-year Basic Air Force ROTC program or receive equivalent credit for active service in the military forces of the United States.
2. Execute a written agreement with the government to complete the advanced program, contingent upon remaining in the University, and to attend 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.
5. Successfully complete general survey and screening tests as prescribed.
6. Be selected by the Professor of Air Science and Tactics and the President of the University.
7. Complete the advanced program as a prerequisite for graduation from the University, unless excused or dismissed from this requirement by authority of the Secretary of the Air Force.

The two-year advanced course requires classroom attendance four hours a week, plus one hour of practice in the leadership laboratory. Between the first and second years, students attend summer camp for four weeks.

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 both basic and advanced programs are furnished complete uniforms of the type worn by Air Force personnel. Students 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 is refunded in full when the uniform and textbooks are returned undamaged.

Inquiries about enrollment or other matters should be addressed to the Professor of Air Science and Tactics.

COURSES FOR UNDERGRADUATES**131, 132, 133 Air Science I—Basic (2,2,2)****Staff**

Details of the Air Force ROTC program; the significance of the individual's obligations for military service; introduction to aviation; fundamentals of global geography; factors of world power; the nation's defense organization; drill.

231, 232, 233 Air Science II—Basic (2,2,2)**Staff**

The purpose, process, and primary elements of aerial warfare: targets, weapons, delivery aircraft, operations, and bases; purpose and provisions of the Air Force Officer Career Program; survey of occupational fields open to Air Force officers; opportunities for and obligations of a career in the Air Force as an officer or airman; cadet non-commissioned-officer training.

301, 302, 303 Air Science III—Advanced (3,3,3)**Staff**

Command and staff concepts; leadership laboratory; problem-solving techniques, communications processes; principles and techniques of learning and teaching; Air Force correspondence and publications; military law—courts and boards; applied air science, including principles of flight, aircraft engineering, aerial navigation, and weather; functions of the Air Force base.

304 Air Science III—Advanced Camp (3)**Staff**

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 IV—Advanced (3,3,3)**Staff**

Critique of summer camp; Air Force leadership and management; relationship of geographical factors to national strength and international power patterns; foundations of national power; military aviation and the art of war; career guidance; briefing for commissioned service.

MILITARY SCIENCE AND TACTICS

Professor of Military Science and Tactics: WALTER A. RUDE, Army ROTC Building

Qualifications for entrance to the Army Reserve Officers Training Corps are in accordance with University requirements and Department of the Army regulations. Participation in the Army ROTC program may permit deferment from the draft under the Universal Military Training and Service Act of 1951.

Courses in the first and second years of the basic program require classroom attendance two hours each week. First and second year students are introduced to American military history, organization of the Army, map reading, and individual and crew-served weapons. Practice in leadership, drill, and exercise of command extends throughout the two years of the basic program and continues two additional years for students in the advanced program.

After completing the basic program, students are eligible for entrance to the advanced Army ROTC, which is designed to train professionally qualified officers. Students in the advanced course are chosen from the group of most highly qualified students who have completed the basic program of senior-division ROTC, or have had twelve months or more of honorable active service in the military forces of the United States. Each student accepted for the advanced program must:

1. Not have reached twenty-seven years of age at the time of initial enrollment in the advanced course.
2. Execute a written agreement with the government to complete the advanced course contingent upon remaining in the University.
3. Be selected by the Professor of Military Science and Tactics and the President of the University.
4. Successfully complete whatever general survey and screening tests are prescribed.
5. Complete the course as a prerequisite for graduation from the University, unless excused or dismissed from this requirement by authority of the Secretary of the Army.

Courses in the advanced program require classroom attendance four hours a week, plus one hour of practice in leadership, drill, and exercise of command. Advanced students are given courses in small unit tactics and communications, organization and functions of various arms and services, logistics, operations, and military administration. In addition, a summer camp is attended for six weeks between the first and second years of the advanced program.

Advanced Army ROTC students are paid a monetary allowance at a daily rate equal to the value of the commuted ration, which currently is 90 cents a day. The allowance is in addition to benefits received through the G.I. Bill.

Regulation ROTC uniforms are issued to students in the basic program, and uniforms similar to those of Army officers are issued to students in the advanced program. Students are normally required to wear the uniform on drill days; wearing it to ROTC classes other than drill is optional. At the time of registration each student must make a \$25.00 deposit, which is refunded in full when the uniform is returned undamaged. The Army furnishes all textbooks and equipment used in military science classes.

Inquiries about enrollment or other matters should be addressed to the Professor of Military Science and Tactics.

COURSES FOR UNDERGRADUATES

- | | | |
|---------------|--|--------------|
| 101, 102, 103 | Military Science I—Basic (2,2,2) | Staff |
| | Organization of the Army and ROTC; American military history; individual weapons and marksmanship; school of the soldier and exercise of command. | |
| 201, 202, 203 | Military Science II—Basic (2,2,2) | Staff |
| | Crew-served weapons and gunnery; map and aerial photograph reading; school of the soldier and exercise of command. | |
| 301, 302, 303 | Military Science III—Advanced (3,3,3) | Staff |
| | Small unit tactics and communications; organization, function, and mission of the arms and services; military teaching methods (objective and scope); leadership; school of the soldier and exercise of command. | |
| 401, 402, 403 | Military Science IV—Advanced (3,3,3) | Staff |
| | 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; the role of the United States in world affairs and the present situation; leadership; officer indoctrination; school of the soldier and exercise of command. | |

NAVAL SCIENCE

Professor of Naval Science: JOHN G. FOSTER, JR., 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 seventy 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 sixteen and twenty-one on July 1 of the year of entrance.
3. Meet physical requirements, which include vision of 20/20 uncorrected, no cavities in teeth, and height between 65½ and 76 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.

Students with not more than one year of previous attendance in college are eligible if they meet the qualifications and agree to finish the four-year program.

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 Educational Testing Service, Box 592, Princeton, New Jersey, 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) | Staff |
| Naval courtesy and customs; leadership; naval history; naval regulations; ship construction and characteristics; standard ship organization; orientation in underseas, amphibious, logistics, communications, security, intelligence, seamanship, and rules-of-the-road phases of the naval service. | |
| 211 Naval Weapons (3) | Staff |
| Principles of gun construction; ammunition components; gun assemblies; automatic guns; mines; introduction to fire control; aviation ordnance. | |
| 212 Fire Control (3) | Staff |
| Surface fire control; battery alignment; anti-aircraft fire control. | |
| 213 Applied Naval Electronics (3) | Staff |
| Advanced fire control; radar, sonar; C.I.C.; shore bombardment; guided missiles; nuclear explosives; underwater ordnance; rockets. | |

LINE

- | | |
|---|--------------|
| 311 Piloting (3) | Staff |
| Aerology; use of the maneuvering board; rules of the nautical road. | |

- 312 Navigation (3) Staff**
Piloting; nautical astronomy necessary for celestial navigation.
- 313 Celestial Navigation (3) Staff**
Daily work of the navigator at sea.
- 411 Naval Machinery (3) Staff**
Marine engineering installations: boilers, power plants, auxiliary machinery, turbines, distillers, refrigeration plants.
- 412 Diesel Engines and Ship Stability (3) Staff**
Diesel engines; aircraft engines; stability; damage control; loading conditions; buoyancy.
- 413 Naval Administration and Leadership (3) Staff**
Military law; practical application of leadership principles; duties and responsibilities of officers.

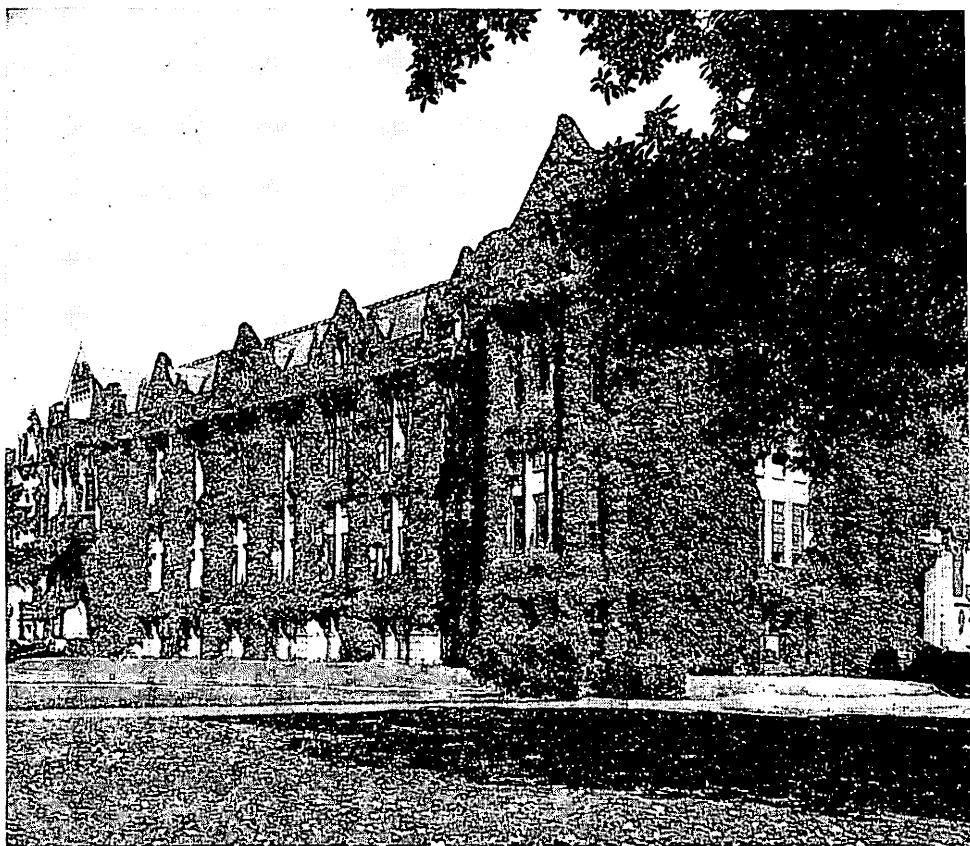
MARINE CORPS

- 311M Evolution of the Art of War (3) Staff**
Introduction; the development of tactics and weapons as illustrated by specific battles of ancient and European history; a historical study of the causes and effects of war through 1864.
- 312M Evolution of the Art of War (3) Staff**
Tactics and strategy from the rise of Germany through World War II; comparisons with modern basic strategy and tactics; foreign policy of the United States.
- 313M Modern Basic Strategy and Tactics (3) Staff**
Tactics of the platoon and company; jungle warfare, river crossings; fortified positions. Strategy of the United States and Germany during World War II.
- 411M, 412M Amphibious Warfare (3,3) Staff**
411M: a brief history of amphibious warfare development; a detailed study of the principles of amphibious warfare techniques. 412M: continued study of amphibious warfare, logistics, and operation orders; the Gallipoli campaign and the amphibious campaigns of World War II.

SUPPLY CORPS

- 311S Introduction to Supply, Naval Finance, and Basic Naval Accounting (4) Staff**
Introduction to Supply Corps and accounting principles; national security organization; naval finance; appropriations; cost and fidelity accounting.
- 312S Advanced Naval Accounting, Basic Supply Afloat (4) Staff**
Reports and returns; property and stores accounting; organization and administration of supply afloat; material identification, classification, and allowance.
- 313S Supply Afloat, Intermediate (4) Staff**
Procedure and purchasing, receipt, surveys, and expenditure of special and regular naval materials.
- 411S Advanced Supply Afloat and Basic Ships' Stores (4) Staff**
Records, reports, and returns for supply afloat, and ships' store operating procedure.
- 412S Advanced Ships' Stores, Commissary, Clothing, and Small Stores (4) Staff**
Records, reports, and returns for ships' stores, commissary, clothing, and small stores.

BULLETIN • UNIVERSITY OF WASHINGTON



COLLEGE OF EDUCATION

1955-1957

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes two general bulletins; bulletins of the colleges and schools; two Summer Quarter announcements; and publications of the Division of Adult Education and Extension Services, the correspondence study and extension class announcements.

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 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.

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

UNIVERSITY REGULATIONS (FOR REGISTERED STUDENTS ONLY)
INTRODUCTION TO THE UNIVERSITY

Bulletins of the Colleges and Schools

COLLEGE OF ARTS AND SCIENCES
COLLEGE OF BUSINESS ADMINISTRATION
COLLEGE OF EDUCATION
COLLEGE OF ENGINEERING
COLLEGE OF FORESTRY
GRADUATE SCHOOL
SCHOOL OF LAW
SCHOOLS OF MEDICINE AND DENTISTRY
SCHOOL OF NURSING
COLLEGE OF PHARMACY

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT
SUMMER QUARTER ANNOUNCEMENT
CORRESPONDENCE STUDY
EXTENSION CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 893
July, 1955

Published monthly at Seattle, Washington, by the University of Washington from October to July, inclusive. No issues in August and September. Entered as second-class matter December 18, 1947, at the post office at Seattle, Washington, under the Act of August 24, 1912.

CONTENTS

CALENDAR 4

ADMINISTRATION 8

 Board of Regents

 Officers of Administration

 College of Education Faculty and Staff

 Cooperating Faculty

 Service and Production Units

GENERAL INFORMATION 15

 College Facilities and Services

 Admission

 World War II and Korean Veterans

 Registration

 Tuition and Fees

 Estimate of Yearly Expenses

 Student Activities and Services

THE PROGRAMS IN EDUCATION 29

 Bachelor's Degrees

 Teacher Certification

 Provisional General Certificate

 Certificate Conversion Program

 Renewal of Certificates

 Out-of-State Transfers and Emergency Certificates

 Administrators' Credentials

 Advanced Degrees

 Courses

CALENDAR

All fees must be paid at the time of registration. Registration is by appointment only.

AUTUMN QUARTER, 1955

REGISTRATION PERIOD

- SEPT. 6-SEPT. 27 Registration for students in residence Spring Quarter, 1955. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 23, but no later than September 16.*)
- SEPT. 9-SEPT. 27 Registration for former students not in residence Spring Quarter, 1955. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 23, but no later than September 16.*)
- SEPT. 12-SEPT. 23 Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (*August 26 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)
- SEPT. 12-SEPT. 27 Registration for new transfer students with at least full sophomore standing. (*August 26 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

- SEPT. 26-MONDAY Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing.
- SEPT. 28-WEDNESDAY Instruction begins (8 a.m.) for all other students
- OCT. 4-TUESDAY Last day to add a course
- NOV. 11-FRIDAY State Admission Day holiday
- NOV. 23-NOV. 28 Thanksgiving recess (6 p.m. to 8 a.m.)
- DEC. 16-FRIDAY Instruction ends (6 p.m.)

WINTER QUARTER, 1956

REGISTRATION PERIOD

- NOV. 21-DEC. 9 Registration for students in residence Autumn Quarter, 1955. (*Registration appointments will be issued on presentation of ASUW cards beginning October 21.*)
- DEC. 28-DEC. 30 Registration for former students not in residence Autumn Quarter, 1955. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 21.*)
- DEC. 28-DEC. 30 Registration for new students. (*New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Winter Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

JAN. 3—TUESDAY	Instruction begins
JAN. 9—MONDAY	Last day to add a course
FEB. 22—WEDNESDAY	Washington's Birthday and Founder's Day holiday
MAR. 16—FRIDAY	Instruction ends

SPRING QUARTER, 1956

REGISTRATION PERIOD

FEB. 23-MAR. 9	Registration for students in residence Winter Quarter, 1956. (<i>Registration appointments will be issued on presentation of ASUW cards beginning January 20.</i>)
MAR. 21-MAR. 23	Registration for former students not in residence Winter Quarter, 1956. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 20.</i>)
MAR. 21-MAR. 23	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

MAR. 26—MONDAY	Instruction begins
MAR. 30—FRIDAY	Last day to add a course
MAY 18—FRIDAY	Governor's Day
MAY 30—WEDNESDAY	Memorial Day holiday
JUNE 3—SUNDAY	Baccalaureate Sunday
JUNE 8—FRIDAY	Instruction ends
JUNE 9—SATURDAY	Commencement

SUMMER QUARTER, 1956

REGISTRATION PERIOD

MAY 29-JUNE 1	Registration for all students. (<i>Registration appointments for students in residence Spring Quarter, 1956, and for former students not in residence Spring Quarter, 1956, may be obtained from the Registrar's Office beginning April 16. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.</i>)
JUNE 11-JUNE 15	

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
JULY 4—WEDNESDAY	Independence Day holiday
JULY 18—WEDNESDAY	First term ends
JULY 19—THURSDAY	Second term begins
JULY 20—FRIDAY	Last day to add a course for the second term
AUG. 17—FRIDAY	Instruction ends

AUTUMN QUARTER, 1956

REGISTRATION PERIOD

- SEPT. 11-OCT. 2 Registration for students in residence Spring Quarter, 1956. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 21, but no later than September 21.*)
- SEPT. 14-OCT. 2 Registration for former students not in residence Spring Quarter, 1956. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 21, but no later than September 21.*)
- SEPT. 17-SEPT. 28 Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (*August 31 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)
- SEPT. 17-OCT. 2 Registration for new transfer students with at least full sophomore standing. (*August 31 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

- OCT. 1—MONDAY Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing.
- OCT. 3—WEDNESDAY Instruction begins (8 a.m.) for all other students
- OCT. 9—TUESDAY Last day to add a course
- NOV. 12—MONDAY State Admission Day holiday
- NOV. 21-NOV. 26 Thanksgiving recess (6 p.m. to 8 a.m.)
- DEC. 21—FRIDAY Instruction ends (6 p.m.)

WINTER QUARTER, 1957

REGISTRATION PERIOD

- NOV. 26-DEC. 14 Registration for students in residence Autumn Quarter, 1956. (*Registration appointments will be issued on presentation of ASUW cards beginning October 26.*)
- JAN. 2-JAN. 4 Registration for former students not in residence Autumn Quarter, 1956. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 26.*)
- JAN. 2-JAN. 4 Registration for new students. (*New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Winter Quarter. Registration appointments will be mailed with notification of admission.*)

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. 22—FRIDAY Instruction ends

SPRING QUARTER, 1957

REGISTRATION PERIOD

FEB. 27-MAR. 15	Registration for students in residence Winter Quarter, 1957. (<i>Registration appointments will be issued on presentation of ASUW cards beginning January 25.</i>)
MAR. 27-MAR. 29	Registration for former students not in residence Winter Quarter, 1957. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 25.</i>)
MAR. 27-MAR. 29	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

APR. 1-MONDAY	Instruction begins
APR. 5-FRIDAY	Last day to add a course
MAY 24-FRIDAY	Governor's Day
MAY 30-THURSDAY	Memorial Day holiday
JUNE 9-SUNDAY	Baccalaureate Sunday
JUNE 14-FRIDAY	Instruction ends
JUNE 15-SATURDAY	Commencement

SUMMER QUARTER, 1957

REGISTRATION PERIOD

JUNE 5-JUNE 7	Registration for all students. (<i>Registration appointments for students in residence Spring Quarter, 1957, and for former students not in residence Spring Quarter, 1957, may be obtained from the Registrar's Office beginning April 22. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.</i>)
JUNE 17-JUNE 21	

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 24-WEDNESDAY	First term ends
JULY 25-THURSDAY	Second term begins
JULY 26-FRIDAY	Last day to add a course for the second term
AUG. 23-FRIDAY	Instruction ends

ADMINISTRATION

BOARD OF REGENTS

MRS. J. HERBERT GARDNER, <i>President</i>	LaConner
CHARLES M. HARRIS, <i>Vice-President</i>	Entiat
GRANT ARMSTRONG	Chehalis
THOMAS BALMER	Seattle
DONALD C. CORBETT	Spokane
CHARLES F. FRANKLAND	Seattle
WINLOCK W. MILLER	Seattle
HELEN HOAGLAND, <i>Secretary</i>	

OFFICERS OF ADMINISTRATION

HENRY SCHMITZ, Ph.D.	<i>President of the University</i>
HAROLD P. EVEREST, M.A.	<i>Vice-President of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
NELSON A. WAHLSTROM, B.B.A.	<i>Comptroller and Business Manager</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>
FRANCIS FOUNTAIN POWERS, Ph.D.	<i>Dean of the College of Education</i>
ELLA WESA REDFERN, B.A.	<i>Assistant to the Dean</i>

COLLEGE OF EDUCATION FACULTY AND STAFF

(As of May 6, 1955)

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 ROMAYNE, 1949 (1955)	<i>Associate Professor of Industrial Education</i>
B.S., 1931, Kansas State Teachers College; M.A., 1936, Ed.D., 1949, Missouri	
BATIE, HARRIETT VIRGINIA, 1941 (1954)	<i>Assistant Professor of Education;</i>
B.S., 1935, Hastings College;	<i>Certification and Academic Adviser</i>
M.A., 1945, Ph.D., 1953, Washington	
BOLTON, FREDERICK ELMER, 1912 (1947)	<i>Professor Emeritus of Education;</i>
B.S., 1893, M.S., 1896, Wisconsin;	<i>Research Consultant; Dean Emeritus of</i>
Ph.D., 1898, Clark	<i>the College of Education</i>
BOROUGHs, HOMER, JR., 1948 (1950)	<i>Assistant Professor of Elementary</i>
B.A., 1939, Western Washington College of Education;	<i>Education</i>
M.A., 1947, Ph.D., 1949, Washington	
COLE, THOMAS RAYMOND, 1930 (1951)	<i>Professor Emeritus of Education;</i>
Ph.B., 1902, M.A., 1903, LL.D. (Hon.),	<i>Consultant in School Service</i>
1931, Upper Iowa	
CORBALLY, JOHN EDWARD, 1927 (1942)	<i>Professor of Secondary Education;</i>
B.A., 1918, Whitworth College; M.A., 1925,	<i>Director of Practice Teaching</i>
Ph.D., 1929, Washington	
DRAPER, EDGAR MARIAN, 1925 (1936)	<i>Professor of Curriculum;</i>
B.A., 1916, M.A., 1925, Ph.D., 1926,	<i>Director of In-Service Teacher</i>
Washington	<i>Training</i>
DVORAK, AUGUST, 1923 (1937)	<i>Professor of Education; Director of the Bureau</i>
B.A., 1920, Ph.D., 1923, Minnesota	<i>of Admissions Research</i>
FEA, HENRY ROBERT, 1954 (1955)	<i>Assistant Professor of Education</i>
B.A., 1942, B.Ed., 1947, M.Ed., 1948, Saskatchewan; Ph.D., 1950, California	
HAYDEN, ALICE HAZEL, 1942 (1952)	<i>Professor and Director of Educational</i>
Ph.C., 1928, B.S., M.S., 1929, Oregon State College;	<i>Research</i>
Ph.D., 1932, Purdue	

HORST, CLAUDE WILLIAM, 1950..... *Supervisor, Industrial Education Laboratory*
 B.A., 1923, M.A., 1933, Washington
 JESSUP, JOHN HUNNICUTT, 1926 (1927)..... *Associate Professor of Educational*
 A.B., 1920, Earlham College; M.A., 1924, Iowa *Sociology*
 MACDONALD, CECILIA, 1949 (1950)..... *Assistant Professor of Elementary*
 B.A., 1946, Central Washington College of Education; *Education*
 M.Ed., 1952, Washington
 OSBURN, WORTH JAMES, 1936 (1953)..... *Professor Emeritus of Education*
 A.B., 1903, Central College (Missouri); A.M., 1904, Vanderbilt;
 B.S., 1910, Missouri; Ph.D., 1921, Columbia
 POWERS, FRANCIS FOUNTAIN, 1928 (1940)..... *Professor of Educational Psychology;*
 B.A., 1923, Washington; M.A., 1927, *Dean of the College of Education*
 Oregon; Ph.D., 1928, Washington
 STEVENS, EDWIN BICKNELL, 1936 (1947)..... *Professor Emeritus of Education;*
 A.B., 1896, Tufts College; *Adviser to Higher Education Conference*
 A.M., 1899, Harvard
 STRAYER, GEORGE DRAYTON, JR., 1949..... *Professor of Educational Administration*
 B.S., 1927, Princeton; M.A., 1928, Ph.D., 1934, Columbia
 VOPNI, SYLVIA FRED, 1952 (1955)..... *Acting Assistant Professor of Education*
 B.A., 1931, M.A., 1938, Washington
 WILLIAMS, CURTIS TALMADGE, 1920 (1936)..... *Professor of Methods and*
 A.B., 1913, Kansas State Normal School; *Philosophy of Education*
 A.M., 1914, Ph.D., 1917, Clark

COOPERATING FACULTY

ALLEDOERFER, CARL B..... *Professor and Executive Officer, Mathematics*
 BIJOU, SIDNEY W..... *Professor, Psychology*
 BLASER, H. WESTON..... *Associate Professor, Botany*
 BONE, HUGH A..... *Professor, Political Science*
 BOWERMAN, CHARLES E..... *Assistant Professor, Sociology*
 BRIER, HOWARD M..... *Associate Professor, Journalism*
 BRIGGS, ROBERT..... *Associate Professor, General Business*
 BROER, MARION R..... *Associate Professor, Physical Education for Women*
 BUECHEL, HENRY T..... *Associate Professor, Economics*
 CADY, GEORGE H..... *Professor, Chemistry*
 CHAPPLE, STANLEY..... *Professor and Director, Music*
 COLE, KENNETH C..... *Professor and Executive Officer, Political Science*
 CONWAY, JOHN A..... *Professor, Drama*
 COOMBS, HOWARD A..... *Professor and Executive Officer, Geology*
 CROSS, PAUL C..... *Professor and Executive Officer, Chemistry*
 CUTLER, RUSSELL K..... *Associate Professor and Executive Officer,*
Physical Education for Men
 DEKKER, DAVID B..... *Assistant Professor, Mathematics*
 DE VRIES, MARY AID..... *Associate Professor, Physical Education for Women*
 EMERY, DONALD W..... *Associate Professor, English*
 FARIS, ROBERT..... *Professor and Executive Officer, Sociology*
 FOX, KATHARINE..... *Assistant Professor, Physical Education for Women*
 FULLER, STEVEN D..... *Assistant Professor, Art*
 GATES, CHARLES M..... *Professor, History*
 GONZALES, BOYER..... *Professor and Director, Art*
 GRIMES, WILMA H..... *Assistant Professor, Speech*
 GRIMSHAW, AUSTIN..... *Professor and Dean, Business Administration*
 GRUMMEL, WILLIAM C..... *Associate Professor, Classics*
 HAAGA, AGNES M..... *Assistant Professor, Drama*
 HALL, HELEN..... *Associate Professor, Music*
 HARRINGTON, DONAL F..... *Professor, Drama*
 HATCH, MELVILLE H..... *Professor, Zoology*
 HEILMAN, ROBERT B..... *Professor and Executive Officer, English*

HITCHCOCK, C. LEO	Professor and Executive Officer, Botany
HITCHNER, DELL G.	Associate Professor, Political Science
HORNE, DORTHALEE	Assistant Professor, Physical Education for Women
HUBER, J. RICHARD	Professor and Executive Officer, Economics
HUDSON, G. DONALD	Professor and Executive Officer, Geography
HUGHES, GLENN	Professor, English; Director, Drama
JERBERT, ARTHUR R.	Associate Professor, Mathematics
JOHNSON, PAULINE	Associate Professor, Art
KATZ, SOLOMON	Professor and Executive Officer, History
KENWORTHY, RAY W.	Associate Professor, Physics
KINGSTON, J. MAURICE	Assistant Professor, Mathematics
LIEBERMAN, IRVING	Professor and Director, Librarianship
LORD, J. J.	Assistant Professor, Physics
LOUCKS, ROGER BROWN	Professor and Executive Officer, Psychology
MCLEAN, DOROTHY	Assistant Professor, Physical Education for Women
MANLEY, JOHN HENRY	Professor and Executive Officer, Physics
MARTIN, ARTHUR W.	Professor, Physiology; Executive Officer, Zoology
MARTIN, HOWARD H.	Professor, Geography
MARTS, MARION ERNEST	Associate Professor, Geography
MCADAMS, LAURA E.	Associate Professor, Home Economics
MCDIARMID, J. B.	Associate Professor and Executive Officer, Classics
MEYER, HERMAN C.	Associate Professor, Germanic Languages
MILLS, CASWELL A.	Assistant Professor, Physical Education and Public Health and Preventive Medicine
MOSELEY, SPENCER	Assistant Professor, Art
MURPHEY, RHOADS	Assistant Professor, Geography
NELSON, OLIVER W.	Associate Professor, Speech
NORMANN, THEODORE F.	Associate Professor, Music
NOSTRAND, HOWARD L.	Professor and Executive Officer, Romance Languages and Literature
PALMER, JOHN M.	Assistant Professor, Speech
PASCAL, PAUL	Instructor, Classics
PEEK, CLIFFORD	Assistant Professor, Physical Education for Men
PETERSON, MARION E.	Assistant Professor, Librarianship
RAHSKOFF, HORACE G.	Professor and Executive Officer, Speech
REEVES, C. SPENCER	Associate Professor, Physical Education and Public Health and Preventive Medicine
REYNOLDS, WILLIAM E.	Executive Officer, Public Health and Preventive Medicine
ROWNTREE, JENNIE I.	Professor and Director, Home Economics
RULIFSON, LEONE H.	Associate Professor, Physical Education for Women
SIMPSON, LURLINE V.	Associate Professor, Romance Languages
SMITH, HENRY LADD	Professor, Journalism; Director, Communications
SMITH, PAUL, JR.	Instructor, Physical Education for Men
SORENSEN, ALICE J.	Associate Professor, Music
STROTHER, CHARLES R.	Professor, Psychology and Psychiatry
TAYLOR, GEORGE E.	Professor, Far Eastern History and Politics; Executive Officer, Far Eastern and Slavic Languages and Literature
TURNER, MABEL	Assistant Professor, Librarianship
VAIL, CURTIS C. D.	Professor and Executive Officer, Germanic Languages and Literature
VARGAS-BARÓN, ANIBAL	Associate Professor, Spanish
VAVRA, CATHERINE E.	Assistant Professor, Public Health and Preventive Medicine
WATERS, ELLEN H.	Assistant Professor, Physical Education for Women
WHEELER, SARA HUTCHINGS	Assistant Professor, Librarianship
WILSON, RUTH M.	Associate Professor and Executive Officer, Physical Education for Women

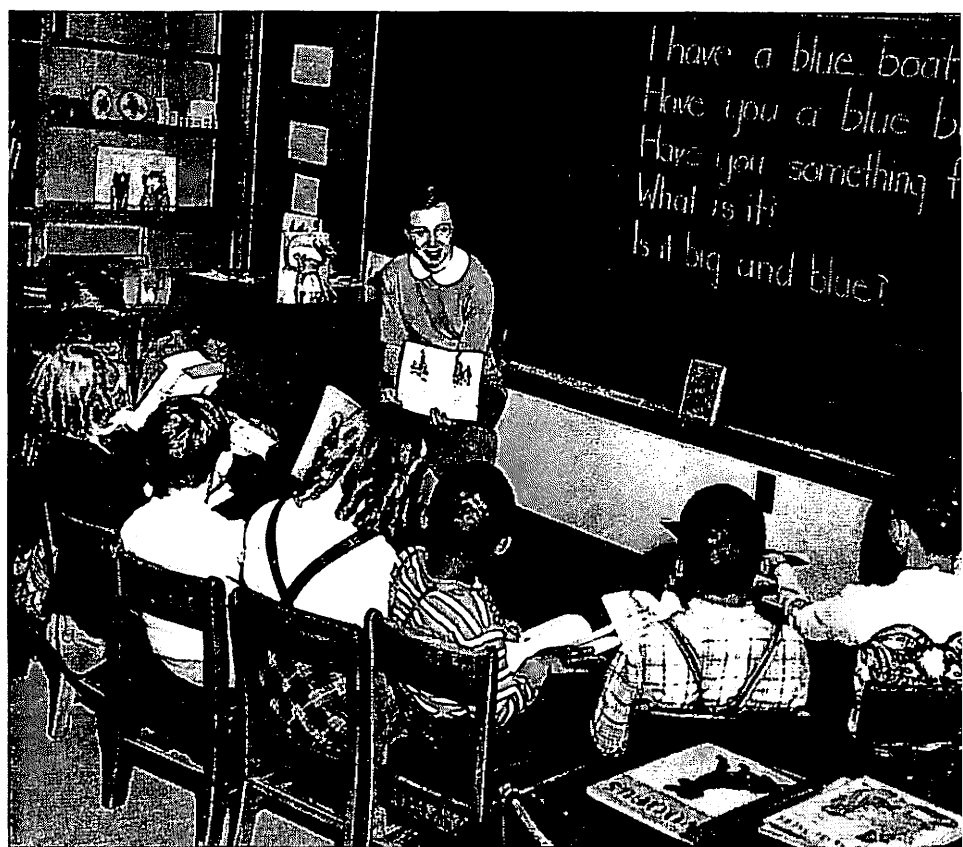
WILSON, WILLIAM E..... *Professor, Romance Languages*
WOODBURNE, LLOYD S..... *Professor, Psychology; Dean, Arts and Sciences*

SERVICE AND PRODUCTION UNITS

BUREAU OF TEACHER SERVICE AND PLACEMENT *Rufus C. Salyer, Acting Director*
EDUCATION LIBRARY..... *Donna Mae Pearce, Librarian*
IN-SERVICE TEACHER TRAINING..... *Edgar M. Draper, Director*
MOTION PICTURE PRODUCTION UNIT..... *Philip A. Jacobsen, Technical and
Research Director*
STILL PHOTOGRAPHY PRODUCTION UNIT..... *E. F. Marten, Supervisor*

CHANGES IN UNIVERSITY REGULATIONS

The University and its colleges and schools reserve the right to change the rules regulating admission to, instruction in, and graduation from the University and its various divisions, and to change any other regulations affecting the student body. 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 and change fees at any time.



GENERAL INFORMATION

GENERAL INFORMATION

THE FIRST teacher training in the state of Washington was given at the University by President Anderson (1878-1882), who conducted courses in literature, mathematics, astronomy, surveying, psychology, and pedagogics. There was no development of a University program, however, despite efforts of the Board of Regents and the Superintendent of Public Instruction. 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 new beginning in teacher training was a part of the general growth of the University that took place between 1898 and 1914, when the Graduate School and other schools and colleges were established during the administrations of Presidents Graves and Kane. Between 1898 and 1912, a small Department of Education had been 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.

The College administration was instrumental in 1929 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. In recent years, the College has emphasized the cooperation of academic and professional faculties of the University and, with the expansion of its facilities in Winlock W. Miller Hall, has advanced the development of many specialized functions, including the Education Library. Observation and practice work has been expanded and strengthened.

The College emphasizes fundamentals in all phases of its teacher-training program. The student is expected to master a defined body of academic material and the professional courses in educational psychology, curriculum, methods, and pupil evaluation. The student's ability to use his knowledge and training is improved in supervised practice teaching, which is supplemented by other classroom and community experiences.

Graduate work leading to the degrees of Master of Arts, Master of Education, Doctor of Education, and Doctor of Philosophy is performed under exacting

standards. Both thesis and examination are required in all graduate programs, although the research project for a Master of Education degree may be more practical and specialized than for the other degrees.

In all education curricula, the goal is the development of a teacher who, through mastery of academic content and professional techniques, thinks creatively, values good citizenship, and reflects the best in democratic society.

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 General 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 Seattle Public Schools and in other nearby districts under which students teach for one quarter of their senior year, during which they spend half days working with a master teacher in a public school. By special agreement, the College uses the Nathan Eckstein Junior High School, in Seattle, for intense study of certain school problems; members of the school staff help to carry out these projects under the direction of the College of Education faculty.

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 solving professional problems. Other services include curriculum workshops, held at the University during the summer and in some counties during the school year; a reading clinic, in which teachers learn to diagnose educational failure and to plan remedial instruction for retarded pupils; institutes and consultative programs; and informal help through letters, telephone calls, and visits.

ADMISSION

The University Board of Admissions gives first preference to applications from legal residents of Washington and Alaska and to out-of-state applicants who are sons and daughters of University of Washington alumni. The College of Education, like most colleges in the University, admits qualified out-of-state students and encourages those with good scholarship records to apply.

Applications for admission must be submitted by prescribed deadlines and must be substantiated by certain credentials and reports submitted in accordance with University rules and practices. It is important that the student's application be submitted by the proper time, for the University can accept no responsibility for applicants who come to the campus before their credentials have been forwarded or before they have been notified of acceptance.

Correspondence regarding requirements for admission to and graduation from any college or school of the University should be addressed to the Registrar.

It is the student's responsibility to make sure that complete credentials covering all his previous secondary and college education are submitted to the University. To be official they must be forwarded by the principal or registrar of the last school 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.

For admission in Autumn Quarter, the required credentials should be forwarded after high school graduation and before July 15. *The last day for new students to submit applications with complete credentials for admission in Autumn Quarter is August 31, 1956, August 30, 1957, or September 1, 1958.* For admission in the other quarters, applications and credentials should be submitted at least thirty days before the opening of the quarter. This applies to all new students seeking admission as graduates or undergraduates. *It is imperative that students observe this deadline in order to insure prompt attention to credentials and replies to correspondence.*

Before notice of admission is given, a medical questionnaire, on a form supplied by the Registrar, is issued to new out-of-state students. This should be completed by a doctor of medicine and returned by him to the Registrar's Office.

ADMISSION FROM ACCREDITED HIGH SCHOOLS

Graduates who earn diplomas of graduation from accredited high schools and who meet the University unit and scholarship requirements for entrance are eligible for admission as freshmen with regular standing.

No out-of-state student will be accepted for admission who would not be acceptable to the university of his own state (see Scholarship Requirement, page 18).

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

UNIT REQUIREMENT. The University unit¹ requirement is 16 high school units (or 15 units exclusive of activity credit in physical education, debate, etc.) with grades certifiable for university entrance. The 16 units should include at least 9 units in academic subjects (a unit equals 2 semester credits, or one full year of high school study). No unit which received lower than the lowest passing grade as defined by the high school itself may be included in the required total. For admission to the College of Education, the 9 academic units must include:

English	3 units	One foreign language*	2 units
Elementary algebra	1 unit	Social science	1 unit
Plane geometry or second-year algebra	1 unit	One laboratory science	1 unit

*Less than 1 unit in a foreign language will not be counted. The entrance requirement in foreign language may be met with 15 University credits in a foreign language and/or in any English courses except English 101, 102, and 103.

SUBJECT MATTER DEFICIENCIES. Applicants with diplomas of graduation from accredited high schools who meet the scholarship requirement and have at least 3 units in English and 6 in other academic subjects, including either 1 unit of algebra or 1 unit of plane geometry, may petition the Dean of the College for permission to

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

enter. (Typical academic subjects are English, foreign languages, mathematics, science, history, and economics. Some nonacademic courses are those in commerce, manual training, home economics, and band.) Students who are permitted to enter with provisional standing must register each quarter for make-up courses in the subject they lack until the entrance deficiency is removed. Those deficient in both first-year algebra and plane geometry are seldom admitted on this basis. Provisional standing continues until the student has satisfied the entrance requirements of the college in which he is enrolled. *No application for a degree may be accepted until all entrance deficiencies have been removed.* Deficiencies may be made up with university credit if college courses covering the high school material are available; 10 college credits are considered the equivalent of 1 high school unit, except that for foreign languages 15 quarter credits of college work are considered the equivalent of 2 units (4 semesters) of high school credit. No student may receive credit for repetition of work at the same or at a more elementary level, if credit has been granted in the earlier course. This rule applies whether the earlier course was taken in high school or in college, and whether, in the latter case, course numbers are duplicated or not. University credits earned by removing a deficiency cannot be used to satisfy college group requirements. First-year algebra and plane geometry are offered by the Division of Adult Education and Extension Services (fee \$18.00 per course) and do not carry University credit.

SCHOLARSHIP REQUIREMENT. The College of Education scholarship requirement is a high school grade point of 2.20 (equivalent to a C+ average on the state of Washington grading system). Students from high schools in other states which use different grading systems will find their scholarship averages adjusted to the Washington four-point system (see Admission from Accredited High Schools, second paragraph, page 17).

Graduates of accredited schools who cannot meet the 2.20 grade-point requirement or who have not decided which education curriculum to follow may apply for admission to the College of Arts and Sciences, which offers a pre-education program. This program is described in the *College of Arts and Sciences Bulletin*.

ADMISSION BY EXAMINATION

Graduates of nonaccredited high schools in Washington and Alaska may petition the Board of Admissions for permission to enter if they meet other entrance requirements and are recommended by their high school principals. The Board will require these students to take special entrance examinations.

Prospective students who are not high school graduates must pass College Entrance Board Examinations and without deficiency meet requirements for admission to the University and the College. Those who plan to take entrance examinations should write for information to the Educational Testing Service, Box 592, Princeton, New Jersey, or Box 9896, Los Feliz Station, Los Angeles 27, California.

ADMISSION WITH ADVANCED UNDERGRADUATE STANDING

Applicants are admitted to the University and to the College of Education by transfer from accredited colleges, universities, and junior colleges under the following conditions:

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

2. Applicants who have completed a year or more of college work must have a 2.20 (C+) grade-point average in their entire college records. Those with less than a year of college work must have a 2.20 (C+) average in both their college and high school records.

3. Complete transcripts and letters of honorable dismissal must be sent directly to the University Registrar by the registrar of the former school. Failure to supply complete college credentials will be considered a serious breach of honor and may

result in permanent dismissal from the University.

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

5. A maximum of 45 credits earned in extension and correspondence courses at other institutions may be transferred, but none of these credits can apply toward the work of the senior year. Extension and correspondence credits from schools that are members of the National University Extension Association are accepted without examination; credits from schools that are not members are accepted only after examination.

6. The maximum number of credits obtainable by acceptance of Armed Forces training school 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.

7. Credits earned in extension 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 correspondence credits is acceptable; the 90 credits may include the 45 extension or correspondence credits allowable from other institutions or may consist entirely of courses taken in this University's Division of Adult Education. All credits earned by advanced-credit examination and all acceptable Armed Forces training school credits must be counted in the 90-credit maximum. Up to 10 extension or correspondence credits from this University can apply toward the work of the senior year.

8. The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted. Definite advanced standing is not determined until 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. No credit will be allowed in the senior year.

For work done 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.

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

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Students educated entirely or partially in foreign countries must meet the same general requirements as those educated in American schools and must demonstrate a satisfactory command of the English language. The official record of Canadian students is the matriculation certificate or university admission certificate of their province. A student who has graduated from a school system that provides less than twelve years of instruction may be required to take additional high school work. Students who have been in university attendance must have official transcripts forwarded (see Admission, page 16).

ADMISSION OF SPECIAL STUDENTS AND AUDITORS

Persons twenty-one or over who are legal residents of Washington or Alaska and are not eligible for admission as regular students may apply to the Board of Admissions for 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 requirements for admission to the College, special students may change their status to that of regular students and may receive degrees.

Persons twenty-one or over may register as auditors in nonlaboratory courses or the lecture parts 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. Students who have been dropped for low scholarship or new applicants may not register as auditors until they have been reinstated or accepted in some college of the University.

ADMISSION WITH GRADUATE STANDING

Prospective graduate students must apply for admission to the Graduate School. Entrance requirements are described in the *Graduate School Bulletin*, which may be obtained from the Registrar.

WORLD WAR II AND KOREAN VETERANS

ADMISSION

The University welcomes veterans under the G.I. Bill, the Vocational Rehabilitation Act, and the Korean Bill, provided they can meet the University of Washington entrance requirements.

ENTITLEMENT TO EDUCATIONAL BENEFITS

Veterans who are accepted for entrance to the College of Education and who expect to study under the provisions of Public Laws 16, 894, or 346 should apply to a Veterans Administration regional office for a Certificate of Eligibility at least one month prior to registration. This certificate should be presented at the Veterans Division, 1B Administration Building, the day of registration. Those who do not have this certificate at the time they register must pay all charges; they will receive refunds when authorization from the Veterans Administration is established.

Korean veterans entering under the provisions of Public Law 550 should apply to a Veterans Administration regional office for a Certificate for Education and Training at least one month prior to registration. This certificate should be presented at the Veterans Division, 1B Administration Building, the day of registration or during the first week of instruction. Under this law, students receive an educational allowance and pay their own tuition and fees. Korean veterans should be prepared to meet all their own expenses as well as the cost of tuition, fees, and supplies for at least two months. Educational allowances are not paid until a full month's attendance has been established.

REGISTRATION

All students must have definite registration appointments each quarter. New students are given appointments when they are notified of admission and 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) may obtain registration appointments by writing or telephoning the Registrar's Office at the time specified in the Calendar (see page 4). Students in residence may obtain appointments at the time announced in the Calendar.

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 Dean's consent.

REGULAR STUDENTS

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

ADVISING

After notification of admission, and before registration, new students should visit or write to the College 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 College of Education, and the Graduate School.

APTITUDE TESTS

New students of freshman standing (including transfer students with less than 45 quarter credits exclusive of credits in physical education activity and Army, Air Force, and Navy ROTC subjects) will take college aptitude tests at a time to be announced each quarter.

The aptitude tests consist of a battery of several tests selected on the basis of their proven value for the prediction of grades most likely to be earned by each student. Thus, the results of testing may be used in advisement of the student and are used as an aid in assigning students to appropriate sections in English composition and other subjects. Little can be gained by preliminary study for these tests. Sample copies are not available. Special, exchange, and blind students and auditors will be exempted. Also, foreign students who have markedly inadequate previous training in the use of English may be exempted.

MATHEMATICS PLACEMENT AND EXEMPTION TESTS

Students who have taken third-semester algebra in high school and who plan to take Mathematics 104 (Trigonometry) and/or Mathematics 105 (College Algebra) are required to take a placement test before they are permitted to register for these University courses. Students who have taken trigonometry and/or college algebra in high school and whose University courses of study require these subjects may obtain exemption from Mathematics 104 and/or 105 by taking an exemption test. Directions for taking these tests are included in *Registration Information for New Students* which is enclosed with the Notification of Admission blank. Students are advised to review their high school work before taking these tests.

MEDICAL EXAMINATIONS

All new students, and all former students who have not attended the University within the preceding calendar year, must take a medical examination, including a chest X ray. For out-of-state students, this examination is in addition to the medical questionnaire required of them as part of the application for admission. An annual chest X ray is required of all students.

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 Announcement*.

Tuition

Resident students, per quarter \$25.00

A resident student is one who has been domiciled in Washington or Alaska for at least a year immediately before registration. The domicile of a minor is that of his parents.

Nonresident students, per quarter 75.00

Prospective students are classified as nonresidents when their credentials come from schools outside Washington and Alaska. If they believe they are residents, they may petition the Nonresident Tuition Office for a change of classification.

Auditors, per quarter 12.00

Veterans of World Wars I and 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, University Comptroller's Office. Nonresident students who meet one of these requirements pay one-half the nonresident tuition.

This exemption is not granted to Summer Quarter students.

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) 3.00 to 5.00

Ticket for Autumn, Winter, and Spring Quarters, \$5.00; for Winter and Spring Quarters only, \$3.00; for Spring Quarter only, \$3.00.

Military Uniform Deposit, per year 25.00

Paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. Limitation on refund to Army ROTC students will be explained during registration.

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 for men students taking physical education activities.

Grade Sheet Fee .25

One grade sheet is furnished each quarter without charge; the fee is charged for each additional copy.

Transcript Fee .50

One transcript is furnished without charge; the fee is charged for each additional copy. Supplementary transcripts are 25 cents each.

Graduation Fee 10.00

Directed (Practice) Teaching Fee, per credit 1.00

The total cost usually amounts to \$8.00.

Bureau of Teacher Service and Placement Fees

Initial registration in senior year 5.00

Maintenance on active list each subsequent year 2.50

Teaching Certificate Fee 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.

SPECIAL FEES

From \$2.00 to \$5.00 is charged for late registration; \$2.00 for each change of registration; \$5.00 for a late medical examination; and \$1.00 for a late X ray. The fee for a special examination is \$1.00; for an advanced-credit examination, \$2.00 per credit; and for removal of an Incomplete, \$2.00.

MUSIC FEES, per quarter are: Private lessons, one-half hour a week (2 credits), \$25.00. Private lessons, one hour a week (3 credits), \$37.50. Group lessons, \$5.00. 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 ACTIVITY FEES, per quarter are: Bowling, \$3.00. Canoeing, \$2.50. Golf Instruction, \$3.00 per quarter; Season Ticket, \$5.00 per quarter, a season ticket is good on the golf course for play and may be purchased alone or in addition to golf instruction fee. Riding Fee is payable to riding academy and varies in amount. Skiing, for transportation and tow charge, \$19.75.

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	\$183.00
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Full-time nonresident student	408.00
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<i>Athletic Admission Ticket</i> (optional)	3.00 to 5.00
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<i>Accident Insurance</i> (optional)	4.95
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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>	75.00
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Board and Room

Room and meals in Men's Residence Hall	570.00
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Room and meals in Women's Residence Halls	525.00 to 600.00
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Room and meals in student cooperative house	445.00 to 460.00
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Room and meals in fraternity or sorority house	660.00 to 700.00
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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>	200.00
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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.

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.

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 four annual continuing scholarships of \$150 each awarded by the Washington Congress of Parents and Teachers, three to freshmen with outstanding high school records and one to a junior college graduate in the state of Washington, and an annual scholarship of Autumn Quarter tuition for a freshman woman, awarded by Pi Lambda Theta. Other awards are made from time to time, such as the Soroptimist 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.

DEPARTMENTAL ASSISTANTSHIPS

Application for teaching assistantships (fellowships) and graduate assistantships should be made in the Office of the Dean of the College of Education. A limited number is available depending on enrollment.

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 Dean of Students Office also provides current information on Selective Service regulations.

The Counselor for International Services, a member of the Dean of Students staff, offers 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 hospital-ity should be referred to this counselor. 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 offers vocational and personal counseling to students who need help in their adjustments to college living. The staff of the Center, which includes vocational counselors, psychiatric social workers, and clinical psychologists, works closely with other student services and supplements the academic advisory program.

HOUSING

A limited number of accommodations are available to men in the Men's Residence Hall, 1101 Campus Parkway, Seattle 5, Washington. Interested students should write to the Manager, the Men's Residence Hall. Housing is available to women in the Women's Residence Halls. For further information write to Manager, Women's Residence Halls, University of Washington, Seattle 5, Washington. The Students' Cooperative Association, 1114 East Forty-fifth Street, operated independently from the University, has low-cost accommodations for both men and women. Information about fraternities may be obtained from the Interfraternity Council, Union Building, University of Washington, and about sororities from the Panhellenic Council, 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, students' cooperative, and church-sponsored living groups. Other types of living arrangements must be approved by the Office of the Dean of Students.

Married students who are veterans of World War II or Korea are eligible to apply to the Office of Student Residences for accommodations in Union Bay Village, the University's family housing project. Because there is a long waiting list, new students should not rely on the possibility of immediate housing there.

The Office of Student Residences in Room 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 center and infirmary which help to 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 two dollars a day is made. At their own expense, infirmary patients may consult any licensed physician in good standing.

PLACEMENT

The College of Education maintains a Bureau of Teacher Service and 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 in other fields may be obtained at the University Placement Office. Applications are accepted from University students and their wives and husbands. Application must be made in person after residence in Seattle has been established. Placement in jobs on the campus is handled by the Nonacademic Personnel Office 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 any bachelor's degree 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 graduation include military training, physical education, scholarship and minimum credits, group requirements, and senior-year residence.

Application for a bachelor's degree and a teaching certificate should be made through the College advisory office during the first quarter of the senior year, if the student is in attendance during the academic year. A student may choose to graduate under the graduation requirements of the appropriate school or college bulletin published most recently before the date of his entry into the college in which he is to graduate, provided that not more than ten years have elapsed since that date. As an alternative he may choose to fulfill the graduation requirements as outlined in the appropriate school or college bulletin published most recently before the date of his graduation; however, he must meet the current requirements for teacher certification. All responsibility for fulfilling graduation requirements will 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. Education students are required to remove high school deficiencies during their first year in residence at the University of Washington.

BACHELOR OF ARTS. To obtain the Bachelor of Arts degree, education students may major in art, business education, chemistry, civics, drama, economics, English, French, geography, German, history, industrial education, journalism, Latin, mathematics, music, physical education, political science, sociology, Spanish, or

speech. The requirements for each major are included in the first area of concentration in that subject (see pages 35-57).

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 major are included in the first area of concentration in that subject (see pages 35-57).

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 209, 360, 370E, 371K or 371E, 374, 376, 377X-377Y, 378C, 378D, 389, and 390, or approved substitutes.

BACHELOR OF SCIENCE IN HOME ECONOMICS EDUCATION. The requirements for a major for this degree are included in the first area of concentration in home economics (see page 36). The program is intended for prospective Smith-Hughes (vocational) home economics teachers.

MILITARY TRAINING

Male students who enter the University as freshmen or sophomores are required to complete six quarters of military training. Students should meet this requirement during the first two years they are in residence (registered in regular University classes).

The military training requirement may be met with courses in any one of three University departments: Air Science, Military Science and Tactics, or Naval Science. The Departments of Air Science and Military Science offer six-quarter (two-year) basic programs of class work and drill which fulfill University requirements, and two years of advanced ROTC training which selected students may enter after completing the basic program. Information about these programs may be obtained from the Professor of Air Science and the Professor of Military Science and Tactics at the University. The Department of Naval Science offers four-year programs only, and prospective students who are interested in Naval ROTC should write to the Professor of Naval Science. Students with junior or senior standing in the Naval ROTC program and those who enter the advanced Air Force or Army ROTC program must complete the program as a condition of graduation unless excused or dismissed by authority of the Secretary of the service concerned.

Exemptions from the requirement are granted to:

1. Students who are twenty-three or over at the time of original entrance.
2. Special students.
3. Part-time students, those registered for 6 credits or less.
4. Students who are not citizens of the United States.
5. Students who because of physical condition are exempted by the University Health Officer.
6. 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.
7. Students who are active members or reserve officers of the Armed Forces or Coast Guard, or commissioned officers of the National Guard.
8. Students who are active enlisted members of the National Guard or of the Organized Reserve of the Armed Forces or Coast Guard.
9. 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.
10. 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 4 or 10 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

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.

Men students must take one quarter of swimming, unless the required swimming proficiency (exemption) test has been passed. In the other two quarters, a student can elect any activity course he desires, but only one quarter of any one activity can be counted toward graduation. Any freshman or varsity sport may be substituted for any activity course except swimming.

Women students must complete one quarter of swimming, unless the safety swimming test has been passed, and one of the fundamental movement courses prescribed by the Department during the three quarters.

Exemptions from the activity requirement are granted to:

1. Students who are twenty-five or older at the time of original entrance.
2. Special students.
3. Part-time students, those registered for 6 credits or less.

4. 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 School of Physical Education. All other students who are reported by the University Health Officer as unfitted to join regular classes will be assigned by the Executive Officer of the School of Physical Education to special programs adapted to their needs.

5. Students who are veterans of military service. Complete exemption is granted for six months or more of active service. Veterans with less than six months of service receive no exemption.

6. 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 undergraduates are required to take Physical Education 175, a course in personal health, within the first three quarters of residence. Veterans with six months or more of active service are exempt from this requirement. Other exemptions are by examination and by transfer of credit for a similar course in an accredited college.

Women students who enter the University as freshmen are required to take Physical Education 110, a course in health education, within the first three quarters of residence. This requirement may be satisfied by passing a health-knowledge examination given during the Autumn Quarter registration period for women entering the University for the first time.

SCHOLARSHIP AND CREDITS

Students in the College of Education must maintain a 2.20 grade-point average. A cumulative 2.20 average is required for the Provisional General Certificate. 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 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.

The University credit requirement for graduation is 180 academic credits (including Physical Education 110 or 175) and the required quarters of military training and physical education activity. 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.

Students who transfer from other institutions are normally required to earn at least 10 credits in their major subject in this College.

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.

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. Physical Education 110 and 175, English 101, 102, and 103, and courses taken to remove entrance deficiencies (except English courses taken to remove a language deficiency) 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>
Architecture	Anthropology	Anatomy 301
Art	Economics	Astronomy
Classics	Far Eastern Institute	Biochemistry
Drama	courses	Biology
English	Geography	Botany
Far Eastern languages and	History	Chemistry
literature	Home economics	Fisheries
General and comparative	Philosophy	Geology
literature	Physical education	Mathematics
Germanic languages and	Political science	Meteorology and
literature	Psychology	climatology
Humanities 101, 102, 103,	Social Science 101, 102, 103,	Microbiology
201, 202, 203	201, 202, 203	Oceanography 101
Journalism	Sociology	Pharmacy 115
Liberal arts		Physical Science 101, 102
Librarianship		Physics
Music		Zoology
Radio-Television		
Romance languages and literature		
Scandinavian languages and		
literature		
Slavic languages and literature		
Speech		

SENIOR-YEAR RESIDENCE

Senior standing is attained when 135 credits, plus the required quarters of ROTC and physical education, have been earned. In 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 at this University or in this University's extension or correspondence courses.

TEACHER CERTIFICATION

The State Board of Education, charged by law with the responsibility of establishing the types and kinds of teaching certificates in the state of Washington, has by official action instituted the Provisional and Standard General Certificates in this state. It is no longer possible for a student with no previous experience or preparation to start work toward an elementary or secondary certificate as such, since these were abolished as original certificates September 1, 1951, at which time the Provisional General Certificate replaced them.

Transfer students who have been graduated from an approved four-year teacher-training institution in the state of Washington are accepted on a graduate basis, but they 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 passed upon by the Registrar and by the Dean of the College of Education. Transfer students must present a grade-point average of 2.20 for admittance to education courses leading to certification. After a transfer

student has spent three quarters at the University of Washington, his grade point is based on grades received at this institution and must meet the 2.20 requirement if he is to qualify for a teaching certificate.

Transfer students who have obtained a degree from a properly accredited institution in another state may certify through the State Department of Public Instruction in Olympia. Any requirements outlined by that office may be met at the University of Washington.

Transfer students working toward the Provisional General Certificate through the University of Washington must earn 9 credits in education courses, 10 credits in the first broad area of concentration or basic academic field, and 5 credits in the second broad area of concentration at this University.

Requirements for a teaching certificate shall be those currently in force at the time the certificate is granted.

PROVISIONAL GENERAL CERTIFICATE

The Provisional General Certificate is valid for a maximum of five years in all grades (kindergarten through twelfth), and an approved renewal must be registered annually with a county superintendent. During the term of the Provisional General Certificate, the teacher must meet the requirements for a Standard General Certificate (see page 57).

Requirements for the Provisional General Certificate are:

- I. A degree of Bachelor of Arts, Bachelor of Science, Bachelor of Arts in Elementary Education, or Bachelor of Science in Home Economics Education.
- II. Evidence of such general scholarship and personal and moral qualities as give promise of success.
- III. A 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 371K, 371E, 371X, or 371S; and an average of C or above in each area of concentration or basic academic field.
- IV. A signed oath of allegiance as a citizen of the United States.
- V. A health examination within six months before the certificate is granted.
- VI. Academic work (excluding physical education activities) to total a minimum of 180 quarter credits, including the following:
 - A. **EMPHASIS (either 1 or 2 may be chosen)**
 1. Elementary emphasis, kindergarten through grade six
 - a. Major in elementary education, for the degree of Bachelor of Arts in Elementary Education—minimum of 36 credits in elementary education
 - b. One basic academic field (see B)
 - c. A second area of concentration (see B)
 - d. General education (see C)
 - e. General education for elementary teachers (see D)
 - f. Professional education (see E)
 2. Secondary emphasis, grades seven through twelve
 - a. First area of concentration, which includes major requirements for the degree of Bachelor of Arts, Bachelor of Science, or Bachelor of Science in Home Economics Education (see B)
 - b. Second area of concentration (see B)
 - c. General education (see C)
 - d. Professional education (see E)
 - B. **A BASIC ACADEMIC FIELD AND A SECOND AREA OF CONCENTRATION (FOR ELEMENTARY EMPHASIS) OR FIRST AND SECOND AREAS OF CONCENTRATION (FOR SECONDARY EMPHASIS).** Specific departmental requirements for each field and area are listed on pages 35-57.
 1. The basic academic field or first area of concentration is chosen from one department in one of the five broad areas listed below.
 2. The second area of concentration is chosen from two or more departments in one of the four remaining broad areas.

The areas of concentration and basic academic fields are chosen from the following broad areas as outlined by the State Board of Education.

<i>Fine and Applied Arts</i>	<i>Health and Physical Education</i>	<i>Language Arts</i>	<i>Sciences and Mathematics</i>	<i>Social Studies</i>
Art Education	Health Education	Drama	Biology	Civics
Business Education	Physical Education (Men)	English	Chemistry	Economics
Home Economics	Physical Education (Women)	French	Geology	Far Eastern (second area only)
Industrial Education		German	Mathematics	Geography
Music		Journalism	Physics	History
		Latin		Political Science
		Librarianship		Psychology
		(second area only)		Sociology
		Spanish		
		Speech		

C. GENERAL EDUCATION including the following or their equivalents (required in both elementary and secondary emphases):

COURSES	CREDITS
English 101, 102, 103 English Composition	9
Physical Education Activities	3
Physical Education 110 or 175 Health Education (women) or Personal Health (men)	2
Speech 100 Basic Speech Improvement	5
Psychology 100 General Psychology	5
Psychology 306 Child Psychology	5
OR	
Psychology 320 Directed Observation of Child Behavior in the Nursery School	2
OR	
Education 402 Child Study and Development	3
Music 107 Survey of Music (or substitute)	2-5
OR	
Education 377X-377Y Music for Elementary Teachers	6
Art 100 Introduction to Art (or substitute)	2-5
OR	
Education 376, 389 Art in the Elementary School, Industrial Education for Elementary Teachers	10
Public Health 461 School and Community Health Programs	5
History 464 History of Washington and the Pacific Northwest	5

D. PERSONS ELECTING AN ELEMENTARY EMPHASIS for the degree of Bachelor of Arts in Elementary Education must present 20 credits from the following specific courses or their equivalents:

COURSES	CREDITS
Drama 437 Creative Dramatics with Children	3
Geography 100 Introductory Human Geography	5
History 241 Survey of the History of the United States	5
Home Economics 300 Nutrition	2
Librarianship 451 Children's Books or 452 Storytelling	3
Sociology 110 Survey of Sociology	5
Sociology 352 The Family	5
OR	
Home Economics 356 Family Relationships	3

E. PROFESSIONAL EDUCATION COURSES in the following sequence:

COURSES	CREDITS
Education 209 Educational Psychology (including laboratory experiences). Prerequisite, Psychology 100 and a course in child development	3
Education 370 Introduction to Teaching Procedures (including 2 credits in laboratory experiences)	5
Education 360 Principles of Education (including curriculum study)	3
Education 370E Elementary School Methods (including 2 credits in laboratory experiences). Prerequisite, 370	5
Education 374 Fundamentals of Reading Instruction. Prerequisite, 370E	5
Education 390 Evaluation in Education. Prerequisite, 370	3
Education 373 Washington State Manual	2
Special Methods for High School Teaching (prerequisite, 370), or 378C, 378D Physical Education for the Elementary School and 379 Arithmetic for Elementary Teachers (prerequisite, 370E)	2-8
Education 371K or 371E Directed Teaching in Kindergarten or Elementary School. Prerequisites, 374, 376, 377X-377Y, and 378C, 378D (minimum total of 8)	3-8
OR	
Education 371X or 371S Directed Teaching in Junior or Senior High School. Prerequisites, 370E and Special Methods (minimum total of 8)	3-8
Education 372E, 372X, or 372S Professional Laboratory Experiences (taken on level different from directed teaching). Prerequisite, 371K, 371E, 371X, or 371S	3

AREAS OF CONCENTRATION AND BASIC ACADEMIC FIELDS

The areas established by the State Board of Education are given below, together with the specific requirements for each area and field as defined by the College of Education. It is the responsibility of the student to consult the department in which he plans to take his area of concentration or basic academic field to verify the requirements as listed.

AREA I, FINE AND APPLIED ARTS

ART

FIRST AREA OF CONCENTRATION. The requirements are 70 credits in art and 7 or 9 credits in related fields, including the following:

COURSES	CREDITS
Art 105, 106, 107 Drawing	9
Art 109, 110, 111 Design	9
Art 112 History of Art through the Renaissance	5
Art 253, 254, 255 Two- and Three- Dimensional Design	9
Art 256, 258 Painting	6
Art 272 Sculpture	3
Art 300 Elementary Crafts	2
Art 301 Elementary Interior Design	2
Art 302 Bookmaking and Bookbinding	2
Art 303, 304 Ceramic Art	6
Art 305 Lettering	3
Art 360 or 361 or 362 Life	3
Art 463 Composition	3
Art 466 Commercial Design	5
Approved Art electives	3
Arch. 100, 101 Architectural Appreciation	4
Philosophy 445 Philosophy of Art	3
OR	
Liberal Arts 111 Introduction to the Study of the Fine Arts	5

The following courses are suggested for the thirteenth quarter. They may be taken either before or after teaching experience.

COURSES	CREDITS
Art 320 History of Modern Sculpture	2
Art 326 History of Painting since the Renaissance	2
Art 369 Costume Design and Illustration	2
Art 450 Illustration	5
OR	
Art 451 Printmaking	5
Art 464 Composition	3
Art 357, 358, 359 Design in Metal	9
Art 340 Design for Printed Fabrics	3

BASIC ACADEMIC FIELD. 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 112 History of Art through the Renaissance	5
Art 151 Figure Sketching	1
Art 253, 254, 255 Two- and Three-Dimensional Design (3,3,3)	to total 6
Art 256, 258 Painting	6
Art 300 Elementary Crafts	2
Art 302 Bookmaking and Bookbinding	2
Education 376 Art in the Elementary School	5

SECOND AREA OF CONCENTRATION. This program should be planned in consultation with an adviser.

BUSINESS EDUCATION

FIRST AREA OF CONCENTRATION. The requirements are 54 credits°, including the following and 10 approved credits from secretarial training, accounting, or marketing courses. Upon consultation with the Department, this 54-credit requirement may be reduced because of previous training in shorthand or typewriting.

COURSES	CREDITS
Secretarial Training 10 Typewriting	1
Secretarial Training 111 Secretarial Training (Intermediate Typewriting)	2
Secretarial Training 112 Secretarial Training (Advanced Typewriting)	2
Secretarial Training 115 Office Machines	3
Secretarial Training 120-121 Gregg Shorthand	6
Secretarial Training 122 Advanced Gregg Shorthand	3
Secretarial Training 320 Secretarial Practice	5
General Business 101 Introduction to Business	5
Accounting 150 Fundamentals of Accounting	4
Accounting 151 Fundamentals of Accounting	3
Business Law 201 Business Law	5
Marketing 301 Principles of Marketing	5

BASIC ACADEMIC FIELD. The requirements are 36 credits*, including the following. Upon consultation with the Department, this requirement may be reduced because of previous training in shorthand or typewriting.

COURSES	CREDITS
Secretarial Training 10 Typewriting	1
Secretarial Training 111 Secretarial Training (Intermediate Typewriting)	2
Secretarial Training 112 Secretarial Training (Advanced Typewriting)	2
Secretarial Training 120-121 Gregg Shorthand	6
Secretarial Training 122 Advanced Gregg Shorthand	3
Secretarial Training 320 Secretarial Practice	5
General Business 101 Introduction to Business	5
Accounting 150 Fundamentals of Accounting	4
Accounting 151 Fundamentals of Accounting	3
Business Law 201 Business Law	5

SECOND AREA OF CONCENTRATION. The requirements are 26 credits*, including the following. Upon consultation with the Department, this requirement may be reduced because of previous training in shorthand or typewriting.

COURSES	CREDITS
Secretarial Training 10 Typewriting	1
Secretarial Training 111 Secretarial Training (Intermediate Typewriting)	2
Secretarial Training 112 Secretarial Training (Advanced Typewriting)	2
Secretarial Training 120-121 Gregg Shorthand	6
Secretarial Training 122 Advanced Gregg Shorthand	3
Secretarial Training 320 Secretarial Practice	5
Accounting 150 Fundamentals of Accounting	4
Accounting 151 Fundamentals of Accounting	3

*Also required are (see professional education course requirements):

Education 324 Teachers' Course in Business Education: Bookkeeping and General Business	2
Education 325 Teachers' Course in Business Education: Typewriting, Shorthand, Transcription, and Business Communications	2

HOME ECONOMICS

FIRST AREA OF CONCENTRATION. The requirements are 60 credits, including the following and prerequisites and any recommended courses to complete the area. Students who plan to teach homemaking in Washington high schools follow this prescribed curriculum which meets the course requirements for a Temporary Vocational Certificate as well as the course requirements for the Provisional General Certificate.

COURSES	CREDITS
Home Economics 101 Introduction to Home Economics (not required of transfer students)	1
Home Economics 115 Food Preparation	3
Home Economics 125 Textiles	3
Home Economics 134 Clothing Construction and Selection	5
Home Economics 215 Meal Planning and Preparation	3
Home Economics 234 Costume Design and Construction	3
Home Economics 248 The House, Its Equipment, and Management	3
Home Economics 307 Nutrition	5
Home Economics 315 Advanced Food Selection and Preparation	5
Home Economics 338 Clothing for the Family	3
Home Economics 347 Home Furnishing	5
Home Economics 348 Home-Management House (reservation required)	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 selected from 407 Advanced Nutrition (3), 434 Costume Design and Construction (3), 447 Advanced Home Furnishing (3), or 495 Special Problems in Home Economics (3)	to total 3
Nursing 100 Care and Prevention of Illness in the Home	3
Psychology 320 Directed Observation of Child Behavior in the Nursery School	2

BASIC ACADEMIC FIELD. The requirements are 45 credits, including the following and three electives in home economics and prerequisites and any recommended courses to complete the field.

COURSES	CREDITS
Home Economics 101	Introduction to Home Economics (not required of transfer students) . . . 1
Home Economics 115	Food Preparation . . . 3
Home Economics 125	Textiles . . . 3
Home Economics 134	Clothing Construction and Selection . . . 5
Home Economics 215	Meal Planning and Preparation . . . 3
Home Economics 234	Costume Design and Construction . . . 3
Home Economics 248	The House, Its Equipment, and Management . . . 3
Home Economics 307	Nutrition . . . 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

SECOND AREA OF CONCENTRATION. Students may select one of four sequences. The requirements are 15 credits.

Requirements for the general courses are the following:

COURSES	CREDITS
Home Economics 110	Food and Nutrition . . . 5
OR	
Home Economics 115	Food Preparation . . . 3
Home Economics 125	Textiles . . . 3
Home Economics 134	Clothing Construction and Selection . . . 5
Home Economics 248	The House, Its Equipment, and Management . . . 3
Home Economics 300	Nutrition . . . 2

The requirements for specialization in textiles, clothing, and art are the following:

COURSES	CREDITS
Home Economics 125	Textiles . . . 3
Home Economics 134	Clothing Construction and Selection . . . 5
Home Economics 234	Costume Design and Construction . . . 3
Home Economics 347	Home Furnishing . . . 5

Suggested electives in Home Economics include:

Home Economics 321	Needlecraft . . . 2
Home Economics 322	Needlecraft . . . 2
Home Economics 329	Hand Weaving . . . 2
Home Economics 334	Costume Design and Construction . . . 3
Home Economics 338	Clothing for the Family . . . 3
Home Economics 426	Historic Textiles . . . 3
Home Economics 434	Costume Design and Construction . . . 3

The requirements for specialization in foods, nutrition, and health are the following:

COURSES	CREDITS
Home Economics 101	Introduction to Home Economics (not required of transfer students) . . . 1
Home Economics 110	Food and Nutrition . . . 5
OR	
Home Economics 115	Food Preparation . . . 3
Home Economics 215	Meal Planning and Preparation . . . 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 . . . 5
OR	
Home Economics 115	Food Preparation . . . 3
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 Child Behavior in the Nursery School . . . 2

INDUSTRIAL EDUCATION

FIRST AREA OF CONCENTRATION. The requirements are 41 credits, including the following and any recommended courses to complete the area.

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 Castings	1
Mechanical Engineering 202 Welding	1
Mechanical Engineering 312 Machine Tool Fundamentals	3
Architecture 105 The House	2
Art 253 Two- and Three-Dimensional Design	3

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are the following and any recommended courses to complete the area.

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 Castings	1
Mechanical Engineering 202 Welding	1
Mechanical Engineering 312 Machine Tool Fundamentals	3

MUSIC

Every prospective music student will be interviewed by members of the faculty of the School of Music to determine his (a) musical sensitivity; (b) musicianship: pitch, rhythm, singing or playing at sight, and vocal or instrumental facility; (c) musical skill through performance as a vocalist or as an instrumentalist; (d) ability to play, at the piano, all major and harmonic minor scales, a simple piece by Bach, an easy sonatina, and an easy composition by a romantic or contemporary composer; to read at sight music of the difficulty of the average hymn; and to identify keys and key signatures. If a student meets the first three requirements but is unable to qualify at the piano, 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.

Since participation in music organizations is an indispensable part of his musical experience, every music student must become a member of one or more music ensembles throughout his four years. No credit can be earned for this experience during the freshman and sophomore years; from 6 to 12 credits can be earned during the junior and senior years. 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 the chosen performance field, either as a soloist or as a member of a small music 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.

For graduation, students are required to earn a grade-point average of 2.50 in music courses.

With the approval of the music education faculty, a student who has exceptional 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 substitute courses will be arranged.

PIANO. The requirements are: (1) play ten traditional community songs from memory; (2) improvise a suitable accompaniment to a melody in any given key; (3) play singly or in combination parts of a choral or instrumental composition suitable for use in the public schools; (4) transpose simple melodies; and (5) perform in a musical manner a group of short compositions suitable for use in the elementary grade school program.

VOICE. The requirements are: (1) demonstrate an understanding of the elements of good voice production by singing from memory a repertoire of folk and art songs; (2) sing at sight one part in two- and four-part songs; (3) evaluate constructively the vocal performances of students in the class.

FIRST AREA OF CONCENTRATION. The requirements are 80 credits, including the following:

COURSES	CREDITS
Music 101, 102, 103 First-Year Music Theory	9
Music 201, 202, 203 Second-Year Music Theory	9
Theory electives	6
Music 207, 208, 209 Music Literature	6
Vocal or instrumental instruction beginning with:	
Music 130 Vocal or Instrumental Instruction (2-3, maximum 18), AND/OR	
Music 110A Class Instruction: Piano (3) AND	
Music 110C Class Instruction: Voice (3)	to total 24
Music 124, 125, 224, 225, 226 Orchestral Instruments Laboratory	5
Music 244 Orchestra Laboratory	1
Music 304 Choral Literature	1
Music 384, 385, 386 Conducting	4
Music 344 Elementary School Music	4
Music 346J Teachers' Course in Secondary School Music	3
Twelve quarters of vocal and instrumental ensemble as arranged with School of Music adviser ..	6

BASIC ACADEMIC FIELD. The requirements are 45 credits, including the following:

COURSES	CREDITS
Music 101, 102, 103 First-Year Music Theory	9
Music 201 Second-Year Music Theory	3
Music 208 or 209 Music Literature	2
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
Music 124, 125, 224, 225, 226 Orchestral Instruments Laboratory (1 each)	to total 3
Music 244 Orchestra Laboratory	1
Music 304 Choral Literature	1
Music 385 Conducting	2
Education 377X-377Y Music for Elementary Teachers	6
OR	
Music 344 Elementary School Music (by permission)	4
Two years of music ensemble	0

SECOND AREA OF CONCENTRATION. The requirements for a vocal area are 33 credits, including the following:

COURSES	CREDITS
Music 101, 102, 103 First-Year Music Theory	9
Music 201 Second-Year Music Theory	3
Music 110A Class Instruction: Piano (or exemption)	3
Music 130C Vocal or Instrumental Instruction: Voice	6
Music 304 Choral Literature	1
Music 385 Conducting	2
Music 495 Choral Conducting	3
Music 346J Teachers' Course in Secondary School Music	3
Upper-division choral ensemble	3

The requirements for an instrumental area are 35 credits, including the following:

COURSES	CREDITS
Music 101, 102, 103 First-Year Music Theory	9
Music 201 Second-Year Music Theory	3
Music 110A Class Instruction: Piano (or exemption)	3
Music 130 B,D,F, or G Vocal or Instrumental	
Instruction: Violin, Violoncello, Woodwind, or Brass	6
Music 124, 125, 224, 225, 226 Orchestral Instruments Laboratory	5
Music 244 Orchestra Laboratory	1
Music 384, 386 Conducting	2
Music 346J Teachers' Course in Secondary School Music	3
Upper-division instrumental ensemble	3

AREA II, HEALTH EDUCATION; PHYSICAL EDUCATION**HEALTH EDUCATION (PUBLIC HEALTH EMPHASIS)**

FIRST AREA OF CONCENTRATION. The requirements are 78 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Public Health 301 Causes and Control of Communicable Diseases	3
OR	
Public Health 402 Communicable Disease Control	3
Public Health 412 Public Health Organizations and Services	3
Public Health 464 Community Health Education Techniques	3
Public Health 483 Field Practice in Public Health	6
Conjoint 496 Concept of the Child	3
OR	
Education 402 Child Study and Development (included in general education requirements) ...	3
Physical Education 291 Personal and General Hygiene	3
Physical Education 292 First Aid and Safety	3
Physical Education 345 Principles of Physical Education	3
Physical Education 453 Methods and Materials in Health Teaching	3
Sociology 353 Social Factors in Marriage	3
OR	
Home Economics 356 Family Relationships	3
Psychiatry 450 Principles of Personality Development	2
OR	
Education 408 Mental Hygiene for Teachers and Administrators	3
Home Economics 300 Nutrition	2
Microbiology 301 General Microbiology	5
Anatomy 301 General Anatomy	4
Zoology 208 Elementary Human Physiology	5
Biology 101J-102J General Biology	10
Chemistry 101 General Chemistry	5
Chemistry 230 Organic Chemistry	5
Science electives	7

BASIC ACADEMIC FIELD. The requirements are 45 credits chosen from the following, any recommended courses to complete the field, and group requirements in science.

COURSES	CREDITS
Public Health 301 Causes and Control of Communicable Diseases	3
OR	
Public Health 402 Communicable Disease Control	3
Public Health 412 Public Health Organizations and Services	3
Public Health 464 Community Health Education Techniques	3
Public Health 483 Field Practice in Public Health	6
Conjoint 496 Concept of the Child	3
OR	
Education 402 Child Study and Development (included in general education requirements) ...	3
Physical Education 291 Personal and General Hygiene	3
Physical Education 292 First Aid and Safety	3
Physical Education 345 Principles of Physical Education	3
Physical Education 453 Methods and Materials in Health Teaching	3
Sociology 353 Social Factors in Marriage	3
OR	
Home Economics 356 Family Relationships	3
Psychiatry 450 Principles of Personality Development	2
OR	
Education 408 Mental Hygiene for Teachers and Administrators	3
Home Economics 300 Nutrition	2
Microbiology 301 General Microbiology (or equivalent)	5
Chemistry 101 General Chemistry	5
Chemistry 230 Organic Chemistry	5
Biology 101J-102J General Biology	10

SECOND AREA OF CONCENTRATION. The requirements are 20 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Physical Education 291 Personal and General Hygiene	3
Physical Education 292 First Aid and Safety	3
Physical Education 453 Methods and Materials in Health Teaching	3
Public Health 301 Causes and Control of Communicable Diseases	3
Public Health 412 Public Health Organizations and Services	3
Public Health 461 School and Community Health Programs (included in general education requirements)	5

HEALTH EDUCATION (SCHOOL OF PHYSICAL AND HEALTH EDUCATION)

FIRST AREA OF CONCENTRATION. The requirements are the following and any recommended courses to complete the area.

COURSES	CREDITS
Physical Education 291 Personal and General Hygiene	3
Physical Education 292 First Aid and Safety	3
Physical Education 345 Principles of Physical Education	3
Physical Education 453 Methods and Materials in Health Teaching	3
Anatomy 301 General Anatomy	4
AND	
Zoology 118 Survey of Physiology	5
OR	
Zoology 208 Elementary Human Physiology	5
OR	
Zoology 358 Vertebrate Physiology	6
OR	
Conjoint 317-318 Elementary Anatomy and Physiology	12
Biology 101J-102J General Biology	10
OR	
Zoology 111 and 112 General Zoology	10
Chemistry 101 General Chemistry	5
Chemistry 230 Organic Chemistry	5
Sociology 110 Survey of Sociology	5
Conjoint 496 Concept of the Child	3
OR	
Education 402 Child Study and Development (included in general education requirements)	3
Home Economics 300 Nutrition	2
Microbiology 301 General Microbiology (or approved substitute)	5
Psychiatry 450 Principles of Personality Development	2
OR	
Education 408 Mental Hygiene for Teachers and Administrators	3
Public Health 301 Causes and Control of Communicable Diseases	3
OR	
Public Health 402 Communicable Disease Control	3
Public Health 412 Public Health Organizations and Services	3
Public Health 464 Community Health Education Techniques	3
Sociology 353 Social Factors in Marriage	3
OR	
Home Economics 356 Family Relationships	3

SECOND AREA OF CONCENTRATION. The requirements are the following and any recommended courses to complete the area.

COURSES	CREDITS
Physical Education 291 Personal and General Hygiene	3
Physical Education 292 First Aid and Safety	3
Physical Education 453 Methods and Materials in Health Teaching	3
Public Health 301 Causes and Control of Communicable Diseases	3
Public Health 412 Public Health Organizations and Services	3
Public Health 461 School and Community Health Programs (included in general education requirements)	5

BASIC ACADEMIC FIELD. The requirements are 45 credits and group requirements in science to be selected from:

COURSES	CREDITS
Biology 101J-102J General Biology	10
Chemistry 101 General Chemistry	5
Chemistry 230 Organic Chemistry	5
Anatomy 301 General Anatomy	4
Zoology 118 and 118L Survey of Physiology and Elementary Physiology Laboratory	6
OR	
Zoology 208 Elementary Human Physiology	5
OR	
Zoology 358 Vertebrate Physiology	6

SOPHOMORE YEAR

Physical Education 291 Personal and General Hygiene	3
Physical Education 292 First Aid and Safety	3

JUNIOR YEAR

Home Economics 300 Nutrition	2
Microbiology 301 General Microbiology (or approved substitute)	5
Physical Education 345 Principles of Physical Education	3
Public Health 402 Communicable Disease Control	3
OR	
Public Health 301 Causes and Control of Communicable Diseases	3

Psychiatry 267	Introduction to Mental Hygiene	2
OR		
Education 408	Mental Hygiene for Teachers and Administrators	3
SENIOR YEAR		
Conjoint 496	Concept of the Child	3
OR		
Education 402	Child Study and Development	3
Physical Education 452	Methods and Materials in Health Teaching	3
Public Health 412	Public Health Organizations and Services	3
Public Health 461	School and Community Health Programs	5
Public Health 464	Community Health Education Techniques	3
Sociology 353	Social Factors in Marriage	3
OR		
Home Economics 356	Family Relationships	3
Related electives		3-4

PHYSICAL EDUCATION FOR MEN

FIRST AREA OF CONCENTRATION. The requirements are a total of 101 credits, including the following:

COURSES		CREDITS
Physical Education 161, 162, 163	Physical Education Activities for Freshman Majors	3
Physical Education 264, 265, 266	Physical Education Activities for Sophomore Majors	3
Physical Education 181, 182, 183, 284, 285, 286	Physical Education Backgrounds	6
Physical Education 190	Introduction to Physical and Health Education	2
Physical Education 291	Personal and General Hygiene	3
Physical Education 292	First Aid and Safety	3
Physical Education 293	Physiology of Muscular Exercise	3
Physical Education 294	Introduction to Recreation	2
Physical Education 309	The School Dance Program	2
Physical Education 322	Kinesiology	3
Physical Education 324	Playground Programs	3
Physical Education 340	Administration of Intramural Sports	3
Physical Education 345	Principles of Physical Education	3
Physical Education 358	Methods in Teaching Apparatus, Tumbling, and Stunts	2
Physical Education 361	Methods in Teaching Boxing and Wrestling	2
Physical Education 363	Methods and Materials in Teaching Sports	2
Physical Education 364	Methods and Materials in Teaching Swimming	2
Physical Education 447	Tests and Measurements	3
Physical Education 450	The School Physical Education Program	3
Physical Education 455	The School Health Education Program	3
Physical Education 493	Problems in Athletics	3
Physical Education 370	Methods in Teaching Football (2), Physical Education 371	3
	Methods in Teaching Basketball (2), Physical Education 372	3
	Track and Field (2), Physical Education 373	3
	Methods in Teaching Baseball (2)	2
	to total 6	
Anatomy 301	General Anatomy	4
Psychology 100	General Psychology (included in general education requirements)	5
Sociology 110	Survey of Sociology	5
Speech 100	Basic Speech Improvement (included in general education requirements)	5
Biology 101J-102J	General Biology	10
OR		
Zoology 111, 112	General Zoology	10
Zoology 114	Evolution	2
Zoology 118	Survey of Physiology	5
OR		
Zoology 208	Elementary Human Physiology	5
OR		
Zoology 358	Vertebrate Physiology	6

BASIC ACADEMIC FIELD. The requirements are a total of 44 credits, including the following:

COURSES		CREDITS	
Physical Education	161, 162, 163	Physical Education Activities for Freshman Majors	3
Physical Education	264, 265, 266	Physical Education Activities for Sophomore Majors	3
Physical Education	181, 182, 183, 284, 285, 286	Physical Education Backgrounds	6
Physical Education	190	Introduction to Physical and Health Education	2
Physical Education	292	First Aid and Safety	3
Physical Education	293	Physiology of Muscular Exercise	3
Physical Education	309	The School Dance Program	2
Physical Education	322	Kinesiology	3
Physical Education	324	Playground Programs	3
Physical Education	340	Administration of Intramural Sports	3
Physical Education	345	Principles of Physical Education	3
Physical Education	358	Methods in Teaching Apparatus, Tumbling, and Stunts	2
Physical Education	361	Methods in Teaching Boxing and Wrestling	2
OR			
Physical Education	364	Methods and Materials in Teaching Swimming	2
Physical Education	363	Methods and Materials in Teaching Sports	2

Physical Education 370	Methods in Teaching Football	2
Physical Education 371	Methods in Teaching Basketball	2
Physical Education 450	The School Physical Education Program	3
Physical Education 493	Problems in Athletics	3

SECOND AREA OF CONCENTRATION. The requirements are 27 credits, including the following:

COURSES		CREDITS
Physical Education 161, 162, 163	Physical Education Activities for Freshman Majors	3
Physical Education 264, 265, 266	Physical Education Activities for Sophomore Majors	3
Physical Education 181, 182, 183, 284, 285, 286	Physical Education Backgrounds	6
Physical Education 345	Principles of Physical Education	3
Physical Education 358	Methods in Teaching Apparatus, Tumbling, and Stunts	2
OR		
Physical Education 361	Methods in Teaching Boxing and Wrestling	2
OR		
Physical Education 363	Methods and Materials in Teaching Sports	2
OR		
Physical Education 364	Methods and Materials in Teaching Swimming	2
Physical Education 370	Methods in Teaching Football	2
OR		
Physical Education 371	Methods in Teaching Basketball	2
OR		
Physical Education 372	Methods in Teaching Track and Field	2
OR		
Physical Education 373	Methods in Teaching Baseball	2
Physical Education 450	The School Physical Education Program	3
Zoology 118	Survey of Physiology	5
OR		
Zoology 208	Elementary Human Physiology	5
OR		
Zoology 358	Vertebrate Physiology	6

PHYSICAL EDUCATION FOR WOMEN

FIRST AREA OF CONCENTRATION. Students who plan to complete a first area of concentration will follow the program listed below:

COURSES		CREDITS
FIRST YEAR: 49 credits		
Physical Education 110	Health Education	2
Physical Education 115	Archery	1
Physical Education 121	Bowling	1
Physical Education 157	Canoeing	1
Physical Education 181, 182, 183, 283	Physical Education Backgrounds	4
Physical Education 190	Introduction to Physical and Health Education	2
Physical Education 281 or 284	Physical Education Backgrounds	1
English 101, 102, 103	Composition	9
Physical Science 102	The Physical Universe	5
OR		
Chemistry 101	General (or one year high school chemistry)	5
Physics 170 and 170L	Physics for Nurses and Laboratory	6
Sociology 110	Survey of Sociology	5
Speech 100	Basic Speech Improvement (included in general education requirements)	5
Electives and teacher training requirements		7
SECOND YEAR: 45 credits		
Physical Education 282 and 281 or 284	Physical Education Backgrounds	2
Physical Education 292	First Aid and Safety	3
Physical Education 304 or 305 or 306	Officiating	2
Physical Education 312	Elementary School Athletic Program	3
Physical Education 318	Analysis of Rhythm	3
Physical Education 344	Organization and Administration of Camp Programs	3
Anatomy 301	General Anatomy	4
Psychology 100	General Psychology (included in general education requirements)	5
Electives and professional education requirements		20

THIRD YEAR: 45 credits

Physical Education 293	Physiology of Muscular Exercise	3
Physical Education 301	Methods and Materials in Gymnastics, Stunts, and Tumbling	3
Physical Education 311	Rhythmic Activities for Small Children	2
Physical Education 362	Methods and Materials in Teaching Folk, Tap and Clog Dancing	2
Physical Education 363	Methods and Materials in Teaching Sports	3
Physical Education 364	Methods and Materials in Teaching Swimming	3
Physical Education N466	Coaching (two quarters)	0
Home Economics 300	Nutrition	2
Public Health 301	Communicable Diseases (if not accompanied by health education area)	3
Zoology 118 and 118L	Survey of Physiology and Elementary Physiology Laboratory	6
Electives and professional education requirements		18

FOURTH YEAR 45 credits

Physical Education 322	Kinesiology	3
Physical Education 345	Principles of Physical Education	3
Physical Education 356	Teaching Modern Dance	2
Physical Education 435	Adapted Activities	3
Physical Education 450	School Physical Education Program	2
Physical Education 453	Health Teaching (if not accompanied by health education area)	3
Physical Education N466	Coaching (one quarter)	0
Physical Education 480	Principles of Movement	3
Electives and professional education requirements		26

BASIC ACADEMIC FIELD. The requirements are 45 credits and the following courses to satisfy general University requirements. It is recommended that students confer with the department concerning appropriate selection of activities before registering.

COURSES	CREDITS
Physical Education Activities	3
Zoology 118 and 118L Survey of Physiology and Elementary Physiology Laboratory	6
Anatomy 301 General Anatomy	4

Basic academic field course requirements include:

FRESHMAN YEAR

Physical Education 181, 182, 183	Physical Education Backgrounds	3
Physical Education 283	Physical Education Backgrounds	1

SOPHOMORE YEAR

Physical Education 281, 282, 284	Physical Education Backgrounds	3
Physical Education 292	First Aid and Safety	3
Physical Education 318	Analysis of Rhythm	3
Physical Education 344	Organization and Administration of Camp Programs	3

JUNIOR YEAR

Physical Education 304, 305, 306	Officiating (two courses)	4
Physical Education 363	Methods and Materials in Teaching Sports	3
Physical Education 356	Methods and Materials in Teaching Modern Dance (2), Physical Education 362 Methods and Materials in Teaching Folk, Tap, and Clog Dancing (2), Physical Education 309 The School Dance Program (2), Physical Education 364 Methods and Materials in Teaching Swimming (3) .. to total 4 or 5	3

SENIOR YEAR

Physical Education 450	The School Physical Education Program	2
Physical Education 453	Methods and Materials in Health Teaching	3
Physical Education 480	Principles of Movement	3
Electives to be selected from Physical Education 293 Physiology of Muscular Exercise (3), Physical Education 322 Kinesiology (3), Physical Education 345 Principles of Physical Education (3), one additional officiating course, one additional methods course from elective group .. to total 9 or 10		

SECOND AREA OF CONCENTRATION. The requirements are the following and any recommended courses to complete the area, chosen in consultation with an adviser.

COURSES	CREDITS
Physical Education 181, 182, 183 Physical Education Backgrounds	3
Physical Education 292 First Aid and Safety	3
Physical Education 309 The School Dance Program	2
Physical Education 312 Elementary School Athletic Program	3
Physical Education 345 Principles of Physical Education	3
Physical Education 363 Methods and Materials in Teaching Sports	3
Zoology 118 Survey of Physiology	5
Zoology 208 Elementary Human Physiology	5
Zoology 358 Vertebrate Physiology	6

AREA III, LANGUAGE ARTS**DRAMA**

FIRST AREA OF CONCENTRATION. The requirements are 63 credits in drama and 20 credits in English, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Drama 101, 102 Introduction to the Theatre	4
Drama 146, 147, 148 Theatre Speech	9
Drama 251, 252, 253 Acting	9

Drama 403	Scene Construction	3
Drama 404	Scene Design	3
Drama 405	Historic Costume for the Stage	3
Drama 406	Make-up	3
Drama 414	Stage Lighting	3
Drama 421	Advanced Acting	3
OR		
Drama 423	Advanced Acting	3
Drama 422	Advanced Acting	3
Drama 427, 428, 429	History of the Theatre	6
Drama 451, 452, 453	Representative Plays	9
Drama 481	Directing	3
OR		
Drama 482	Directing	3
OR		
Drama 483	Directing	3
Drama 497	Theatre Organization and Management	2
English 264	Literary Backgrounds (5), English 265 Literary Backgrounds (5),	
English 370	Shakespeare (5), English 371 Shakespeare (5),	
English 372	Shakespeare (5)	to total 20

BASIC ACADEMIC FIELD. The requirements are 40 credits, including the following and any recommended courses to complete the field.

COURSES	CREDITS
Drama 101, 102 Introduction to the Theatre	4
Drama 146, 147 Theatre Speech	6
Drama 251, 252 Acting	6
Drama 434, 436 Children's Theatre	6
Drama 437, 438, 439 Creative Dramatics	9
Drama 499 Projects in Drama	3
Drama electives (approved by School of Drama)	6

SECOND AREA OF CONCENTRATION. The requirements are 33 credits, including the following and any recommended courses to complete the area.

COURSES		CREDITS
Drama 101, 102	Introduction to the Theatre	4
Drama 146, 147, 148	Theatre Speech	9
Drama 251, 252	Acting	6
Drama 403	Scene Construction (3), Drama 404 Scene Design (3),	
Drama 405	Historic Costume for the Stage (3), Drama 406 Make-up (3),	
Drama 414	Stage Lighting (3)	to total 6
Drama 427	History of the Theatre (2), Drama 428 History of the Theatre (2),	
Drama 429	History of the Theatre (2), Drama 451 Representative Plays (3),	
Drama 452	Representative Plays (3), Drama 453 Representative Plays (3)	to total 6
Drama 497	Theatre Organization and Management	2

ENGLISH

FIRST AREAS OF CONCENTRATION. The requirements for specialization in advanced writing are 50 credits in English and 10 credits in education and speech, including the following and recommended courses in advanced writing, literature, and related fields to complete the area.

COURSES		CREDITS
English 258	Introduction to Fiction	5
English 264	Literary Backgrounds	5
OR		
English 370	Shakespeare	5
English 377	Early Nineteenth-Century Literature	5
OR		
English 374	Late Nineteenth-Century Literature	5
English 387	English Grammar	3
OR		
English 417	History of the English Language	5
English 448	The English Novel	5
OR		
English 449	The English Novel	5
English 362	American Literature	5
OR		
English 363	American Literature	5
OR		
English 466	Modern American Literature	5
English 251	Factual Writing (3), English 252 Factual Writing (3),	
English 261	Verse Writing (5), English 262 Verse Writing (5), English 263 Verse	
Writing (5), English 328	Dramatic Composition (3), English 329 Dramatic	
Composition (3), English 277	Narrative Writing (3),	
English 278	Narrative Writing (3)	to total 6

Upper-division writing courses, 10 credits in consecutive courses	15
Education 326 Teachers' Course in English (included in professional education requirements)	5
Speech 240 Oral Interpretation	5

The requirements for specialization in literature are 50 credits in English and 10 credits in education and speech, including the following and any recommended courses in upper-division literature, advanced writing, and foreign literature in translation to complete the area.

COURSES	CREDITS
English 257 Introduction to Poetry	5
OR	
English 258 Introduction to Fiction	5
English 351 Old and Middle English Literature	5
English 370 Shakespeare	5
English 344 Eighteenth-Century English	5
OR	
English 345 Eighteenth-Century English	5
OR	
English 367 Seventeenth-Century Literature	5
OR	
English 368 Seventeenth-Century Literature	5
OR	
English 369 Seventeenth-Century Literature	5
English 374 Late Nineteenth-Century Literature	5
OR	
English 375 Late Nineteenth-Century Literature	5
OR	
English 377 Early Nineteenth-Century Literature	5
OR	
English 378 Early Nineteenth-Century Literature	5
OR	
English 379 Early Nineteenth-Century Literature	5
English 361 American Literature	5
OR	
English 362 American Literature	5
OR	
English 363 American Literature	5
English 387 English Grammar	3
OR	
English 417 History of the English Language	5
Courses which continue or are closely related in period or subject matter to two of those already chosen	10
Education 326 Teachers' Course in English (included in professional education requirements)	5
Speech 240 Oral Interpretation	5
Advanced writing	3

BASIC ACADEMIC FIELD. The requirements are 45 credits, including the following and any recommended courses to complete the field.

COURSES	CREDITS
English 257 Introduction to Poetry	5
OR	
English 258 Introduction to Fiction	5
English 351 Old and Middle English Literature	5
English 370 Shakespeare	5
English 344 Eighteenth-Century English	5
OR	
English 345 Eighteenth-Century English	5
OR	
English 367 Seventeenth-Century Literature	5
OR	
English 368 Seventeenth-Century Literature	5
OR	
English 369 Seventeenth-Century Literature	5
English 374 Late Nineteenth-Century Literature	5
OR	
English 375 Late Nineteenth-Century Literature	5
OR	
English 377 Early Nineteenth-Century Literature	5
OR	
English 378 Early Nineteenth-Century Literature	5
OR	
English 379 Early Nineteenth-Century Literature	5
English 361 American Literature	5
OR	
English 362 American Literature	5
OR	
English 363 American Literature	5
English electives, 10 credits of which continue or are closely related to two of the upper-division courses already chosen	15

SECOND AREAS OF CONCENTRATION. One area requires 36 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Speech 240 Oral Interpretation	5
English 387 English Grammar	3
OR	
English 417 History of the English Language	5
Advanced writing	3
Literature electives, including Shakespeare and nineteenth-century English and American literature	23-25

The other area requires 24 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Speech 240 Oral Interpretation	5
Advanced writing and literature (one course each)	
Electives, preferably including either:	
English 264, 265, 266 Literary Backgrounds	15
OR	
English 257 Introduction to Poetry (5) AND English 258 Introduction to Fiction (5)	
AND English 387 English Grammar (3) or English 417 History of the English Language (5)	to total 13-15

FRENCH

FIRST AREA OF CONCENTRATION. The requirements are 47 credits beyond French 101-102, 103 Elementary (5-5,5) or beyond two high school years, including the following:

COURSES	CREDITS
French 201, 202, 203 Intermediate (or a third high school year)	9
French 301, 302, 303 Advanced Composition and Conversation (or a fourth high school year)	6
French 304, 305, 306 Survey of French Literature	9
French 327 Advanced Conversation	2
OR	
French 328 Advanced Conversation	2
OR	
French 329 Advanced Conversation	2
OR	
French 330 Conversational French	2½-4
French 341 Phonetics	3
French 358 Advanced Syntax	2
Electives in courses numbered above 400, with some additional directed reading	12
Romance 401 Introduction to Romance Linguistics	2
Education 329 Teachers' Course in French (included in professional education requirements) ..	2

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are 28 credits or equivalent in French approved by the Department of Romance Languages and Literature beyond French 103 Elementary; or 26 such credits plus Romance 401 Introduction to Romance Linguistics (2), which is recommended, and Education 329 Teachers' Course in French (2), totaling 30 credits beyond French 101-102, 103 Elementary (5-5,5) or beyond two high school years. See Modern Language Association statement, Minimal Qualifications for the Secondary-School Teacher of a Modern Foreign Language.

GERMANIC LANGUAGES AND LITERATURE

Scientific German, courses in English translation, and first-year German are not counted toward the major or toward teaching areas.

FIRST AREA OF CONCENTRATION. The requirements are 36 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
German 207 Second-Year Grammar Review	3
German 230 Conversation	3
German 300 Phonetics	2
German 301, 302, 303 Grammar and Conversation	6

German 401, 402, 403 Grammar and Composition	6
Education 330 Teachers' Course in German (included in professional education requirements) ..	2

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are 20 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
German 207 Second-Year Grammar Review	3
German 300 Phonetics	2
German 301, 302, 303 Grammar and Conversation	6
German 401, 402, 403 Grammar and Composition	6
Education 330 Teachers' Course in German	2

For students who enter the University with no high school German, the recommended courses are German 101-102, 103 First-Year Speaking German (5-5,5). For students who enter with two years of high school German, the recommended courses are German 205 Second-Year Reading (3); 210 Advanced Second-Year Reading (3), or 450J Introduction to General Linguistics (5); 310, 311 Introduction to the Classical Period (3,3); and 312 Introduction to the German Novelle (3).

JOURNALISM

All journalism courses must be scheduled by arrangement with the Director of the School of Communications through the curriculum adviser. A 3.00 minimum grade-point average must be maintained in all journalism courses, otherwise credits may be applied only toward a second area of concentration.

FIRST AREA OF CONCENTRATION. The requirements are 45 credits, including the following:

COURSES	CREDITS
Journalism 200 News Writing	5
Journalism 201 Copy Editing	2
Journalism 220 Introduction to Advertising	3
Journalism 300 Laboratory Work on <i>University Daily</i>	5
Journalism 303 Public Relations	3
Journalism 306 Printing Processes	3
Journalism 326 Contemporary Affairs	3
Journalism 329 Legal Aspects of Communication	5
Journalism 375J Teachers' Course in Journalism (included in professional education requirements)	3
Journalism 310 Photographic Laboratory (1), Journalism 327 Reporting (5), Journalism 328 Reporting (5), Journalism 333 Editorial Writing, Policies, and Research (5), Journalism 334 History of Journalism (3), Journalism 347 Newspaper Management (3), Journalism 404 Magazine Article Writing (3)	to total 13

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are 21 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Journalism 200 News Writing	5
Journalism 201 Copy Editing	2
Journalism 220 Introduction to Advertising	3
Journalism 300 Laboratory Work on <i>University Daily</i>	5
Journalism 306 Printing Processes	3
Journalism 375J Teachers' Course in Journalism	3

LATIN

FIRST AREA OF CONCENTRATION. The requirements are 27 credits in upper-division Latin courses, 9 credits chosen with the consent of the Department from upper-division Latin and Greek courses, and the following and any recommended courses to complete the area.

COURSES	CREDITS
Classics 330 Greek and Roman Mythology	3
Classics 340 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 and Medieval Philosophy	5

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are 20 credits in Latin courses numbered above 300, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Latin 309 Advanced Grammar and Composition	1-4

LIBRARIANSHIP

A high school librarian's certificate is required of all librarians in accredited high schools. Applicants must hold a teaching certificate. Course requirements are as follows:

1. For librarianship in schools with enrollment of 100 or less: a minimum of 7½ quarter credits in approved courses in library science.
2. For librarianship in schools with enrollment of 100 to 200: a minimum of 15 quarter credits in approved courses in library science.
3. For librarianship in schools with enrollment of 200 to 500: one year of training in an approved library school recommended. The minimum requirement for schools in this group is the same as that in 2 above.
4. For librarianship in schools with enrollment of 500 or more: one year of training in an approved library school.

SECOND AREA OF CONCENTRATION. The requirements are 19 credits, including the following and any recommended courses to complete the area.

COURSES		CREDITS
Librarianship 451	Children's Books	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	4
Librarianship 464	Elements of Technical Processes	3

SPANISH

FIRST AREA OF CONCENTRATION. The requirements are 47 credits beyond Spanish 101-102, 103 Elementary (5-5,5) or beyond two high school years and the following:

COURSES	CREDITS
Spanish 201, 202, 203 Intermediate (or a third high school year)	9
Spanish 301, 302, 303 Advanced Composition and Conversation (or a fourth high school year)	9
Spanish 304, 305, 306 Survey of Spanish Literature	6
Spanish 327 Advanced Conversation	2
OR	
Spanish 328 Advanced Conversation	2
OR	
Spanish 329 Advanced Conversation	2
OR	
Spanish 330 Conversational Spanish	2½-4
Spanish 358 Advanced Syntax	2
Elective credits in courses numbered above 400 with some additional directed reading	15
Romance 401 Introduction to Romance Linguistics	2
Education 343 Teachers' Course in Spanish (included in professional education requirements)	2

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are 28 credits in Spanish approved by the Department of Romance Languages and Literature beyond Spanish 103; or 26 such credits plus Romance 401 Introduction to Romance Linguistics

(2), which is recommended, and Education 343 Teachers' Course in Spanish (2), totaling 30 credits beyond Spanish 101-102, 103 Elementary (5-5,5) or beyond two high school years.

SPEECH

FIRST AREA OF CONCENTRATION in general speech (secondary emphasis). The student must pass proficiency tests in extempore speaking and oral reading. The requirements are 40 credits in speech, including the following:

COURSES	CREDITS
Speech 100 Basic Speech Improvement	5
Speech 120 Introduction to Public Speaking	5
Speech 210 Introduction to Phonetics	5
Speech 230 Essentials of Argument	5
Speech 240 Oral Interpretation	5
Speech 332 Principles of Group Discussion	3
Speech 352 Introduction to the Teaching of Speech	2
Speech 470 Speech Correction (3 credits can be earned in extension; 5 in residence)	3 or 5
Education 342 Teachers' Course in Speech (included in professional education requirements) ..	3
At least 2 credits from:	
Speech 339 Public Discussion Workshop	1-3
OR	
Speech 349 Oral Interpretation Workshop	2
OR (by special permission)	
Radio-TV 350 Laboratory Work on KUOW	2-5
OR	
Radio-TV 465 Television Workshop	2-5
In case of individual need:	
Speech 110 Voice Improvement	2
AND/OR	
Speech 111 Articulation Improvement	2
Education 326 Teachers' Course in English (included in professional education requirements) ..	5
Drama 426 High School Play Production	3
Approved American and/or English literature courses	13

In the fifth year, the student must elect an additional 15 credits in speech approved by the Department of Speech including Speech 400 Backgrounds in Speech (5) unless it has already been completed.

BASIC ACADEMIC FIELD in general speech (elementary emphasis). The student must pass proficiency tests in extempore speaking and oral reading. The requirements are 40 credits in approved speech courses, including the following:

COURSES	CREDITS
Speech 100 Basic Speech Improvement	5
Speech 120 Introduction to Public Speaking	5
Speech 210 Introduction to Phonetics	5
Speech 240 Oral Interpretation	5
Speech 332 Principles of Group Discussion	3
Speech 352 Introduction to the Teaching of Speech	2
Speech 359 Speech in the Classroom	3
Speech 470 Speech Correction (3 credits can be earned in extension; 5 in residence)	3 or 5
At least 2 credits from:	
Speech 339 Public Discussion Workshop	1-3
OR	
Speech 349 Oral Interpretation Workshop	2
OR (by special permission)	
Radio-TV 350 Laboratory Work on KUOW	2-5
OR	
Radio-TV 465 Television Workshop	2-5
In case of individual need:	
Speech 110 Voice Improvement	2
AND/OR	
Speech 111 Articulation Improvement	2

In the fifth year, the student must elect an additional 15 credits in speech approved by the Department of Speech including Speech 400 Backgrounds in Speech (5) unless it has already been completed.

SECOND AREA OF CONCENTRATION in general speech. The requirements are 25 credits in speech, including the following:

COURSES	CREDITS
Speech 100 Basic Speech Improvement	5
Speech 120 Introduction to Public Speaking	5

Speech 230	Essentials of Argument	5
OR		
Speech 240	Oral Interpretation	5
Speech 352	Introduction to the Teaching of Speech	2
Speech 470	Speech Correction (3 credits can be earned in extension; 5 in residence)	3 or 5
Education 342	Teachers' Course in Speech (secondary emphasis)	3
OR		
Speech 359	Speech in the Classroom (elementary emphasis)	3

In the fifth year, the student must elect an additional 5 credits in courses approved by the Department of Speech.

FIRST AREA OF CONCENTRATION in speech correction and hearing. The student must pass proficiency tests in extempore speaking and oral reading. The requirements are 45 credits, including the following:

COURSES		CREDITS
Speech 100	Basic Speech Improvement	5
Speech 210	Introduction to Phonetics	5
Speech 352	Introduction to the Teaching of Speech	2
Speech 470	Speech Correction	5
Speech 471	Speech Correction	5
Speech 473	Diagnostic Methods in Speech Correction	2
Speech 474	Clinical Practice in Speech Correction	8
AND/OR		
Speech 484	Clinical Practice in Aural Rehabilitation	8
Speech 480	Introduction to Hearing	5
Speech 481	Methods in Aural Rehabilitation	5
Speech 489	Audiometry	2
In case of individual need:		
Speech 110	Voice Improvement	2
AND/OR		
Speech 111	Articulation Improvement	2

In the fifth year, the student must elect an additional 15 credits in speech approved by the Department of Speech including Speech 400 Backgrounds in Speech (5) unless it has already been completed. It is expected that students who emphasize speech correction and hearing will also elect additional approved courses in psychology during the fifth year.

BASIC ACADEMIC FIELD in speech correction and hearing. The requirements are the same as those for the first area of concentration in speech correction and hearing.

AREA IV, SCIENCES AND MATHEMATICS

BIOLOGY

FIRST AREA OF CONCENTRATION. The requirements are 60 credits, most of which are in specific courses or areas as follows:

The entering student may elect to begin his program with the 10-credit sequence Biology 101J-102J General Biology (10). In this case, he will continue his elementary training with Botany 112 and 113 Elementary Botany (5,5), and Zoology 112 General Zoology (5). Or he may begin his program 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 in botany include either Botany 371 Elementary Plant Physiology (5) or 472 Plant Physiology (5). Required courses in zoology include: either Zoology 358 Vertebrate Physiology (6) or 400 General Physiology (5); 330 Natural History of Marine Invertebrates (5) or 433, 434 Invertebrate Zoology (10) or 444 Entomology (5) or Biology 472 Principles of Ecology (5); and Zoology 362 Natural History of the Vertebrates (5) or 463 Natural History of Amphibia and Reptiles (5) or 464 Natural History of Birds (Ornithology) (5) or 465 Natural History of Mammals (5). Other required courses are Microbiology 301 General Microbiology (5) and Biology 451 Genetics (3 or 5).

Depending upon the sequence selected, the student will complete 50 to 60 credits in this program. If 10 more credits are needed, he must elect them usually from the following approved courses: Botany 201 and 202 Plant Propagation

(2,2) or 331 Ornamental Plants (3), Biology 401 Cytology (3), Zoology 433, 434 Invertebrate Zoology (10), 456 Vertebrate Embryology (5) and Biology 473 Limnology (5).

BASIC ACADEMIC FIELD. The requirements are 45 credits, including the following:

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)	
	to total 20

SECOND AREA OF CONCENTRATION. The requirements are 30 credits, including either 1. Botany 111 Elementary Botany (5), and 10 credits selected from 112 Elementary Botany (5), and 113 Elementary Botany (5), or 371 Elementary Plant Physiology (5); or 2. Biology 101J-102J General Biology (5-5), Botany 112 Elementary Botany (5), or 113 Elementary Botany (5), and 371 Elementary Plant Physiology (5); or either 1. Zoology 111 General Zoology (5), and 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 area.

CHEMISTRY

Grades of C or above must be obtained in all chemistry courses counted to meet the minimum requirements for a first or second area or a basic academic field.

FIRST AREA OF CONCENTRATION. The requirements are 36 credits, including the following and one year of college physics and any recommended courses to complete the area. The election of enough college mathematics to include some calculus is recommended.

COURSES	CREDITS
Chemistry 115 General Chemistry	5
AND	
Chemistry 116 General Chemistry and Qualitative Analysis	5
OR	
Chemistry 111, 112 General Chemistry	10
AND	
Chemistry 113 Elementary Qualitative Analysis	5
Chemistry 221 Quantitative Analysis	5
Chemistry 231 Organic Chemistry	3
Chemistry 232 Organic Chemistry	3
Chemistry 241 Organic Chemistry Laboratory	2
Chemistry 242 Organic Chemistry Laboratory	2
Chemistry 351 Elementary Physical Chemistry	3
Chemistry 352 Elementary Physical Chemistry	3
Chemistry 354 Elementary Physical Chemistry Laboratory	2

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are 25 credits, including the following and one year of high school or college physics and any recommended courses to complete the area.

COURSES	CREDITS
Chemistry 115 General Chemistry	5
AND	
Chemistry 116 General Chemistry and Qualitative Analysis	5
OR	
Chemistry 111, 112 General Chemistry	10
AND	
Chemistry 113 Elementary Qualitative Analysis	5
Chemistry 221 Quantitative Analysis	5
Chemistry 230 Organic Chemistry	5

GEOLOGY

FIRST AREA OF CONCENTRATION. The requirements are 36 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Geology 205 Rocks and Minerals	5
Geology 206 Elements of Physiography	5
Geology 207 Historical Geology	5
Geology 412 Physiography of the United States	5

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are 20 credits, including the following and approved electives and any recommended courses to complete the area.

COURSES	CREDITS
Geology 101 Survey of Geology	5
Geology 205 Rocks and Minerals	5
Geology 206 Elements of Physiography	5

MATHEMATICS

Grades of C or above must be obtained in all mathematics courses counted to meet the minimum requirements for a first or second area or a basic academic field.

FIRST AREA OF CONCENTRATION. The requirements are 45 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Mathematics 105 College Algebra	5
Mathematics 120 Introduction to Mathematical Thinking	2
Mathematics 153 Analytic Geometry and Calculus	5
Mathematics 251 Analytic Geometry and Calculus	5
Mathematics 252 Analytic Geometry and Calculus	5
Mathematics 253 Analytic Geometry and Calculus	3
Approved electives, including 5 credits in advanced algebra and 5 credits in advanced geometry	20

The only approved lower-division electives are Mathematics 112 Mathematics of Business (5) and 281 Elements of Statistical Method (5).

BASIC ACADEMIC FIELD. The requirements are 33 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Mathematics 105 College Algebra	5
Mathematics 120 Introduction to Mathematical Thinking	2
Mathematics 153 Analytic Geometry and Calculus	5
Mathematics 251 Analytic Geometry and Calculus	5
Mathematics 252 Analytic Geometry and Calculus	5
Approved electives	11

The only approved lower-division electives are Mathematics 112 Mathematics of Business (5), 121 Basic Ideas of Algebra (3), 253 Analytic Geometry and Calculus (3), and 281 Elements of Statistical Method (5).

SECOND AREA OF CONCENTRATION. The requirements are 25 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Mathematics 105 College Algebra	5
Mathematics 120 Introduction to Mathematical Thinking	2
Mathematics 153 Analytic Geometry and Calculus	5
Approved electives	13

The only approved lower-division electives are Mathematics 112 Mathematics of Business (5), 121 Basic Ideas of Algebra (3), 251, 252, 253 Analytic Geometry and Calculus (5,5,3), and 281 Elements of Statistical Method (5).

PHYSICS

FIRST AREA OF CONCENTRATION. The requirements are 42 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Physics 121, 122, 123 General Physics	15
OR	
Physics 101, 102, 103 General Physics	15
AND	
Physics 107, 108, 109 General Physics Laboratory	3
Physics 321, 322 Introduction to Modern Physics	6
Physics 323 Introductory Nuclear Physics	3
Physics 325, 326 Electricity	8
Physics 360, 361 Optics	6

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

AREA V, SOCIAL STUDIES**CIVICS**

FIRST AREA OF CONCENTRATION. The requirements are 41 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Political Science 201 Modern Government	5
Political Science 360 The American Constitutional System	3
Political Science 376 State and Local Government and Administration	5
Economics 160 American Economic History	5
Sociology 110 Survey of Sociology	5
Political science electives	13
Economics or sociology electives	5

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are 26 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Political Science 201 Modern Government	5
Political Science 360 The American Constitutional System	3
Economics 160 American Economic History	5
OR	
Sociology 110 Survey of Sociology	5
Political science electives	13

ECONOMICS

FIRST AREA OF CONCENTRATION. The requirements are the following plus 25 additional credits, 20 of which 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.

COURSES	CREDITS
Economics 200 Introduction to Economics	5
Economics 201 Principles of Economics	5
Economics 301 National Income Analysis	5
Economics 302 Intermediate Economics	5
Accounting 150 Fundamentals of Accounting	4
Accounting 255 Basic Accounting Analysis	3
Business Statistics 201 Statistical Analysis	5
OR	
Mathematics 281 Elements of Statistical Method	5
OR	
Psychology 301 Statistical Methods	5
OR	
Sociology 223 Social Statistics	5

BASIC ACADEMIC FIELD. The requirements are 45 credits chosen from the courses required for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are 25 credits, including the following and three upper-division courses from three different fields of specialization and any recommended courses to complete the area.

COURSES	CREDITS
Economics 200 Introduction to Economics	5
Economics 201 Principles of Economics	5

FAR EASTERN

A 2.20 grade-point average is required in Far Eastern courses.

SECOND AREA OF CONCENTRATION. The requirements are 18 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Far Eastern 110 Survey, Problems of the Pacific	5
OR	
Far Eastern 310 Problems of the Pacific	5
Far Eastern 423J Recent Russian History	5
OR	
Far Eastern 447 Modern Chinese History	5
OR	
Far Eastern 454J Modern Japanese History	5
Far Eastern 240 Chinese Civilization	5
OR	
Far Eastern 242 Korean Civilization	3
OR	
Far Eastern 243 Russian Civilization	5
OR	
Far Eastern 296J History of Japanese Civilization	5
OR	
Far Eastern 443 Chinese Social Institutions	5
Approved electives	3

GEOGRAPHY

FIRST AREA OF CONCENTRATION. The requirements are 50 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Geography 100 Introductory Human Geography	5
Geography 102 Introductory Physical Geography	5
Geography 202 Anglo-America	3
Geography 207 Introductory Economic Geography	5
Geography 210 The Pacific Northwest	3
Geography 325 Historical Geography of America	3
Geography 358 Maps and Map Reading	2
Additional upper-division courses	23

BASIC ACADEMIC FIELD. The requirements are 45 credits, including the following and any recommended courses to complete the field.

COURSES	CREDITS
Geography 100 Introductory Human Geography	5
Geography 102 Introductory Physical Geography	5
Geography 202 Anglo-America	3
Geography 207 Introductory Economic Geography	5
Geography 210 The Pacific Northwest	3
Geography 325 Historical Geography of America	3
Geography 358 Maps and Map Reading	2
Additional upper-division courses	18

SECOND AREA OF CONCENTRATION. The requirements are 26 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Geography 100 Introductory Human Geography	5
Geography 102 Introductory Physical Geography	5
Geography 202 Anglo-America	3
Geography 210 The Pacific Northwest	3
Geography 325 Historical Geography of America	3
Geography 370 Conservation of Natural Resources	5
One course numbered above 400	

HISTORY

A 2.50 grade-point average is required in history courses.

FIRST AREA OF CONCENTRATION. The requirements are 50 credits, including the following and any recommended upper-division courses to complete the area.

COURSES	CREDITS
History 101 Medieval European History	5
AND	
History 102 Modern European History	5
OR	
Social Science 101, 102, 103 History of Civilization	15
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

BASIC ACADEMIC FIELD. The requirements are 45 credits, including the same courses as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are 30 credits, including the following and any recommended upper-division courses to complete the area.

COURSES	CREDITS
History 101 Medieval European History	5
AND	
History 102 Modern European History	5
OR	
Social Science 101, 102, 103 History of Civilization	15
History 241 Survey of the History of the United States	5
History 464 History of Washington and the Pacific Northwest	5

POLITICAL SCIENCE

FIRST AREA OF CONCENTRATION. The requirements are 40 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Political Science 201 Modern Government	5
Political Science 202 American Government and Politics	5
Political Science 321 American Foreign Policy	3
Political Science 351 The American Democracy	5
Political Science 360 The American Constitutional System	3
Political Science 376 State and Local Government and Administration	5

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are 20 credits, including the following and any recommended courses to complete the area.

COURSES	CREDITS
Political Science 202 American Government and Politics	5
Political Science 360 The American Constitutional System	3
Political Science 376 State and Local Government and Administration	5

PSYCHOLOGY

A 2.50 grade-point average is required in psychology courses.

FIRST AREA OF CONCENTRATION. The requirements are 36 credits, including the following:

COURSES	CREDITS
Psychology 100 General Psychology	5
Psychology 200 Advanced General Psychology	5
Psychology 301 Statistical Methods	5
Psychology 400 Psychology of Learning	5
OR	
Psychology 416 Animal Behavior	3
OR	
Psychology 427 Conditioning	5
Psychology 406 Experimental Psychology	5
OR	
Psychology 426 Animal Laboratory	5
OR	
Psychology 441 Perception	5
OR	

Psychology 484	Laboratory in Child Behavior	5
OR		
Psychology 499	Undergraduate Research	3
Psychology electives preferably chosen from: Psychology 305 Abnormal Psychology (5), Psychology 306 Child Psychology (5), Psychology 307 Psychology of Adolescence (3), Psychology 309 Psychology of Exceptional Children (3) to total 11-13		

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are 18 credits, including the following and any recommended courses to complete the area.

COURSES		CREDITS
Psychology 100	General Psychology	5
Psychology 305	Abnormal Psychology	5
OR		
Psychology 309	Psychology of Exceptional Children	3

SOCIOLOGY

FIRST AREA OF CONCENTRATION. The requirements are 40 credits, including the following:

COURSES			CREDITS
Sociology 110	Survey of Sociology		5
OR			
Sociology 310	General Sociology		5
Sociology 223	Social Statistics		5
Sociology 230	Introduction to Human Ecology		5
OR			
Sociology 430	Human Ecology		5
Sociology 240	Group Behavior		5
Sociology 450	Contemporary American Institutions		5
OR			
Sociology 352	The Family		5
Sociology electives chosen after consultation regarding the special field of interest			15

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are 27 credits, including the following:

COURSES		CREDITS
Sociology 110	Survey of Sociology	5
OR		
Sociology 310	General Sociology	5
Sociology 352	The Family	5
OR		
Sociology 430	Human Ecology	5
Sociology electives chosen after consultation regarding the special field of interest		17

CERTIFICATE CONVERSION PROGRAM

The Standard General Certificate has been issued since August, 1951, and is valid in all grades so long as the holder teaches and five years thereafter. Candidates converting to the Standard General 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 so that they may be considered in formulating the fifth-year program.

The Standard General 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. Appropriate conversion programs are outlined below.

- I. Requirements for conversion from the Provisional General Certificate to the Standard General Certificate include:
 - A. A petition for the Standard General Certificate should be made when the conversion pattern is started. (A detailed outline of the conversion routine is available in 221 Miller Hall.)
 - B. A total of 45 quarter credits above the requirements for a bachelor's degree is required for the Standard General Certificate. These credits must meet the pattern for the fifth year as outlined.
 - C. A maximum of 15 quarter credits in excess of degree requirements taken for the Provisional General Certificate may be applied to the fifth year *before* teaching experience.
 - D. *After* one year of teaching experience, a minimum of 30 quarter credits must be completed.
 - E. A minimum of 30 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.
 - F. If the Provisional General program has included 15 credits beyond the degree requirement, courses to apply toward the Standard General Certificate *may not* be taken before the completion of one year of teaching experience.
 - G. If the Provisional General program *has not* included any excess credit beyond the degree requirement, a maximum of 12 quarter credits by extension and/or correspondence or a maximum of 15 quarter credits in residence may be taken toward the fifth year before or during the first year of teaching.
 - H. A maximum of 12 quarter credits earned in approved correspondence and/or extension courses will be accepted during the fifth year for conversion. 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 General Certificate, although these credits cannot be recorded on the individual's record at the University of Washington.
 - I. A minimum of 50 per cent of the 45 quarter credits in the fifth year must be upper-division and/or graduate courses (numbered 300 and above).
 - J. A minimum grade-point average of 2.00 (C) must be maintained during the fifth year.
- II. Persons who hold a Three-Year or Six-Year Elementary *and* a Three-Year or Six-Year Secondary Certificate, or any other regular elementary and secondary certificates, are eligible for a Standard General Certificate, provided they have had at least one year of teaching experience. A petition for the Standard General Certificate must be filed with an adviser in 221 Miller Hall, and transcripts of all college work must be presented at the same time. The "Application for Teacher's Certificate" form (State Department of Public Instruction), including the notarized oath of allegiance, must be filed with the county superintendent together with a \$1.00 fee for release of the certificate.
- III. Requirements for conversion from the Three-Year or Six-Year Elementary certificate, or any other regular elementary certificate, to the Standard General Certificate include: (A detailed outline of the conversion routine is available in 221 Miller Hall.)
 - A. The following courses (or their equivalents):

COURSES

QUARTER CREDITS

Education 370. Introduction to Teaching Procedures	5
Education 372X or 372S. Professional Laboratory Experiences on the Secondary School Level	3
Education Special Methods in the First Broad Area of Concentration for Secondary School Teaching	2-5

- B. All candidates will be required to have had directed teaching on the elementary level.
 - C. A major of 45 quarter credits in one academic division.
 - D. At least one year of teaching experience (180 days).
 - E. An acceptable bachelor's degree.
 - F. A total of 45 quarter credits above the total required for the bachelor's degree. These 45 credits should meet the following requirements:
 - 1. Fifty per cent upper-division and/or graduate courses (numbered 300 or above).
 - 2. A minimum of 30 quarter credits in residence at the University of Washington or an approved out-of-state institution.
 - 3. Twelve quarter credits may be taken by correspondence and/or extension in the fifth year. Extension credits from teacher-training institutions which are not members of the National University Extension Association may be included in the recommendation for the Standard General Certificate, although these credits cannot be recorded on the individual's record at the University of Washington.
 - 4. A minimum grade-point average of 2.00 (C) for the fifth year's work.
 - G. A petition for the Standard General Certificate filed with an adviser in Room 221 Miller Hall, when beginning the conversion work. *Transcripts of all college work must accompany the petition.*
- IV. Requirements for conversion from the Three-Year or Six-Year Secondary Certificate, or any other regular secondary certificate, to the Standard General Certificate include: (A detailed outline of the conversion routine is available in 221 Miller Hall.)
- A. The following courses or their equivalents to total 24 credits in elementary education:

COURSES	QUARTER CREDITS
Education 370E Elementary School Methods	5
Education 374 Fundamentals of Reading Instruction	5
Education 402 Child Study and Development or Psychology 306 Child Psychology	3-5
Education 372E Professional Laboratory Experiences on the Elementary Level	3
Electives from the following or other approved courses in elementary education:	
Education 376 Art in the Elementary School	5
Education 377X-377Y Music for Elementary Teachers	6
Education 378C, 378D Physical Education for the Elementary School	6
Education 379 Arithmetic for Elementary Teachers	3

- B. All candidates will be required to have had directed teaching on the secondary level.
- C. A major of 45 quarter credits in one academic division.
- D. At least one year of teaching experience (180 days).
- E. An acceptable bachelor's degree.
- F. A total of 45 quarter credits above the total required for the bachelor's degree. These 45 credits should meet the following requirements:
 - 1. Fifty per cent upper-division and/or graduate courses (numbered 300 and above).
 - 2. A minimum of 30 quarter credits in residence at the University of Washington or an acceptable institution.
 - 3. Twelve credits may be taken by correspondence and/or extension in the fifth year. Extension credits from teacher-training institutions which are not members of the National University Extension Association may be included in the recommendation for the Standard General Certificate, although these credits cannot be recorded on the individual's record at the University of Washington.
 - 4. A minimum grade-point average of 2.00 (C) for the fifth year's work.
- G. A petition for the Standard General Certificate filed with an adviser in Room 221 Miller Hall when beginning the conversion work. *Transcripts of all college work must accompany the petition.*

- V. Teachers holding a Six-Year Elementary Certificate or the equivalent may continue it in force by earning 9 quarter credits every six years.
- VI. Persons holding a Six-Year Secondary Certificate or any other regular secondary certificate who wish to convert to the Standard Secondary Certificate (continuing) should contact the State Department of Public Instruction for routines.
- VII. Persons holding a Three-Year or Six-Year Elementary Certificate *or its equivalent* who wish to convert to the Standard Elementary Certificate (continuing) with the University of Washington as the recommending institution must have verification as to the completion of 45 quarter credits beyond the total credits required for the bachelor's degree.
 - A. Of the 45 credits, 12 may be earned by correspondence and/or extension, the remaining credits being earned in residence at the University or an approved out-of-state institution. Extension credits from teacher-training institutions which are not members of the National University Extension Association may be included in the recommendation for the Standard Elementary or Standard Secondary Certificates (continuing), but these credits will not be recorded on the individual's record at the University of Washington. Extension credits taken to apply toward advanced degrees at the University of Washington must be taken through its Extension Division, may not exceed six quarter credits, and must be approved by the Department of Education and the Graduate School in advance of registration.
 - B. Fifty per cent of the 45 credits must be in upper-division and/or graduate courses (those numbered 300 and above).
 - C. A minimum grade point of 2.00 (C) is required.
 - D. In order to obtain the recommendation from the University of Washington, 30 credits of the 45 must be taken at this University.

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 requirements for administrators' credentials will be in the process of modification during the effective dates of this bulletin. Since the State Department of Public Instruction does the evaluations for administrators' credentials and issues these credentials, students should make application to that department and obtain a written statement of requirements at the beginning of their program.

Principals of elementary schools with six or more teachers must qualify for elementary principals' credentials; junior high school principals must qualify for junior high school principals' credentials; and high school principals devoting at least two hours per day to intraschedule administrative duties must qualify for high school principals' credentials.

Principals of union high schools and superintendents of districts with one or more elementary schools and an accredited high school must qualify for superintendents' credentials.

A teaching certificate on the proper level is a prerequisite for an administrator's credential. This certificate must be kept in force to keep the credential valid. An

elementary certificate is a prerequisite for an elementary principal's credential; an elementary or secondary certificate, for a junior high school principal's credential; a secondary certificate, for a high school principal's credential; and a secondary certificate, for a superintendent's credential. The secondary certificate must be kept in force during the time the superintendent's credential is being used.

ELEMENTARY PRINCIPAL'S CREDENTIAL

One of the two following qualifications is necessary.

1. Two or more years of successful experience as principal of an elementary school of six or more teachers prior to September 1, 1936.

2. At least two years of successful teaching experience in the elementary school or the junior high school, plus 12 quarter credits of professional courses relating to elementary administration and supervision taken subsequent to at least one year of teaching experience. Not less than 6 of the required credits must be from List A, below, and must cover at least two of the enumerated fields. The remaining credits may be from either list. Other courses within the field of elementary education may also be offered, subject to evaluation. All courses presented to satisfy the requirements for an elementary principal's credential must have been completed within ten years prior to date of application.

LIST A. Elementary curriculum; elementary administration and supervision; elementary school methods; and guidance.

LIST B. Tests and measurements; kindergarten; health and physical education; and remedial education.

JUNIOR HIGH SCHOOL PRINCIPAL'S CREDENTIAL

One of the two following qualifications is necessary.

1. Two or more years of successful experience as principal of a junior high school prior to September 1, 1936.

2. Completion of not less than four years of professional preparation and at least two years of successful teaching experience in the common schools, plus 12 quarter credits of professional courses relating to junior high school administration and supervision taken subsequent to at least one year of teaching experience. Not less than 6 of the required number of quarter credits must be from List A, below, and must cover at least two of the enumerated fields. The remaining courses may be from either list. Other courses within the field of junior high school education may also be offered, subject to evaluation. All courses presented to satisfy the requirements for a junior high school principal's credential must have been completed within ten years prior to date of application.

LIST A. Junior high school administration and supervision or high school administration and supervision; junior high school curriculum; junior high school methods; and guidance.

LIST B. Adolescence; extracurricular activities; tests and measurements; and health and physical education.

SENIOR HIGH SCHOOL PRINCIPAL'S CREDENTIAL

One of the two following qualifications is necessary.

1. Two or more years of successful experience as a high school principal prior to September 1, 1934.

2. At least two years of successful teaching experience on the secondary level, plus 12 quarter credits of professional courses relating to secondary organization, supervision, and administration taken subsequent to at least one year of teaching experience. Not less than 6 of the required number of quarter credits must be from List A, below, and must cover at least two of the enumerated fields. The remaining credits may be from either list. Other courses within the field of secondary education may be offered subject to evaluation. All courses presented to satisfy the requirements for the high school principal's credential must have been completed within ten years prior to date of application.

LIST A. High school administration and supervision; high school curriculum; guidance; and school finance.

LIST B. Educational research; extracurricular activities; health and physical education; and tests and measurements.

SUPERINTENDENT'S CREDENTIAL

One of the five following qualifications is necessary.

1. At least two years of successful experience as a superintendent prior to September 1, 1934.

2. At least four years of successful administrative experience, including two years as principal of an elementary school of six or more teachers, and two years as principal of a high school, head of a high school department with six or more teachers, or supervisor. While serving as high school principal, department head, or supervisor, at least two hours per day must have been devoted to administrative duties. (In order to qualify for a superintendent's credential on the basis of the above requirements, it is necessary to be in possession of both elementary and high school principals' credentials. It is also necessary to submit proof of having served in an elementary school of six or more teachers and, in the case of the high school experience, proof of having devoted at least two hours per day to administrative duties. Only a candidate who gained his experience prior to September 1, 1934, may qualify under this paragraph and not be in possession of both elementary and senior high school principals' credentials.)

3. At least two years of successful experience as principal of an elementary school of six or more teachers, plus 12 quarter credits of professional courses relating to organization, administration, and supervision in secondary schools taken subsequent to at least one year of teaching experience. These educational requirements are in addition to the minimum required for initial certification on the secondary level.

4. A junior high school principal whose training has been on the secondary level can apply for a superintendent's credential on the basis of two years of successful experience as principal of a regularly organized junior high school, plus 24 quarter credits of professional courses relating to organization, administration, and supervision of elementary education taken subsequent to one year of teaching experience; a junior high school principal whose training has been on the elementary level can apply for a superintendent's credential on the basis of two years of successful experience as principal of a regularly organized junior high school, plus 12 quarter credits relating to organization, administration, and supervision in secondary schools taken subsequent to one year of teaching experience; this provision does not rescind any regulations or requirements already in effect.

5. At least two years of successful experience as a high school principal, head of a high school department, or supervisor, plus 24 quarter credits of professional courses relating to organization, administration, and supervision of elementary education taken subsequent to at least one year of teaching experience. While serving as a high school administrator, at least two hours per day must have been devoted to administrative duties. These educational requirements are in addition to the minimum required for certification on the secondary level. Not less than 6 of the required number of quarter credits must be from List A, below, and must cover at least three of the enumerated fields, one of which must be school finance. The remaining credits may be from either list. Other courses within the prescribed field can also be offered, subject to evaluation.

In lieu of experience on the elementary level, courses in the following fields are accepted.

LIST A. Elementary curriculum; elementary school administration and supervision; elementary school methods; school finance; and guidance.

LIST B. Tests and measurements; kindergarten; health and physical education; and remedial education.

In lieu of experience on the secondary level, courses in the following fields are accepted.

LIST A. High school administration and supervision; high school curriculum; guidance; and school finance.

LIST B. Educational research; extracurricular activities; health and physical education; and tests and measurements.

It should be carefully noted that training can be substituted in lieu of administrative experience on one level or the other, but not on both. In other words, a candidate for a superintendent's credential must have had at least two years of successful experience as a teacher, plus two years of successful experience as an elementary, junior, or senior high school principal, or as a supervisor or head of a department in a senior high school, and as such have devoted at least two hours per day to administrative duties.

Courses that are not acceptable as graduate credit for advanced degrees at the University of Washington or the State College of Washington, or at other institutions authorized to grant such degrees and accredited by the State Board of Education, are not accepted for a superintendent's credential, except that when the teaching certificate has been earned in a secondary teacher-training institution, one-half of the 24 academic credits in elementary education in lieu of elementary administrative experience required for the superintendent's credential may be obtained on the undergraduate level at an elementary-teacher-training institution maintaining a laboratory school. Courses completed more than ten years prior to application are not acceptable. A course in school finance is required for a superintendent's credential.

The superintendent's credential is valid for a principalship in any field of service for which the holder of the credential is properly qualified with a teaching certificate.

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* 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 from which work may be taken for the M.A. degree are: college teaching, 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 Education 591 and a minimum of 5 credits in each of four fields of education; and 15 credits in two departments other than education, including 5 credits in courses numbered above 500. The fields in education from which work may be taken for the M.Ed. degree are: audio-visual education, business education, college teaching, comparative education, curriculum, educational administration, educational methods, educational psychology, educational sociology, educational supervision, elementary education, guidance and counseling, history and philosophy of

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 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: college teaching, 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 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: college teaching, 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

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 400 courses may carry graduate credit for graduate students.

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 quarterly *Time Schedule and Room Assignments*.

For a listing of courses offered any given quarter, together with the time and place of meeting, consult the quarterly Time Schedule and Room Assignments 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 Announcement for the specific number of credits for a particular course.

COURSES FOR UNDERGRADUATES

Courses 320 to 346J and course 375J are special methods courses in secondary subjects.

- 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.
- 182 General Shop for Industrial Education Teachers (5)** **Baily, Horst**
Introduction to industrial education; the common tools, materials, processes, and products of industry.

- 209 Educational Psychology (3)** **Fea, Powers**
The psychological basis of education. Recent experimentation. Prerequisites, Psychology 100 and a course in child development.
- 280 Fundamentals of Woodwork for Industrial Education Teachers (3)** **Baily, Horst**
Hand tool processes; elementary machine operations; methods of assembling and fastening; simple wood finishing. Prerequisites, 180 and 181 or equivalent.
- 281 General Metalwork for Industrial Education Teachers (3)** **Baily, Horst**
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.
- 320 Teachers' Course in Art (2)** **Johnson**
Prerequisites, 209 and 370, senior standing, and permission.
- 321 Teachers' Course in Biology (2)** **Blaser, Hatch**
Prerequisites, 209 and 370 and 25 credits in botany.
- 322 Teachers' Course in Chemistry (2)** **Cady**
Prerequisites, 209 and 370 and at least 20 credits in college chemistry with a grade-point average of 3.00.
- 323 Teachers' Course in Civics (2)** **Hitchner**
Prerequisites, 209 and 370.
- 324 Teachers' Course in Business Education: Bookkeeping and General Business (2)** **Briggs**
Prerequisites, 209 and 370, General Business 101, and 10 credits in accounting.
- 325 Teachers' Course in Business Education: Typewriting, Shorthand, Transcription, and Business Communications (2)** **Briggs**
Prerequisites, 209 and 370, Secretarial Training 120-121, 122, and permission.
- 326 Teachers' Course in English (5)** **Emery**
Two credits count as education and 3 as English. Prerequisites, 209 and 370.
- 327 Teachers' Course in Trade and Industrial Education (3)** **Baily**
Prerequisites, 209 and 370.
- 329 Teachers' Course in French (2)** **Simpson**
Prerequisites, 209 and 370, French 303 and 358, and permission. 303 and 358 may be taken concurrently with 329.
- 330 Teachers' Course in German (2)** **Vail**
Prerequisites, 209 and 370, and either German 303 or permission.
- 331 Teachers' Course in History (2)** **Gates**
Prerequisites, 209 and 370.
- 332 Teachers' Course in Home Economics (3)** **McAdams**
Two credits count as education and 1 as home economics. Prerequisites, 209 and 370 and 25 credits in home economics.
- 333 Methods of Teaching for Institution Administration Students (5)** **McAdams**
Prerequisites, junior standing and 25 credits in home economics.
- 334 Teachers' Course in Geography (2)** **Staff**
Prerequisites, 209 and 370 and permission.
- 335 Teachers' Course in Latin (2)** **Pascal**
Prerequisites, 209 and 370 and 20 credits in upper-division Latin courses.
- 336 Teachers' Course in Mathematics (3)** **Staff**
Emphasis is upon a critical understanding of subject matter; supplementary topics include teaching aids and classroom problems. Prerequisites, 209, 370, and Mathematics 253 or equivalent. Two credits count as education and 1 as mathematics.
- 339 Teachers' Course in Physical Education for Men (2)** **Peek**
Prerequisites, 209 and 370 and Physical Education 363.
- 340 Teachers' Course in Health and Physical Education for Women (2)** **Fox**
Prerequisites, 209 and 370 and Physical Education 356, 362, 363, 364, 453, and Education 371E, X, or S concurrently.
- 341 Teachers' Course in Scandinavian (2)** **Arestad, Johnson**
Prerequisites, 209 and 370 and permission.
- 342 Teachers' Course in Speech (3)** **Nelson**
Two credits count as education and 1 as speech. Prerequisites for majors in speech, 209, 370, and at least 20 credits in speech, including Speech 352. Prerequisites for nonmajors, 209, 370, and permission.
- 343 Teachers' Course in Spanish (2)** **Simpson**
Prerequisites, 209 and 370, Spanish 303 and 358, and permission. 303 and 358 may be taken concurrently with 343.
- 346J Teachers' Course in Secondary School Music (3)** **Staff**
Two credits count as education and 1 as music. Prerequisites, 209, 370, Music 344, and 385.
- 360 Principles of Education (3)** **Draper**
Analytical studies in the areas of professionalization of teachers, foreign education systems, guidance and counseling, vocational education, extraclass activities, and curriculum improvement. Each student will prepare a resource unit in his major field.

- 370 Introduction to Teaching Procedures (5)** **Boroughs**
A general orientation to the teaching profession with an examination of the basic methods of teaching with emphasis upon practical considerations. Classroom teaching situations are observed on the elementary, junior, and senior high school levels. Audio-visual laboratory experiences are provided.
- 370E Elementary School Methods (5)** **MacDonald**
Basic principles, techniques, and methods of teaching in the elementary school, from the kindergarten through the intermediate grades. Classroom observations are scheduled in the city schools. Prerequisites, 209 and 370.
- 371K Directed Teaching, Kindergarten (3-8)** **Corbally, MacDonald, Powers**
All directed teaching is done in the public schools, and all morning must be left free for an assignment. Assignments are made by the Director of Cadet Teaching the first day of each quarter. Fee, \$1.00 per credit. Prerequisites, 209, 370, 370E, 373, 374, 376, 377X-377Y, 378C, 378D, 390, or approved equivalents.
- 371E Directed Teaching, Elementary (Grades One Through Six) (3-8)** **Corbally, MacDonald, Powers**
All directed teaching is done in the public schools, and all morning must be left free for an assignment. Assignments are made by the Director of Cadet Teaching the first day of each quarter. Fee, \$1.00 per credit. Prerequisites, 209, 370, 370E, 373, 374, 376, 377X-377Y, 378C, 378D, 390, or approved equivalents.
- 371X Directed Teaching, Junior High (3-8)** **Corbally, Boroughs, Powers**
All directed teaching is done in the public schools, and all morning must be left free for an assignment. Assignments are made by the Director of Cadet Teaching the first day of each quarter. Fee, \$1.00 per credit. Prerequisites, 209, 370, 370E, 373, 374, 376, 377X-377Y, 378C, 378D, 390, or approved equivalents.
- 371S Directed Teaching, Senior High (3-8)** **Corbally, Boroughs, Powers**
All directed teaching is done in the public schools, and all morning must be left free for an assignment.
Vocational home economics cadets must take Home Economics 348 and 495 with 371S to make a total of 15 credits for the quarter.
Women's physical education cadets do directed teaching in Winter Quarter only.
Assignments are made by the Director of Cadet Teaching the first day of each quarter. Fee, \$1.00 per credit. Prerequisites, 209, 370, 370E, 373, secondary subject matter methods, 390, or approved equivalents.
- 372E, 372X, 372S Professional Laboratory Experiences (3,3,3)** **Williams**
Professional experiences arranged on opposite level from directed teaching; participation in and acquaintance with pupil and community activities. Prerequisite, 371K, E, X, or S.
- 373 Washington State Manual (2)** **Corbally, Jessup**
State Constitution and excerpts from school code. Required by law of all applicants for Washington State teaching certificates. Prerequisites, 209 and 370.
- 374 Fundamentals of Reading Instruction (5)** **Fea**
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 high school grades. Prerequisite, 370E.
- 375J Teachers' Course in Journalism (3)** **Brier**
Prerequisites, 209 and 370 and Journalism 200 and 201.
- 376 Art in the Elementary School (5)** **Johnson**
The place of creative art in the school curriculum. Emphasis is on content, methods of presentation, and evaluation; areas include drawing, painting, design, and crafts. Laboratory experience, with some lectures, discussion, and reading. Prerequisite, 370E.
- 377X-377Y Music for Elementary Teachers (3-3)** **Staff**
377X: development of the music program in the public schools from kindergarten through grade four, with emphasis on rhythmic and melodic experience. Prerequisites, 370E, Music 110Y and 110Z or equivalent as determined by examination. 377Y: development of the music program in the public schools from grade four through eight, with emphasis on music reading, music background, listening, and harmonic and rhythmic experience. Prerequisite, 377X.
- 378C Physical Education for the Elementary School (3)** **Horne, Smith**
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.
- 378D Physical Education for the Elementary School (3)** **Horne, Smith**
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 and 378C.
- 379 Arithmetic for Elementary Teachers (3)** **Staff**
A re-examination of elementary arithmetic from a mature point of view, with emphasis upon a sound knowledge of arithmetic processes and the problems of teaching these to elementary students. The subject matter includes that taught in grades one through eight. One credit may count as mathematics toward the basic academic field and 2 as education.

- 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.
- 383-384 Advanced Woodwork for Industrial Education Teachers (3-2)** **Baily, Horst**
Design, construction, and finishing of projects in wood, involving machine operations, air-brush finishing, and upholstering. Prerequisite, 280 for 383.
- 386 Home Planning for Industrial Education 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.
- 387 Special Problems in Industrial Education (1-5)** **Baily**
The student works on an individual basis, conferring with the staff as needs arise on one or more problems in industrial education that are of special interest to him. An outline and an organized plan of procedure are to be presented to the adviser. Prerequisite, permission.
- 388 Selection and Organization of Industrial Education Subject Matter (3)** **Baily**
Problems, techniques, and procedures in the selection and organization of teaching content for industrial education; preparation of job and informational assignments and testing devices for shop teachers.
- 389 Industrial Education for Elementary Teachers (5)** **Baily, Horst**
Planning and preparing a representative unit in some area of the elementary school program, with emphasis upon constructional activity; development of basic skills in the use of common hand tools; study of materials used in elementary handwork.
- 390 Evaluation in Education (3)** **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 370.

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.
- 402 Child Study and Development (3)** **Fea**
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)** **Fea**
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 (5)** **Hayden**
Atypical children studied from the point of view of the classroom teacher. Prerequisite, permission.
- 405 Problems of Adolescence (5)** **Staff**
A survey of the problems of adolescence, with analysis and discussion of their educational and social implications.
- 406 Character Education (3)** **Staff**
Experimental background of the modern effort toward character development. Prerequisite, permission.
- 408 Mental Hygiene for Teachers and Administrators (3)** **Vopni**
Mental hygiene of school children, teachers, and administrators, including genetic factors and the influence of various school situations upon the formation of adjustment patterns. Special problems of teachers and administrators are emphasized. Some background in educational psychology is recommended, but is not a prerequisite.
- 410 Educational Sociology (3)** **Jessup**
A systematic view of the larger social factors and relationships underlying the school as an institution. Pivotal topics are: individual-group interaction; agencies of person-group interaction; and outcomes of individual-group interaction. The relationship of the school to the community. Prerequisite, permission.
- 415 Principles of Safety Education (3)** **Corbally**
Development and principles of school safety education; practical methods of implementing a school program. Prerequisite, permission.
- 415D Principles of Safety Education: Driver Education (3)** **Corbally**
Course qualifying for A.A.A. certification of teachers for behind-the-wheel driver training.
- 417 Adult Education (3)** **Jessup**
Principles and methods of directing the continued educational growth of adults. Prerequisite, permission.
- 420 Theory and Technique of Kindergarten and Primary Teaching (3)** **MacDonald**
General analysis of techniques used to help young children develop an interested, responsive approach to school life.
- 421 Remedial Education (3)** **Fea**
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.
- 422 Remedial Education Clinic (3)** **Fea**
Laboratory observation and practical experience using the more elaborate techniques and equipment unique to the laboratory. The objective of such experience is to aid teachers in referral of pupils and explanation to parents and to give a more complete understanding of the nature and importance of remedial education. Prerequisite, 425 or equivalent.
- 425 Remedial Reading (3)** **Fea**
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. Prerequisite, 374 or equivalent.
- 430 Public School Administration (3)** **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, 6-6, 6-4-4, and 7-5 plans; program making; pupil adjustment; principal and department heads; extension of the programs to include the thirteenth and fourteenth years. Prerequisite, permission.
- 435 Administration and Supervision of Junior High Schools (3)** **Staff**
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 relating to school plant, budget, and equipment.
- 437 School Supervision (5)** **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)** **Corbally, Vopni**
The role of guidance in present-day education; a general background course covering the tools, techniques, organization, and evaluation of guidance. For teachers and administrators.
- 448 Improvement of Guidance Techniques (3)** **Vopni**
Designed for teachers, administrators, and counselors. Special emphasis is given to the improvement of methods and techniques in group guidance.
- 455 Auditory and Visual Aids in Teaching (3)** **Hayden**
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**
- 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 Department of Public Health and Preventive Medicine. Prerequisite, permission.
- 461 Elementary School Curriculum (5)** **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 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)** **Williams**
Readings in the educational classics from the Greeks to the present, to trace their influence upon the development of educational theory and practice. Principal sources are Plato, Aristotle, Quintilian, Plutarch, Comenius, Vives, Montaigne, Locke, Milton, Rousseau, Pestalozzi, Herbart, Froebel, and Spencer. Prerequisite, permission.
- 474 Workshop in the Improvement of Teaching (5)** **Staff**
A study through individual research projects of the adaptation of instruction to meet individual differences.
- 475 Improvement of Teaching (3)** **Staff**
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 (3)** **Staff**
Critical analysis of the basic concepts of algebra and geometry with emphasis on improved methods of teaching the subjects.
- 475H Improvement of Teaching: Language Arts (3)** **Fea**
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.
- 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)** **Staff**
Procedures in the social studies. Techniques; source materials; contribution of the various social sciences to the educational program.
- 475S Improvement of Teaching: 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.
- 476D Materials and Methods of Teaching Typewriting (2½)** **Staff**
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)** **Staff**
Objectives and content of office practice and general clerical practice courses; plans for organizing classes and methods of teaching specific machines and subject matter; laboratory study of new inventions in office machines. (Offered Summer Quarter only.)
- 476H Workshop in Current Problems of Distributive Education (2½, maximum 5)** **Staff**
Immediate problems in the field of distributive education; student employment; local, state, and national retailers' clubs; trends in adult training; special problems of the new coordinator. For present and prospective coordinators. (Offered Summer Quarter only.)
- 476L Materials and Methods of Teaching Gregg Shorthand and Transcription (2½)** **Staff**
Recent research and experimentation in teaching shorthand and transcription are emphasized. Psychology of skill development; comparison of the various methods of teaching shorthand; evaluation of teaching materials; consideration of standards, objectives, and teaching techniques. An advanced course for experienced teachers. (Offered Summer Quarter only.)
- 476M Principles and Problems of Business Education (2½)** **Staff**
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)****Staff**

Techniques of teaching bookkeeping and general business subjects; relationship to the curriculum; standards to be achieved; content and organization of the subject matter; tests and teaching materials; new trends in the field; motivational devices; visual aids. (Offered Summer Quarter only.)

477 The Teaching of Reading (3)**Fea**

The teaching of reading in the intermediate and upper grades of the elementary school and high school including comprehension and speed, reading in the content fields, and motivation of voluntary reading. Students will work intensively in one area of special interest.

480 History of Education (5)**Jessup**

A social interpretation of preliterate education; beginnings in the Orient, Greece, Rome, the medieval period, the Renaissance, and modern times. The relationship of education to democracy, fascism, communism, and newer concepts involving the world-wide spread of democracy and education. Prerequisite, permission.

484 Comparative Education (5)**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.

488 Philosophy of Education (3)**Staff**

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.

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 Educational Statistics (5)**Dvorak**

Statistical methods applicable in educational administration and research: central tendency; variability; probability; sampling and reliability; experimental hypotheses; linear, curvilinear, bi-serial, partial, and multiple correlation; regression; reliability; application of various statistical procedures to specific problems. Prerequisite, 390.

491 Advanced Educational 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.

499 Undergraduate Research (2-5)**Staff**

Instructor and field must be designated in registration. (See 600 for list of fields.) Prerequisite, permission of instructor and director of educational research.

COURSES FOR GRADUATES ONLY**501 Seminar in Educational Psychology (3)****Fea**

Psychological principles of education; summary of research results in application to school problems. Prerequisite, a background in general and educational psychology.

510 Seminar in Educational Sociology (3)**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 (5)**Staff****525 Seminar in Elementary Education (3)****Boroughs**

A critical examination of the elementary school, with special emphasis on curriculum and method. 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 (5)**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 (5, maximum 15)** **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 (5)** **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.
- 539 Seminar in Public School Administration (3)** **Strayer**
Current studies on administrative trends and problems; principles for the evaluation of administrative decisions; desirable research problems; appraisal of problems in certain school districts. For school administrators. Prerequisites, 430 and doctoral candidacy or special permission.
- 541, 542, 543 Guidance and Counseling (3,3,3)** **Vopni**
Techniques and materials used in school guidance; organization and administration of the guidance program. Primarily for people who plan to become counselors or guidance workers in educational institutions. Prerequisite, permission
- 547 Seminar in Guidance (5)** **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. Prerequisites, 447 or equivalent and doctoral candidacy or special permission.
- 550 Development and Organization of Higher Education (3)** **Williams**
Higher education from the standpoint of the new instructor; history of administrative organization. Prerequisite, doctoral candidacy or special permission.
- 551 College Problems (3)** **Williams**
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)** **Williams**
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.
- 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 Curriculum: Extraclass Activities (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)** **Williams**
The nature of teaching and the problems involved in the underlying principles and practices of types of modern methodology, with special reference to experimental studies in the project, the unit, socialized recitation, audio-visual aids, supervised study, lesson plans, lectures, assignments, and the activity of movement.
- 587, 588, 589 Seminar in Philosophy of Education (3,3,3)** **Williams**
The nature and meaning of philosophy as it relates to educational objectives, methodology, curriculum, and administration, from the points of view represented in idealism, realism, naturalism, and pragmatism.
- 591 Methods of Educational Research (3)** **Haydon**
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 educational research. Instructor and field must be designated in registration.

Audio-visual education

Educational supervision

College teaching

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

Thesis (*)**Staff**

Advanced degree candidates in education must register for "thesis." When registration is for "thesis only," an incidental fee of \$27.50 is charged and the work may be done *in absentia* by special permission.

BULLETIN • UNIVERSITY OF WASHINGTON



COLLEGE OF ENGINEERING
1955-1957

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes two general bulletins; bulletins of the colleges and schools; two Summer Quarter announcements; and publications of the Division of Adult Education and Extension Services, the correspondence study and extension class announcements.

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 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.

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

UNIVERSITY REGULATIONS (FOR REGISTERED STUDENTS ONLY)
INTRODUCTION TO THE UNIVERSITY

Bulletins of the Colleges and Schools

COLLEGE OF ARTS AND SCIENCES
COLLEGE OF BUSINESS ADMINISTRATION
COLLEGE OF EDUCATION
COLLEGE OF ENGINEERING
COLLEGE OF FORESTRY
GRADUATE SCHOOL
SCHOOL OF LAW
COLLEGE OF PHARMACY
SCHOOLS OF MEDICINE AND DENTISTRY
SCHOOL OF NURSING

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT
SUMMER QUARTER ANNOUNCEMENT
CORRESPONDENCE STUDY
EXTENSION CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 890
April, 1955

Published monthly at Seattle, Washington, by the University of Washington from October to July, inclusive. No issues in August and September. Entered as second-class matter December 18, 1947, at the post office at Seattle, Washington, under the Act of August 24, 1912.

CONTENTS

CALENDAR	4
ADMINISTRATION	9
Board of Regents	
Officers of Administration	
College of Engineering Executive Committee	
College of Engineering Faculty	
Faculty of Reserve Officers Training Programs	
GENERAL INFORMATION	21
Building and Facilities	
Admission	
World War II and Korean Veterans	
Registration	
Tuition and Fees	
Estimate of Yearly Expenses	
Student Activities and Services	
THE DEPARTMENTAL PROGRAMS	39
Bachelor's Degrees	
Advanced Degrees	
Courses	
Aeronautical Engineering	
Chemical Engineering	
Civil Engineering	
Electrical Engineering	
General Engineering	
Humanistic-Social Studies for Engineers	
Industrial Engineering	
Mechanical Engineering	
Mineral Engineering	
Ceramic Engineering	
Metallurgical Engineering	
Mining Engineering	
Courses Included in Engineering Programs	
College of Arts and Sciences	
College of Business Administration	
RESERVE OFFICERS TRAINING PROGRAMS	81
Air Science	
Military Science and Tactics	
Naval Science	

CALENDAR

All fees must be paid at the time of registration. Registration is by appointment only.

SUMMER QUARTER, 1955

REGISTRATION PERIOD

JUNE 1-JUNE 3
JUNE 13-JUNE 17

Registration for all students. (*Registration appointments for students in residence Spring Quarter, 1955, and for former students not in residence Spring Quarter, 1955, may be obtained from the Registrar's Office beginning April 18. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.*)

ACADEMIC PERIOD

JUNE 20-MONDAY
JUNE 21-TUESDAY
JUNE 24-FRIDAY
JULY 4-MONDAY
JULY 20-WEDNESDAY
JULY 21-THURSDAY
JULY 22-FRIDAY
AUG. 19-FRIDAY

Instruction begins
Last day to add a course for the first term
Last day to add a course for the full quarter
Independence Day holiday
First term ends
Second term begins
Last day to add a course for the second term
Instruction ends

AUTUMN QUARTER, 1955

REGISTRATION PERIOD

SEPT. 6-SEPT. 27

SEPT. 9-SEPT. 27

SEPT. 12-SEPT. 23

SEPT. 12-SEPT. 27

Registration for students in residence Spring Quarter, 1955. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 23, but no later than September 16.*)

Registration for former students not in residence Spring Quarter, 1955. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 23, but no later than September 16.*)

Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (*August 26 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)

Registration for new transfer students with at least full sophomore standing. (*August 26 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

SEPT. 26—MONDAY	Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing.
SEPT. 28—WEDNESDAY	Instruction begins (8 a.m.) for all other students
OCT. 4—TUESDAY	Last day to add a course
NOV. 11—FRIDAY	State Admission Day holiday
NOV. 23—NOV. 28	Thanksgiving recess (6 p.m. to 8 a.m.)
DEC. 16—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1956

REGISTRATION PERIOD

NOV. 21—DEC. 9	Registration for students in residence Autumn Quarter, 1955. (<i>Registration appointments will be issued on presentation of ASUW cards beginning October 21.</i>)
DEC. 28—DEC. 30	Registration for former students not in residence Autumn Quarter, 1955. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 21.</i>)
DEC. 28—DEC. 30	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Winter Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

JAN. 3—TUESDAY	Instruction begins
JAN. 9—MONDAY	Last day to add a course
FEB. 22—WEDNESDAY	Washington's Birthday and Founder's Day holiday
MAR. 16—FRIDAY	Instruction ends

SPRING QUARTER, 1956

REGISTRATION PERIOD

FEB. 23—MAR. 9	Registration for students in residence Winter Quarter, 1956. (<i>Registration appointments will be issued on presentation of ASUW cards beginning January 20.</i>)
MAR. 21—MAR. 23	Registration for former students not in residence Winter Quarter, 1956. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 20.</i>)
MAR. 21—MAR. 23	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

MAR. 26—MONDAY	Instruction begins
MAR. 30—FRIDAY	Last day to add a course
MAY 18—FRIDAY	Governor's Day
MAY 30—WEDNESDAY	Memorial Day holiday
JUNE 3—SUNDAY	Baccalaureate Sunday
JUNE 8—FRIDAY	Instruction ends
JUNE 9—SATURDAY	Commencement

SUMMER QUARTER, 1956

REGISTRATION PERIOD

MAY 29-JUNE 1	<i>Registration for all students. (Registration appointments for students in residence Spring Quarter, 1956, and for former students not in residence Spring Quarter, 1956, may be obtained from the Registrar's Office beginning April 16. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.)</i>
JUNE 11-JUNE 15	

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
JULY 4—WEDNESDAY	Independence Day holiday
JULY 18—WEDNESDAY	First term ends
JULY 19—THURSDAY	Second term begins
JULY 20—FRIDAY	Last day to add a course for the second term
AUG. 17—FRIDAY	Instruction ends

AUTUMN QUARTER, 1956

REGISTRATION PERIOD

SEPT. 11-OCT. 2	<i>Registration for students in residence Spring Quarter, 1956. (Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 21, but no later than September 21.)</i>
SEPT. 14-OCT. 2	<i>Registration for former students not in residence Spring Quarter, 1956. (Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 21, but no later than September 21.)</i>
SEPT. 17-SEPT. 28	<i>Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (August 31 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.)</i>
SEPT. 17-OCT. 2	<i>Registration for new transfer students with at least full sophomore standing. (August 31 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.)</i>

ACADEMIC PERIOD

OCT. 1—MONDAY	Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing.
OCT. 3—WEDNESDAY	Instruction begins (8 a.m.) for all other students
OCT. 9—TUESDAY	Last day to add a course
NOV. 12—MONDAY	State Admission Day holiday
NOV. 21—NOV. 26	Thanksgiving recess (6 p.m. to 8 a.m.)
DEC. 21—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1957

REGISTRATION PERIOD

NOV. 26—DEC. 14	Registration for students in residence Autumn Quarter, 1956. (<i>Registration appointments will be issued on presentation of ASUW cards beginning October 26.</i>)
JAN. 2—JAN. 4	Registration for former students not in residence Autumn Quarter, 1956. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 26.</i>)
JAN. 2—JAN. 4	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Winter Quarter. Registration appointments will be mailed with notification of admission.</i>)

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. 22—FRIDAY	Instruction ends

SPRING QUARTER, 1957

REGISTRATION PERIOD

FEB. 27—MAR. 15	Registration for students in residence Winter Quarter, 1957. (<i>Registration appointments will be issued on presentation of ASUW cards beginning January 25.</i>)
MAR. 27—MAR. 29	Registration for former students not in residence Winter Quarter, 1957. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 25.</i>)
MAR. 27—MAR. 29	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

APR. 1—MONDAY	Instruction begins
APR. 5—FRIDAY	Last day to add a course
MAY 24—FRIDAY	Governor's Day
MAY 30—THURSDAY	Memorial Day holiday
JUNE 9—SUNDAY	Baccalaureate Sunday
JUNE 14—FRIDAY	Instruction ends
JUNE 15—SATURDAY	Commencement

SUMMER QUARTER, 1957

REGISTRATION PERIOD

JUNE 5—JUNE 7	<i>Registration for all students. (Registration appointments for students in residence Spring Quarter, 1957, and for former students not in residence Spring Quarter, 1957, may be obtained from the Registrar's Office beginning April 22. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.)</i>
JUNE 17—JUNE 21	

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 24—WEDNESDAY	First term ends
JULY 25—THURSDAY	Second term begins
JULY 26—FRIDAY	Last day to add a course for the second term
AUG. 23—FRIDAY	Instruction ends

CHANGES IN UNIVERSITY REGULATIONS

The University and its colleges and schools reserve the right to change the rules regulating admission to, instruction in, and graduation from the University and its various divisions, and to change any other regulations affecting the study 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 and change fees at any time.

ADMINISTRATION

BOARD OF REGENTS

MRS. J. HERBERT GARDNER, <i>President</i>	La Conner
CHARLES M. HARRIS, <i>Vice-President</i>	Entiat
GRANT ARMSTRONG	Chehalis
THOMAS BALMER	Seattle
DONALD C. CORBETT	Spokane
CHARLES F. FRANKLAND	Seattle
WINLOCK W. MILLER	Seattle

HELEN HOAGLAND, *Secretary*

OFFICERS OF ADMINISTRATION

HENRY SCHMITZ, Ph.D.	<i>President of the University</i>
HAROLD P. EVEREST, M.A.	<i>Vice-President of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
NELSON A. WAHLSTROM, B.B.A.	<i>Comptroller and Business Manager</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>
HAROLD E. WESSMAN, Ph.D.	<i>Dean of the College of Engineering</i>
JAMES W. SOUTHER, M.A.	<i>Assistant to the Dean</i>

COLLEGE OF ENGINEERING EXECUTIVE COMMITTEE, 1954-1955

DEAN H. E. WESSMAN, <i>Chairman</i>
J. W. SOUTHER, <i>Secretary</i>
V. M. GANZER, <i>Aeronautical Engineering</i>
R. W. MOULTON, <i>Chemical Engineering</i>
R. B. VAN HORN, <i>Civil Engineering</i>
A. V. EASTMAN, <i>Electrical Engineering</i>
E. R. WILCOX, <i>General Engineering</i>
S. W. CHAPMAN, <i>Humanistic-Social Studies</i>
B. T. McMINN, <i>Mechanical Engineering</i>
F. B. FARQUHARSON, <i>Engineering Experiment Station</i>
W. E. ROGERS, G. S. SCHALLER, <i>Members at Large</i>

COLLEGE OF ENGINEERING FACULTY

(As of February, 1955)

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

EASTMAN, FRED SCOVILLE, 1927 (1943).....*Professor of Aeronautical Engineering*
B.S. in E.E., 1925, Washington; M.S., 1929, Massachusetts Institute of Technology

- GANZER, VICTOR MARTIN, 1947 (1953).....*Professor of Aeronautical Engineering;*
 B.A. in Math., 1933, Augustana College (Illinois); *Executive Officer of the*
 B.S. in A.E., 1941, Washington *Department of Aeronautical Engineering*
- JOPPA, ROBERT GLENN, 1945 (1953).....*Assistant Professor of Aeronautical*
 B.S. in A.E., 1945, M.S. in A.E., 1951, Washington *Engineering*
- 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
- STREET, ROBERT ELLIOTT, 1948 (1949).....*Associate Professor of Aeronautical*
 B.S. in Physics, 1933, Rensselaer Polytechnic Institute; *Engineering*
 M.A., 1934, Ph.D., 1939, Harvard
- WEIKEL, RAYMOND CHESTER, 1948 (1954).....*Associate Professor of Aeronautical*
 A.B., 1932, Wabash College; A.M., 1939, Illinois *Engineering*

CHEMICAL ENGINEERING

- BABB, ALBERT LESLIE, 1952.....*Assistant Professor of Chemical Engineering*
 B.A.Sc., 1948, British Columbia; M.S., 1949, Ph.D., 1951, Illinois
- BENGTON, KERMIT BERNARD, 1954.....*Instructor in Chemical Engineering*
 B.S., 1947, Washington
- DAVID, MORTON MORRIS, 1953.....*Assistant Professor of Chemical Engineering*
 B.S., 1942, Colorado; D.Eng. in Ch.E., 1950, Yale
- JOHANSON, LENNART NOBEL, 1951.....*Assistant 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*
 B.S. in Ch.E., 1934, Washington; M.S., 1936, Idaho; Ph.D., 1938, McGill
- MOULTON, RALPH WELLS, 1941 (1950).....*Professor of Chemical Engineering;*
 B.S. in Ch.E., 1932, M.S. in Ch.E., *Executive Officer of the Department*
 1934, Ph.D., 1938, Washington *of Chemical Engineering*
- OLIN, JULIUS BROR ERIK, 1954.....*Instructor in Chemical Engineering*
 Diploma Eng., 1949, Finland

CIVIL ENGINEERING

- BOGAN, RICHARD HERBERT, 1954.....*Assistant 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 (1949).....*Associate Professor of Civil*
 B.S. in C.E., 1934, Washington; M.S. in C.E., 1938, *Engineering*
 Massachusetts Institute of Technology
- CHENOWETH, HARRY HOLT, 1946 (1951).....*Assistant Professor of Civil Engineering*
 B.S. in C.E., 1937, Washington
- CHITTENDEN, HIRAM MARTIN, 1923 (1949).....*Associate Professor of Topographic*
 B.S. in C.E., 1920, C.E., 1935, Washington *Surveying*
- CLANTON, JACK REED, 1947 (1952).....*Associate 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 (1953).....*Assistant Professor of Civil*
 B.S., 1947, Maine; M.S. in C.E., 1949, Minnesota *Engineering*
- EKSE, MARTIN INGVALD, 1948 (1953).....*Associate Professor of Civil Engineering*
 B.S., 1932, South Dakota State College; M.S., 1948, Wisconsin
- FARQUHARSON, FREDERICK BURT, 1925 (1940).....*Professor of Civil Engineering;*
 B.S. in M.E., 1923, *Director of the Engineering*
 M.E., 1927, Washington *Experiment Station*
- FINKE, BRUCE GORDON, 1955.....*Instructor in Civil Engineering*
 B.S. in C.E., 1949, M.A. in Urban Planning, 1955, Washington
- HARRIS, CHARLES WILLIAM, 1906 (1951).....*Professor Emeritus of Hydraulic*
 B.S. in C.E., 1903, Washington; *Engineering; Research*
 C.E., 1905, Cornell *Consultant*

- HECHTMAN, ROBERT AARON, 1949 (1953).....*Professor of Structural Research*
B.S. in C.E., 1938, M.S. in C.E., 1939, Washington; Ph.D., 1948, Illinois
- 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 (1952).....*Assistant Professor of Civil Engineering*
B.S. in M.E., 1942, Georgia Institute of Technology; M.S. in Regional Planning, 1951, Washington
- KENT, JOSEPH CHAN, 1952.....*Instructor in Civil Engineering*
B.S. in C.E., 1945, British Columbia; M. S. in C.E., 1948, Stanford; Ph.D., 1952, California
- MASKE, WILLIAM, 1947.....*Sanitary Chemist*
B.S., 1915, M.S., 1917, Washington
- MEESE, RICHARD HUNT, 1946 (1949).....*Assistant 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 (1953).....*Instructor in Civil Engineering*
B.S. in C.E., 1951; M.S. in C.E., 1952, Washington
- MITTET, HOLGER PEDER, 1946 (1949).....*Assistant 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
- MYLROIE, WILLA WILCOX, 1951 (1952).....*Office Engineer of Highway Research*
B.S. in C.E., 1940, M.S. in Regional Planning, 1952, Washington
- 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.....*Assistant 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
- SERGEV, SERGIUS IVAN, 1923 (1946).....*Professor of Engineering Mechanics*
B.S. in M.E., 1923, M.E., 1931, Washington
- SMITH, FREDERICK CHARNLEY, 1926 (1954).....*Professor Emeritus of Civil Engineering; Research Consultant*
B. S. in C.E., 1926, C.E., 1929, Washington
- SYLVESTER, ROBERT OHRUM, 1947 (1953).....*Associate Professor of Sanitary Engineering*
B.S. in C.E., 1936, Washington; S.M., 1941, Harvard
- 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 of Hydraulic Engineering; Executive Officer of the Department of Civil Engineering*
B.S. in C.E., 1916, C. E., 1926, Washington
- VASARHELYI, DEZSOE, 1949 (1953).....*Assistant 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**
- BERGSETH, FREDERICK ROBERT, 1947.....*Associate Professor of Electrical Engineering*
B.S. in E.E., 1937, Washington; S.M. in E.E., 1938, Massachusetts Institute of Technology
- CARLYLE, JACK WEBSTER, 1955.....*Instructor in Electrical Engineering*
B.A., 1954, Washington
- COCHRAN, LYALL BAKER, 1934 (1952).....*Professor of Electrical Engineering*
B.S. in E.E., 1923, E.E., 1936, Washington

- EASTMAN, AUSTIN VITRUVIUS, 1924 (1942).....*Professor of Electrical Engineering;*
B.S. in E.E., 1922, M.S. in E.E., 1929, *Executive Officer of the Department*
Washington *of Electrical Engineering*
- FISHER, JAMES HAYDEN, 1953.....*Assistant Professor of Electrical Engineering*
B.S. in M.E., 1944, B.S. in E.E., 1947, Washington; M.S. in M.E., 1950,
Ph.D., 1953, Purdue
- 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
- HASSERDJIAN, GERARD, 1954.....*Instructor in Electrical Engineering*
B.S. in E.E., 1950, M.E.E., 1954, Rensselaer Polytechnic Institute
- HELD, GEDALIAHU, 1954.....*Assistant Professor of Electrical Engineering*
M.S., 1950, Hebrew University, Israel; Ph.D., 1954, California
- HILL, WILLIAM RYLAND, JR., 1941 (1953).....*Professor of Electrical 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
- ISHIMARU, AKIRA, 1954.....*Instructor in Electrical Engineering*
B.S. in E.E., 1951, Tokyo
- LEACH, PAUL CLARK, 1954.....*Instructor in Electrical Engineering*
B.S. in E.E., 1949, Washington
- LEWIS, LAUREL JONES, 1946 (1954).....*Professor of Electrical Engineering*
A.B., 1933, E.E., 1935, Ph.D., 1947, Stanford
- LINDBLOM, ROY ERIC, 1924 (1945).....*Professor of Electrical Engineering*
B.S. in E.E., 1922, M.S. in E.E., 1929, Washington
- LOEW, EDGAR ALLAN, 1909 (1948).....*Professor Emeritus of Electrical Engineering;*
B.S. in E.E., 1906, E.E., 1922, *Dean Emeritus of the College*
Wisconsin *of Engineering*
- LOOMIS, GORDON JAMES, 1948 (1951).....*Instructor in Electrical Engineering*
B.S. in E.E., 1944, B.S., 1954, Washington
- ROBBINS, FLOYD DAVID, 1946 (1951).....*Assistant Professor of Electrical*
B.S. in E.E., 1925, E.E., 1949, Washington *Engineering*
- ROGERS, WALTER EDWIN, 1946 (1952).....*Associate Professor of Electrical*
B.S. in E.E., 1934, California; M.S. in E.E., 1948, Washington *Engineering*
- RUSTEBAKKE, HOMER MARTIN, 1947 (1949) (On Leave).....*Assistant Professor*
B.S., 1941, Polytechnic College of Engineering; *of Electrical*
M.S., 1945, Pittsburgh *Engineering*
- SAUGEN, JOHN LOUIS, 1955.....*Instructor in Electrical Engineering*
B.S. in E.E., 1955, Washington
- SCHRADER, DAVID HAWLEY, 1954.....*Instructor in Electrical Engineering*
B.S. in E.E., 1951, Kansas
- SHUCK, GORDON RUSSELL, 1918 (1952).....*Professor Emeritus of Electrical*
B.S. in E.E., 1906, E.E., 1906, Minnesota *Engineering; Research Consultant*
- SMITH, GEORGE SHERMAN, 1921 (1941).....*Professor of Electrical Engineering*
B.S. in E.E., 1916, E.E., 1924, Washington
- SWARM, HOWARD MYRON, 1947 (1951) (On Leave).....*Assistant Professor of*
B.S. in E.E., 1940, M.S. in E.E., 1950, Washington *Electrical Engineering*
- WALL, ROBERT EDGAR, JR., 1954.....*Instructor in Electrical Engineering*
B.S. in E.E., 1949, M.S. in E.E. 1953, Washington
- YOSHINAKA, KENJI, 1954.....*Instructor in Electrical Engineering*
B.S. in E.E., 1954, Washington

GENERAL ENGINEERING

- ALEXANDER, DANIEL EDWARD, 1954.....*Instructor in General Engineering*
B.S. in M.E., 1947, M.S. in M.E., 1954, Washington
- BOEHMER, HERBERT, 1937 (1945).....*Assistant Professor of General Engineering*
Dipl.Engr., 1928, German Technical University; M.S. in A.E., 1933,
Washington

- BROWN, ROBERT QUIXOTE, 1919 (1947).....*Professor of General Engineering*
B.S. in E.E., 1916, Washington
- BURKHEAD, LINGURN HINDE, 1954.....*Acting Assistant Professor of General Engineering*
B.S., 1925, U.S. Naval Academy; M.S. in Naval Architecture, 1930, Massachusetts Institute of Technology
- CRAIN, RICHARD WILLSON, JR., 1954.....*Acting Instructor in General Engineering*
B.S. in M.E., 1953, Washington
- DOTSON, BENNIE FRANK, 1954.....*Acting Instructor in General Engineering*
B.S., 1950, B.S. in M.E., 1954, Washington
- DOUGLASS, CLARENCE EADER, 1939 (1945).....*Assistant Professor of General Engineering*
B.S., 1927, Washington State College
- ENGEL, ERNEST DIRCK, 1934 (1949).....*Associate Professor of General Engineering*
B.S. in E.E., 1930, Washington
- FALKOVICH, OLEG C., 1954.....*Instructor in General Engineering*
B.S. in E.E., 1927, Washington; M.S. in E.E., 1932, California
- GULLIKSON, ALBERT CLARENCE, 1942 (1954).....*Associate Professor of General Engineering*
B.S. in M.E., 1924, M.E., 1938, Washington
- HAMMER, VERNON BENJAMIN, 1947 (1953).....*Assistant Professor of General Engineering*
B.S. in C.E., 1940, Washington; M.S. in S.E., 1941, Harvard
- HENRY, WILLIAM J., 1948.....*Instructor in General Engineering*
B.S. in M.E., 1907, Purdue
- HOAG, ALBERT LYNN, 1946 (1952).....*Assistant 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; Technical and Research Director, Motion Picture Unit Education*
B.S. in Engr., 1926, Washington
- KONICHEK, DORLAND HENRY, 1954.....*Assistant Professor of General Engineering*
B.S. in C.E., 1930, North Dakota State College
- LEUBA, RICHARD JAMES, 1954.....*Instructor in General Engineering*
B.S. in M.E., B.A., 1950, Antioch College
- MACARTNEY, THOMAS WAKEFIELD, 1946 (1952).....*Assistant Professor of General Engineering*
B.S. in C.E., 1939, B.S. in Com.E., 1946, Washington
- MCNEESE, DONALD CHARLES, 1946 (1951).....*Assistant Professor of General Engineering*
B.S. in C.E., 1940, C.E., 1951, Wyoming
- MESSER, ROWLAND ENLOW, 1946 (1953).....*Assistant Professor of General Engineering*
B.S. in M.E., 1935, Washington
- ROGERS, ERNEST HENRY, 1953.....*Instructor in General Engineering*
B.S. in C.E., 1949, Washington
- ROWLANDS, THOMAS MCKIE, 1928 (1954).....*Professor of General Engineering*
B.S. in Nav.Arch. and Marine Engrg., 1926, Massachusetts Institute of Technology
- SEABLOOM, ROBERT WENDELL, 1954.....*Acting Instructor in General Engineering*
B.S. in C.E., 1950, Washington
- SEED, RICHARD WARREN, 1951.....*Lecturer in General Engineering*
B.S. in M.E., 1944, California Institute of Technology; LL.B., 1949, George Washington
- 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; Executive Officer of the Department of General Engineering*
B.S., 1915, Met.E., 1919, Washington
- ZEDRO, JACK RICHARD, 1954.....*Acting Instructor in General Engineering*
B.S. in M.E., 1954, Toledo

HUMANISTIC-SOCIAL STUDIES

- CHAPMAN, STUART WEBSTER, 1947 (1954).....*Professor of Humanistic-Social Studies; Executive Officer of the Department of Humanistic-Social Studies*
A.B., 1927, Boston; Ph.D., 1939, Yale

- ELLIOTT, EUGENE CLINTON, 1953.....*Assistant Professor of Humanistic-Social Studies*
B.A., 1936, M.A., 1941, Washington; Doctor of the University of Paris,
Sorbonne, 1952
- HIGBEE, JAY ANDERS, 1952.....*Instructor in Humanistic-Social Studies*
B.A., 1941, Iowa; M.A., 1949, Washington
- RUSTAD, JOHN RONALD, 1948 (1950).....*Instructor in Humanistic-Social Studies*
B.A., 1948, M.A., 1949, Washington
- SKEELS, DELL ROY, 1946 (1952).....*Assistant Professor of Humanistic-Social Studies*
B.A., 1941, M.A., 1942, Idaho; Ph.D., 1949, Washington
- SOUTHER, JAMES WALTER, 1948 (1953).....*Assistant Professor of Humanistic-Social*
B.A., 1947, M.A., 1948, Washington *Studies; Assistant to the Dean*
- WHITE, MYRON LESTER, 1947 (1950).....*Instructor in Humanistic-Social Studies*
B.A., 1943, Washington

MECHANICAL ENGINEERING

- BALISE, PETER LOUIS, JR., 1953.....*Assistant Professor of Mechanical Engineering*
S.B., 1948, S.M., 1950, Massachusetts Institute of Technology
- CHILDS, MORRIS ELSMERE, 1954.....*Assistant Professor of Mechanical Engineering*
B.S. in M.E., 1944, Oklahoma; M.S. in M.E., 1947, Illinois
- CRAIN, RICHARD WILLSON, SR., 1936 (1953).....*Associate Professor of Mechanical*
B.S. in E.E., 1930, B.S. in M.E., 1932, Colorado Agricultural Engineering
and Mechanical College; 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
- EASTWOOD, EVERETT OWEN, 1905 (1947).....*Professor Emeritus of Mechanical*
C.E., 1896, B.S., 1897, A.B., 1899, A.M., 1899, Virginia; Engineering;
B.S., 1902, Massachusetts Institute of Technology Research Consultant
- FIREY, JOSEPH CARL, 1954.....*Assistant Professor of Mechanical Engineering*
B.S. in M.E., 1940, Washington; M.S. in M.E., 1941, Wisconsin
- GUIDON, MICHAEL, III, 1946 (1951).....*Assistant Professor of Mechanical*
B.S. in M.E., 1942, Lehigh; M.S. in M.E., 1952, Washington Engineering
- HENDRICKSON, HAROLD MARTIN, 1949 (1950).....*Associate Professor of Mechanical*
B.S. in M.E., 1927, M.E., 1935, M.S. in M.E., 1954, Washington Engineering
- HOLT, RICHARD EDWIN, 1954.....*Instructor in Mechanical Engineering*
B.S. in M.E., 1947, Washington
- KONECNY, ANTHONY RUDOLPH, 1951.....*Instructor in Mechanical Engineering*
B.S. in M.E., 1950, Illinois
- MCINTYRE, HARRY JOHN, 1919 (1943).....*Professor of Mechanical Engineering*
B.S. in M.E., 1915, M.B.A., 1923, Washington
- MCMINN, BRYAN TOWNE, 1920 (1946).....*Professor of Mechanical Engineering;*
B.S. in M.E., 1918, Oregon State *Executive Officer of the Department of*
College; M.S. in M.E., 1926, M.E., 1931, Mechanical Engineering
Washington
- 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 (1949).....*Assistant Professor of Mechanical*
B.S. in M.E., 1943, Virginia Polytechnic Institute; M.S. in Engineering
M.E., 1954, Washington
- NORDQUIST, WILLIAM BERTIL, 1947 (1949).....*Assistant Professor of Mechanical*
B.M.E., 1941, Rensselaer Polytechnic Institute; M.S., 1946, Engineering
Massachusetts Institute of Technology
- OWENS, BERL WINFIELD, 1948 (1953).....*Assistant Professor of Mechanical*
B.Aero.E., 1944, Minnesota; M.S. in M.E., 1953, Washington Engineering
- SCHALLER, GILBERT SIMON, 1922 (1937).....*Professor of Mechanical Engineering*
B.S. in M.E., 1916, Illinois; M.B.A., 1925, Washington

SNYDER, WILLIAM ARTHUR, 1940 (1949)..... *Assistant Professor of Mechanical Engineering*
 B.M.E., 1939, Minnesota
 WAIBLER, PAUL JOHN, 1954..... *Assistant Professor of Mechanical Engineering*
 B.S. in M.E., 1943, Kansas State College; M.S. in M.E., 1944, Yale
 WATSON, WARREN KENNETH, 1948 (1952)..... *Assistant Professor of Mechanical Engineering*
 B.S. in M.E., 1943, Washington State College
 WINSLOW, ARTHUR MELVIN, 1918 (1952)..... *Professor Emeritus of Mechanical Engineering; Research Consultant*
 Ph.B., 1903, Brown; B.S., 1906, Massachusetts Institute of Technology
 ZYLSTRA, LAURENCE BERNARD, 1949 (1954)..... *Assistant Professor of Mechanical Engineering*
 B.S. in M.E., 1950, Washington; M.S. in M.E., 1951, Illinois

MINERAL ENGINEERING

ANDERSON, DONALD LORRAINE, 1947 (1953)..... *Assistant Professor of Mining Engineering*
 B.S. in Min.E., 1938, St. Francis Xavier; M.S. in Min.E., 1941, Illinois
 BAUER, WOLF, 1954..... *Lecturer in Ceramic Engineering*
 B.S. in Cer.E., 1935, Washington
 BRIEN, FREDERICK BLYTH, 1954..... *Assistant Professor of Mineral Engineering*
 B.S. in Min.E., 1950, Alberta; M.S. in Mineral E., 1951, Columbia
 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
 GLEASON, DAVID SOLBERG, 1954..... *Assistant Professor of Metallurgical Engineering*
 B.S. in Met.E., 1949, M.S. in Met.E., 1951, Montana School of Mines
 MUELLER, EDWARD EUGENE, 1953..... *Assistant Professor of Ceramic Engineering*
 B.S. in Cer.E., 1948, Missouri School of Mines; M.S. in Cer.E., 1952, Ph.D., 1953, Rutgers
 MUELLER, JAMES IRVING, 1949 (1951)..... *Associate 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
 ROBERTS, EARL CHAMPION, 1954..... *Associate 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
 SHOFFNER, JAMES EMMETT, JR., 1953..... *Instructor in Ceramic Engineering*
 B.S. in Cer.E., 1943, North Carolina State College

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
 HEMENWAY, ISABEL W., 1947 (1951)..... *Editor*
 B.A., 1909, Nebraska; M.A., 1912, Chicago

NORTHWEST EXPERIMENT STATION, UNITED STATES BUREAU OF MINES

CAMPBELL, ROBERT J., JR., 1948..... *Chemical Engineer*
 B.S., 1939, Oregon State College
 CENTENERO, ANTHONY D., 1937..... *Analytical Chemist*
 B.S., 1934, Washington
 GEER, MAX RICHARD, 1935..... *Mining Engineer; Lecturer in the School of Mineral Engineering*
 B.E.M., 1934, Ohio State; M. S., 1935, E.M., 1943, Washington
 JOHNSON, KENNETH A., 1925..... *Chemist*
 B.S., 1923, Washington

KELLY, HAL JOSEPH, 1944	Metallurgical Engineer;
B.S., 1934, Washington	Lecturer in the School of Mineral Engineering
YANCEY, HARRY F., 1925	Supervising Engineer;
B.A., 1913, M.A., 1915, Missouri;	Lecturer in the School of Mineral
Ph.D., 1923, Illinois	Engineering

FACULTY OF RESERVE OFFICERS TRAINING PROGRAMS

AIR SCIENCE

ALDRICH, M/SGT. LYNN COOLEY, 1954	Instructor in Air Science
ANDERSON, T/SGT. MYLES THOMAS, 1954	Instructor in Air Science
ASPER, CAPT. ORLANDO CARTFORD, 1954	Assistant Professor of Air Science
B.A., 1947, Pacific Lutheran College	
BENSEN, MAJ. GARFIELD ROLAND, 1951	Assistant Professor of Air Science
B.A., 1953, Washington	
BOUCHER, LT. COL. ERNEST JOSEPH, 1951	Assistant Professor of Air Science
A.B., 1935, California	
CRAIG, M/SGT. JACK, 1954	Instructor in Air Science
DEMPESEY, T/SGT. JOHN ALEXANDER, 1953	Instructor in Air Science
DIETZ, COL. GEORGE HENRY, 1950	Professor of Air Science
B.S., 1925, Washington	
DOUGLASS, MAJ. CLYDE DAVID, 1953	Assistant Professor of Air Science
EASTES, M/SGT. LOWELL MERRILL, 1952	Instructor in Air Science
ENTWISTLE, MAJ. HARRY GRANT, 1952	Assistant Professor of Air Science
B.A., 1939, Ohio; M.A., 1948, Ohio State	
OTTO, C.W.O. MARVIN HENRY, 1952	Assistant Professor of Air Science
PENIX, LT. COL. GUYMON, 1954	Assistant Professor of Air Science
B.A., 1949, Stanford	
SMITH, S/SGT. DONALD EUGENE, 1955	Instructor in Air Science
SPENCER, MAJ. UTLEY, 1954	Assistant Professor of Air Science
B.S., 1942, Memphis State College	
STILWELL, T/SGT. DONALD JOHN, 1952	Instructor in Air Science
SUNDSTROM, M/SGT. DONALD HERBERT, 1953	Instructor in Air Science
TEEPLE, MAJ. BUCKNER BURRIS, 1952	Assistant Professor of Air Science
B.A., 1940, Kansas City	
TWETEN, MAJ. WAYNE BEVERLY, 1952	Assistant Professor of Air Science
VALENTINE, CAPT. EDWIN ALEXANDER, 1951	Assistant Professor of Air Science
B.A., 1947, Pacific Lutheran College; M.A., 1950, Washington	
VOIGT, M/SGT. HOWARD WESLEY, 1954	Instructor in Air Science
WATTS, M/SGT. FRANKLYN WILLIAM, 1953	Instructor in Air Science
WILSON, CAPT. ROBERT CRANE, 1951	Assistant Professor of Air Science
B.A., 1947, Pomona College	
WOOD, MAJ. CRISPIN MELTON, 1951	Assistant Professor of Air Science
B.S., 1949, California State Polytechnic College	

MILITARY SCIENCE AND TACTICS

ATHANASON, CAPT. FRANK ARTHUR, 1953	Assistant Professor of Military
	Science and Tactics
BARNETT, CAPT. PORTER LEE, 1954	Assistant Professor of Military
B.S., 1950, Tennessee	Science and Tactics
CAMUNEZ, CAPT. ARTHUR DAVID, 1953	Assistant Professor of Military
	Science and Tactics
CRAIG, LT. COL. JAMES TERRY, 1953	Assistant Professor of Military
B.S., 1938, United States Military	Science and Tactics
Academy; M.B.A., 1947, Alabama	
HEXT, MAJ. CHARLES MILTON, 1952	Assistant Professor of Military
	Science and Tactics

McGUIRE, MAJ. PAUL MELVILLE, 1954..... *Assistant Professor of Military
B.A., 1938, New Mexico College of Agricultural and Science and Tactics
Mechanic Arts; M.A., 1941, Texas Technological College; A.M., 1949, Missouri*

REES, MAJ. JAMES BEARD, 1953..... *Assistant Professor of Military
Ph.B., 1940, Xavier, Cincinnati Science and Tactics*

RUDE, COL. WALTER ALLEN, 1953..... *Professor of Military Science and Tactics
B.S., 1932, United States Military Academy*

SUNSKI, CAPT. CHESTER FRANKLIN, 1953..... *Assistant Professor of Military
Science and Tactics*

WEEMS, MAJ. MINER LILE, 1952..... *Assistant Professor of Military
B.A., 1954, Washington Science and Tactics*

ZITZER, LT. COL. FREDERICK, 1952..... *Assistant Professor of Military Science and
B.S. in E.E., 1938, Oregon State College; Tactics
M.S. in C.E., 1947, Texas Agricultural and Mechanical College Systems*

NAVAL SCIENCE

BAILEY, BM1 WALTER HENRY, 1954..... *Instructor in Naval Science*

BARCLAY, QMCA GORDON JAMES, 1954..... *Instructor in Naval Science*

FOSTER, CAPT. JOHN GOLDEN, JR., 1954..... *Professor of Naval Science
B.S., 1926, U. S. Naval Academy*

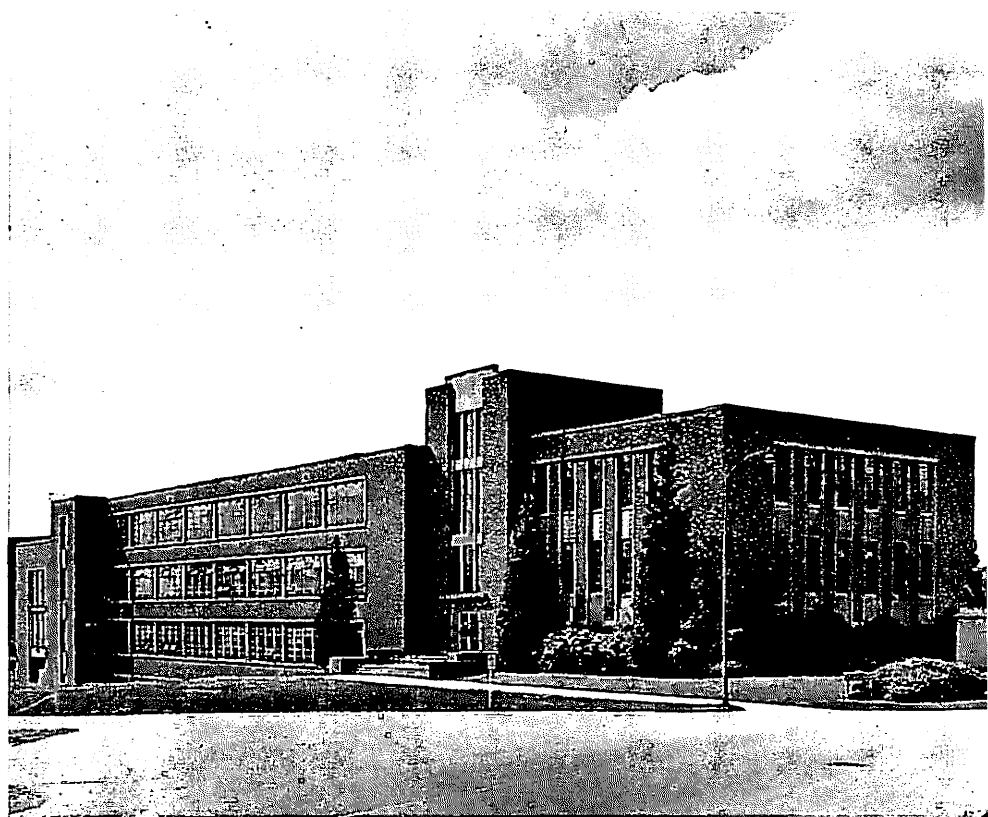
HANLEY, LCDR ROBERT TIMOTHY, 1955..... *Associate Professor of Naval Science
B.S., 1941, Montana School of Mines*

JOHNSON, LT.JG KENNETH HARLAN, 1954..... *Assistant Professor of Naval Science
B.B.A., 1952, University of Minnesota*

LARSON, SKC MAYNARD CARLTON, 1954..... *Instructor in Naval Science*

MESSINGER, GMC RAYMOND ELWIN, 1954..... *Instructor in Naval Science*

PECK, MAJ. RICHARD CLAYTON, 1954..... *Assistant Professor of Naval Science
F.S., 1942, Rhode Island State College*



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 Aeronautical 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.

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 members. In 1954 some nineteen hundred undergraduate and two hundred graduate students were enrolled in engineering curricula.

BUILDINGS AND FACILITIES

The departments of the College of Engineering occupy six major campus buildings: More Hall (Civil), Hydraulics Laboratory (Civil), Electrical Engineering Building, Roberts Hall (School of Mineral Engineering), Guggenheim Hall, (Aeronautical and Mechanical Engineering), and Engineering Hall (Mechanical Engineering and Humanistic-Social Studies). In addition to numerous smaller isolated laboratories, substantial portions of the following buildings are also used: Bagley Hall (Chemical Engineering), Miller Hall (General Engineering), and Engineering Shops (Mechanical Engineering). Brief descriptions of the departmental facilities are given in the following paragraphs.

AERONAUTICAL ENGINEERING

Six different wind tunnels, including a small supersonic laboratory, are available for class instruction and research in the field of aerodynamics. The F. K. Kirsten Aeronautical Laboratory, largest of the wind tunnels, has been used for aerodynamic research and industrial testing since it was completed in 1937. It has a test section measuring 8 by 12 feet and a maximum air speed of 250 mph. Special laboratory equipment is available for studying the behavior of typical aircraft structures under load. Universal testing machines ranging in load capacity from 60,000 to 2,400,000 pounds are available in the Civil Engineering Structural Research Laboratory.

The Department maintains a well-equipped and well-staffed machine and model shop which assists students constructing equipment for research or special projects.

CHEMICAL ENGINEERING

The Department of Chemical Engineering is in 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 operations laboratory has pilot-plant-size equipment for study of chemical processing. Complete equipment is available for study of paper pulping processes on a pilot-plant basis and for laboratory investigations of electrochemistry. Machine, instrument, and glass-blowing shops staffed by full-time employees are maintained. A wide variety of special equipment for research is used by seniors and graduate students for thesis investigations, and a branch library in Bagley Hall houses a special collection of reference books and periodicals.

CIVIL ENGINEERING

More Hall, the civil engineering building, has modern structural, concrete, mineral aggregates, soil mechanics, bituminous and sanitary engineering laboratories. The structural laboratory contains a 2,400,000-pound testing machine with 120 inches between screws, a number of smaller machines ranging in capacity from 60,000 to 300,000 pounds, and complete electronic apparatus for stress and strain measurements. The concrete laboratory has facilities for making, curing, and test-

ing concrete specimens. The aggregates laboratory houses apparatus for testing the hardness, soundness, and wearing qualities of rock and for control of grading. The soil mechanics laboratory is of top rank in this field, and is equipped for all generally recognized tests encountered in foundation and earthwork engineering.

The bituminous laboratory contains apparatus for the usual tests required of asphaltic road building materials and is exceptionally well equipped for research in the design of stable bituminous surfacings. A complete sanitary engineering laboratory for the chemical, bacteriological, and microscopic analysis of water, sewage, and industrial wastes is available for study and professional research. The Charles W. Harris Hydraulics Laboratory, on the shore of Lake Union, is equipped with the latest facilities for investigations and laboratory studies of many problems in experimental hydraulics and water power. It is supplemented by a half-acre outdoor laboratory for construction and study of models of river channels.

ELECTRICAL ENGINEERING

The Department of Electrical Engineering is in Electrical Engineering Hall, a new three-story building of very modern design. The main laboratories are classified as follows: electrical machinery, communications, micro waves, servomechanisms, transients, impulse generator (high-voltage), power transmission line, illumination, industrial control, and electrical measurement. Smaller laboratories are available for research and special uses.

The large machinery laboratory is exceptionally well equipped for the study and testing of direct- and alternating-current motors and generators, transformers, induction regulators, and other auxiliary equipment. Experiments involving the operation of electrical machines are also run in the adjacent industrial controls laboratory, where power rectifiers, electronic apparatus, relays, and other control devices are available. The communications laboratory has the latest facilities for the study of vacuum-tube and transistor circuits and equipment; wire transmission, including line characteristics, filters, and other terminal apparatus; and ultra-high-frequency theory and practice. The electrical measurements laboratory is equipped for measuring a wide variety of electrical and magnetic quantities in addition to the basic measurement of voltage, current, and power.

The other laboratories are used in senior elective courses and graduate instruction. Included among the special laboratories are ten rooms which accommodate from two to six students each and are used for work on special problems and for graduate research. One of these laboratories, which is in a penthouse on the roof, is especially designed to house radio transmitting equipment; antenna towers are on the roof nearby. Other laboratories contain computers and a free-field sound room, and one room is assigned to the Department's amateur radio club.

GENERAL ENGINEERING

The Department of General Engineering is on the third and fourth floors of Miller Hall. In addition to twelve well-equipped and well-lighted classrooms for drafting and computation courses, there are a sound projection room seating 125, a library and study room, and a blueprinting room with a high-speed printing and developing machine.

HUMANISTIC-SOCIAL STUDIES

The Department of Humanistic-Social Studies is unusually well provided with modern equipment to supplement conventional teaching methods. Foremost among its facilities is a library of its own, stocked with books in a wide variety of non-technical fields. These volumes are on open shelves, readily accessible to students who wish to browse. The library also has a collection of records for circulation. The Department maintains a projection room and a music room, with equipment for most of the audio-visual activities now common in teaching, including the recording and playing back of students' talks. All of these facilities are steadily being expanded and improved.

MECHANICAL ENGINEERING

Mechanical engineering laboratory facilities are in three main groups. One group serves the classes in manufacturing methods and includes modern equipment for the foundry, weldery, and machine shop; several special machines are included in this tooling. Testing and gauging apparatus includes physical testing equipment for foundry and core sands, together with interferometer and other precision measuring equipment.

A second laboratory is equipped to exemplify practices and to provide for research projects in the heat-power field. It contains all of the common types of heat-power and refrigeration machines, steam engines and turbines, gas, gasoline, and diesel engines, with the necessary auxiliary equipment, such as dynamometers, condensers, and heat exchangers, for the study of heat balances. Facilities are available for determining heat transfer coefficients for structural panels and for solar-heat studies. A gas turbine unit is arranged with complete instrumentation for a wide range of tests, with provision for alternate combustion chambers and for water injection. A nonoperating turbo-jet unit and a pulse-jet unit are available for study. Auxiliary equipment for flame propagation investigations in jet combustion chambers is available, and equipment for standard tests on centrifugal fans is also part of this laboratory. An adjunct laboratory is equipped for the testing of lubricating oils and fuels.

A third laboratory provides for the study of engineering materials, experimental stress analysis, instrumentation, and vibration. Its materials-testing facilities include universal testing machines, a torsion machine, an impact machine, fatigue-testing machines, hardness testers, metallographic equipment, and apparatus for crack-detection by magnetic-particle inspection, dye-penetrant inspection, fluorescent penetrant inspection, and electrostatic particle inspection. The materials laboratory also has equipment for X-ray radiography and for molding small plastic parts. The facilities for experimental stress analysis include mechanical and electrical strain gauges and associated equipment, photoelastic apparatus, and a brittle-lacquer unit for determining stress concentration. There is also an interferometer-type strain-gauge calibrator. The instrumentation laboratory includes facilities for the experimental study of automatic control. The vibration laboratory has a balancing machine, a torsigraph, vibrometers, and special models and assemblies for the study of vibration phenomena.

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 microscope 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 metallurgi-

cal 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; and a metallographic laboratory with several dark rooms. A nondestructive inspection laboratory provides training facilities in examination of manufactured articles by X-ray and other special techniques. Alloys are prepared in a 17-Kva induction furnace. The advanced physical metallurgy laboratories feature a diffraction X-ray unit with recording goniometer, micro-hardness testing, and controlled-atmosphere heat-treating furnaces. A well-equipped foundry with a cupola and electric melting furnaces is available in conjunction with courses in foundry. Frequent field trips are made to plants of the diverse metal industry of western Washington.

MINING ENGINEERING. Laboratories of the Division of Mining Engineering include full-scale commercial equipment supplemented by laboratory testing machines of the latest design. Mining practices are studied with the aid of models, maps, and frequent field trips. A full equipment catalogue file enables the student to relate class problems to field practice. 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 large, well-equipped flotation and magnetic separation laboratory is maintained. A complete pilot plant treating 50 pounds of feed per hour, with equipment units movable so that any suitable flow through the plant can be arranged, is used in studying advanced milling problems. Commercial-size machines are used for large batch testing. A crushing and screening laboratory and a sampling room complete the special laboratory facilities. A wide variety of ores are in storage and available for experimental testing. In cooperation with the U. S. Bureau of Mines, the School 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.

ENGINEERING EXPERIMENT STATION

Most engineering research is carried on under the direction of the departments in cooperation with the Engineering Experiment Station, which administers a budget for research and the publication of significant results. More than thirty research projects are currently in progress, the majority of them financed by the University through the departments or the Experiment Station and the others done under contract for outside sponsors. Investigations are carried on by graduate research fellows under the supervision of the teaching faculty.

ADMISSION

The University Board of Admissions gives first preference to applications from legal residents of Washington and Alaska and from sons and daughters of University alumni. The College of Engineering, however, like most colleges in the University, admits qualified out-of-state students and encourages those with good scholarship records to apply.

Admission to the College is on a selective basis. Each applicant is considered on the strength of his previous record, with special attention to proficiency in English, mathematics, chemistry, and physics.

Applications for admission must be submitted by prescribed deadlines and must be substantiated by certain credentials and reports submitted in accordance with University rules and practices. It is important that the student's application be submitted by the proper time, for the University can accept no responsibility for applicants who come to the campus before their credentials have been forwarded or before they have been notified of acceptance.

Correspondence regarding requirements for admission to and graduation from any college or school of the University should be addressed to the Registrar.

It is the student's responsibility to make sure that complete credentials covering all his previous secondary and college education are submitted to the University. To be official they must be forwarded by the principal or registrar of the last school 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.

For admission in Autumn Quarter, the required credentials should be forwarded after high school graduation and before July 15. *The last day for new students to submit applications with complete credentials for admission in Autumn Quarter is August 26, 1955, August 31, 1956, or August 30, 1957.* For admission in the other quarters, applications and credentials should be submitted at least thirty days before the opening of the quarter. This applies to all new students seeking admission as graduates or undergraduates. *It is imperative that students observe this deadline in order to insure prompt attention to credentials and replies to correspondence.*

Before notice of admission is given, a medical questionnaire, on a form supplied by the Registrar, is issued to new out-of-state students. This should be completed by a doctor of medicine and returned by him to the Registrar's Office.

ADMISSION FROM ACCREDITED HIGH SCHOOLS

Graduates who earn diplomas of graduation from accredited high schools and who meet the University unit and scholarship requirements for entrance are eligible for admission as freshmen with regular standing.

No out-of-state student will be accepted for admission who would not be acceptable to the university of his own state (see Preparatory Classification, page 27).

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

UNIT REQUIREMENT. The University unit¹ requirement is 16 high school units (or 15 units exclusive of activity credit in physical education, debate, etc.) with

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

grades certifiable for university entrance. No unit which received lower than the lowest passing grade as defined by the high school itself may be included in the required total. A unit equals 2 semester credits or one full year of high school study.

REGULAR CLASSIFICATION. Graduates of accredited high schools who meet University entrance requirements are eligible for admission as freshmen with regular standing in the College of Engineering provided that: (a) they have a cumulative grade-point average of 2.50 (C plus) or better; (b) they present 16 high school units conforming to the following subject matter requirements:

Elementary algebra	1 unit	Chemistry	1 unit
Advanced algebra	$\frac{1}{2}$ unit	English*	3 units
Plane geometry	1 unit	Other academic	
Trigonometry	$\frac{1}{2}$ unit	subjects	3 units
Physics	1 unit	Electives**	5 units

*Effective September, 1958, the English requirement will be increased to $3\frac{1}{2}$ units and "other academic subjects" reduced to $2\frac{1}{2}$ units.

**The elective units may be entirely vocational or entirely academic or a combination of both. Formerly, a maximum of 7 vocational units was allowed, but this has been reduced to 5 units effective September, 1956.

Students who meet all of the above requirements except those in chemistry and trigonometry will be admitted with provisional status until these deficiencies are removed.

PREPARATORY CLASSIFICATION. A limited number of graduates from accredited high schools and transfers from accredited colleges with a grade-point average between 2.20 and 2.50 may, if they have 1 unit each in elementary algebra, plane geometry, and a natural science, be admitted to the preparatory division of General Engineering. They will remain in this division until they have made up their deficiencies and been accepted as students with regular standing. First-year algebra and plane geometry are offered through the University Division of Adult Education. These two courses satisfy entrance requirements but do not carry credit toward graduation.

Veterans or mature students, if accepted by the Admissions Board, may also be admitted to the preparatory division of General Engineering, provided they present 1 unit each of elementary algebra, plane geometry, and a natural science.

Graduates of accredited high schools in Washington and Alaska whose grade-point average is below 2.20 may petition the Board of Admissions for entrance on probation, if they meet all unit requirements for admission to the University and the College. A petition for admission on probation must be accompanied by evidence that the applicant is able to do better work than is indicated by his high school record.

The student who is admitted on probation may continue his attendance at the University at the discretion of the dean of his college but may not (1) be pledged to or initiated into a fraternity or sorority, or engage in those other student activities in which his right to participate is restricted by the regulations of the Committee on Student Welfare; (2) engage in those athletic activities in which his right to participate is restricted by the regulations of the University Athletic Committee. He will be removed from probation when he has earned a minimum of 12 academic credits with a 2.20 grade average, except that if he carries less than 12 hours in one quarter, he may not be removed from probation unless he has earned at least a 2.20 average for the current quarter, as well as a minimum cumulative average of 2.20 for his total quarters in attendance. A student removed from probation under these provisions then is subject to the regular scholarship rules.

Students must possess a good working knowledge of both algebra and trigonometry at the beginning of their course. Qualifying examinations in algebra and trigonometry are required by the Mathematics Department before registration for

college algebra. This is to ascertain the student's present knowledge of and ability to use this subject matter. An adequate review in these subjects shortly before taking the examination is strongly advised. See information included with admission slip concerning dates for these tests.

No foreign language is required for admission, but students who take a foreign language in high school will find German or French the most useful in an engineering career.

ADMISSION BY EXAMINATION

Graduates of nonaccredited high schools in Washington and Alaska may petition the Board of Admissions for permission to enter if they meet other entrance requirements and are recommended by their high school principals. The Board will require these students to take special entrance examinations.

Prospective students who are not high school graduates must pass College Entrance Board Examinations and must meet without deficiency entrance requirements for admission to the University and the College. Those who plan to take entrance examinations should write for information to the Educational Testing Service, Box 592, Princeton, New Jersey, or Box 9896, Los Feliz Station, Los Angeles 27, California.

ADMISSION WITH ADVANCED UNDERGRADUATE STANDING

Students in other institutions who plan to transfer to the College of Engineering are urged to pattern their schedules after one of the curricula in this College so that they can transfer as many credits as possible.

Applicants are admitted to the University and to the College of Engineering by transfer from accredited colleges, universities, and junior colleges under these conditions:

1. Credits for engineering courses may be transferred only from accredited engineering schools.

2. The applicant must present an admission and scholastic record equivalent to that required of resident students of the University. In general, the University will not accept a student who is in scholastic or disciplinary difficulty at his former school. Failure to present full transcripts will be considered a serious breach of honor and may result in permanent dismissal from the University.

3. Applicants who have completed a year or more of college work must have a 2.30 (C plus) grade-point average in their entire college records and in the last term. Those with less than a year of college work must have a 2.30 (C plus) average in both their college and high school records.

4. Complete transcripts and letters of honorable dismissal must be sent directly to the University Registrar by the registrar of the former school.

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

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

7. A maximum of 45 credits earned in extension and correspondence courses at other institutions may be transferred, but none of these credits can apply toward

the work of the senior year. Extension and correspondence credits from schools that are members of the National University Extension Association are accepted without examination; credits from schools that are not members are accepted only after examination.

8. Credits earned in extension 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 correspondence credits is acceptable; the 90 credits may include the 45 extension or correspondence credits allowable from other institutions or may consist entirely of courses taken in this University's Division of Adult Education. All credits earned by advanced-credit examination and all acceptable Armed Forces training school credits must be counted in the 90-credit maximum. Up to 10 extension or correspondence credits from this University can apply toward the work of the senior year.

9. The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted. Definite advanced standing is not determined until 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. No credit will be allowed in the senior year.

For work done 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.

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

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Students educated entirely or partially in foreign countries must meet the same general requirements as those educated in American schools and must demonstrate a satisfactory command of the English language. The official record of Canadian students is the matriculation certificate or university admission certificate of their province. A student who has graduated from a school system that provides less than twelve years of instruction may be required to take additional high school work. Students who have been in university attendance must have official transcripts forwarded (see Admission, page 26).

ADMISSION OF SPECIAL STUDENTS AND AUDITORS

Persons twenty-one or over who are legal residents of Washington or Alaska and are not eligible for admission as regular students may apply to the Board of Admissions for 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 requirements for admission to the College, special students may change their status to that of regular students and may receive degrees.

Persons twenty-one or over may register as auditors in nonlaboratory courses or the lecture parts 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. Students who have been dropped for low scholarship or new applicants may not register as auditors until they have been reinstated or accepted in some college of the University.

ADMISSION WITH GRADUATE STANDING

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. Requirements and procedures for admission to the Graduate School are outlined in the *Graduate School Bulletin*, and course requirements for the various degrees are outlined in the departmental announcements (see pages 39-80).

WORLD WAR II AND KOREAN VETERANS

ADMISSION

The University welcomes veterans under the G.I. Bill, the Vocational Rehabilitation Act, and the Korean Bill, provided they can meet the University of Washington entrance requirements.

ENTITLEMENT TO EDUCATIONAL BENEFITS

Veterans who are accepted for entrance to the College of Engineering and who expect to study under the provisions of Public Laws 16, 894, or 346 should apply to a Veterans Administration regional office for a Certificate of Eligibility at least one month prior to registration. This certificate should be presented at the Veterans Division, 1B Administration Building, the day of registration. Those who do not have this certificate at the time they register must pay all charges; they will receive refunds when authorization from the Veterans Administration is established.

Korean veterans entering under the provisions of Public Law 550 should apply to a Veterans Administration regional office for a Certificate for Education and Training at least one month prior to registration. This certificate should be presented at the Veterans Division, 1B Administration Building, the day of registration or during the first week of instruction. Under this law students receive an educational allowance and pay their own tuition and fees. Korean veterans should be prepared to meet all their own expenses as well as the cost of tuition, fees, and supplies for at least two months. Educational allowances are not paid until a full month's attendance has been established.

REGISTRATION

All students must have definite registration appointments each quarter. New students are given appointments when they are notified of admission and 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) may obtain registration appointments by writing or telephoning the Registrar's Office at the time specified in the Calendar (see page 4). Students in residence may obtain appointments at the time announced in the Calendar.

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 Dean's consent.

REGULAR STUDENTS

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

ADVISING

After notification of admission and before registration, new freshmen 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.

APTITUDE TESTS

New students of freshman standing (including transfer students with less than 45 quarter credits exclusive of credits in physical education activity and Army, Air Force, and Navy ROTC subjects) will take college aptitude tests at a time to be announced each quarter.

The aptitude tests consist of a battery of several tests selected on the basis of their proven value for the prediction of grades most likely to be earned by each student. Thus, the results of testing may be used in advisement of the student and are used as an aid in assigning students to appropriate sections in English composition and other subjects. Little can be gained by preliminary study for these tests. Sample copies are not available. Special, exchange, and blind students and auditors will be exempted. Also, foreign students who have markedly inadequate previous training in the use of English may be exempted.

MATHEMATICS PLACEMENT AND EXEMPTION TESTS

Students who have taken third-semester algebra in high school and who plan to take Mathematics 104 (Trigonometry) and/or Mathematics 105 (College Algebra) are required to take a placement test before they are permitted to register for these University courses. Students who have taken trigonometry and/or college algebra in high school and whose University courses of study require these subjects may obtain exemption from Mathematics 104 and/or 105 by taking an exemption test. Directions for taking these tests are included in *Registration Information for New Students* which is enclosed with the Notification of Admission blank. Students are advised to review their high school work before taking these tests.

ENGINEERING REPORT WRITING PLACEMENT TEST

All engineering freshmen and other new engineering students who have not passed a college course in English composition must write a paper which is used, along with General Aptitude scores, to determine their readiness to take the course H.-S.S. 265, Techniques of Communication. This paper is in addition to the General Aptitude tests and must be written before registration is completed. Directions for taking this test are included in *Registration Information for New Students* which is enclosed with the Notification of Admission blank.

MEDICAL EXAMINATION

All new students, and all former students who have not attended the University within the preceding calendar year, must take a medical examination, including a chest X ray. For out-of-state students, this examination is in addition to the medical questionnaire required of them as part of the application for admission. An annual chest X ray is required of all students.

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 Announcement*.

Tuition

Resident students, per quarter	\$25.00
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A resident student is one who has been domiciled in Washington or Alaska for at least a year immediately before registration. The domicile of a minor is that of his parents.

Nonresident students, per quarter	75.00
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Prospective students are classified as nonresidents when their credentials come from schools outside Washington and Alaska. If they believe they are residents, they may petition the Nonresident Tuition Office for a change of classification.

Auditors, per quarter	12.00
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Veterans of World Wars I and 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 not 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. Proof of eligibility for this exemption should be presented to the Veterans Division, University Comptroller's Office. Nonresident students who meet one of these requirements pay one-half the nonresident tuition.

This exemption is not granted to Summer Quarter students.

Incidental Fee, per quarter

Full-time resident students	27.50
Part-time resident students (6 credits or less, exclusive of ROTC)	10.00
Full-time nonresident students	52.50
Part-time nonresident students (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), per year	5.00
Good for all athletic events in the school year; must be validated each quarter when fees are paid.	

Military Uniform Deposit, per year

25.00

Paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. See page 84 for limitation on refund to Army ROTC students.

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 Sheet Fee

.25

One grade sheet is furnished each quarter without charge; the fee is charged for each additional copy.

Transcript Fee

.50

One transcript is furnished without charge; the fee is charged for each additional copy. Supplementary transcripts are .25 each.

Graduation Fee

10.00

SPECIAL FEES

From \$2.00 to \$5.00 is charged for late registration; \$2.00 for each change of registration; \$5.00 for a late medical examination; and \$1.00 for a late X ray. The fee for a special examination is \$1.00; for an advanced-credit examination, \$2.00 per credit; and for removal of an Incomplete, \$2.00.

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	\$183.00
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Full-time nonresident student	408.00
<i>Athletic Admission Ticket</i> (optional)	5.00
<i>Accident Insurance</i> (optional)	4.95
<i>Special Fees and Deposits</i>	38.50
Military uniform deposits, breakage ticket, and locker fees.	
<i>Books and Supplies</i>	75.00
<i>Board and Room</i>	
Room and meals in Men's Residence Hall	570.00
Room and meals in Women's Residence Halls	525.00 to 600.00
Room and meals in student cooperative house	445.00 to 460.00
Room and meals in fraternity or sorority house	660.00 to 700.00
Initial cost of joining is not included; this information may be obtained from the Interfraternity or Panhellenic Council.	
<i>Personal Expenses</i>	200.00

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.

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, Phi Beta Kappa, 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.

AWARDS 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. A handbook listing the current awards may be obtained from the Office of the Dean of Students.

Fellowships, scholarships, and awards especially for engineering students are listed below:

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 amount to \$135 a month for twelve months, or a total of \$1,620, and recipients are exempt from tuition fees. 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.

ASPHALT PAVING ASSOCIATION SCHOLARSHIP, \$500. Awarded to graduate student in civil engineering.

ASSOCIATED GENERAL CONTRACTORS' SCHOLARSHIP, \$250. Awarded to two seniors in civil engineering.

SAMUEL G. BAKER AWARD IN CHEMICAL ENGINEERING, \$100. Awarded to outstanding senior student.

BOEING AIRPLANE COMPANY FRESHMAN SCHOLARSHIPS, \$250. Awarded to six freshman students.

BOEING AIRPLANE COMPANY JUNIOR-SENIOR SCHOLARSHIPS, \$500. Awarded to seven junior-senior students in aeronautical, civil, electrical, and mechanical engineering.

BOEING AIRPLANE COMPANY GRADUATE SCHOLARSHIPS, \$1,000. Awarded to three graduate students in aeronautical, electrical, and mechanical engineering.

BOW LAKE EQUIPMENT COMPANY SCHOLARSHIP IN CIVIL ENGINEERING, \$300. For undergraduate students.

DOUGLAS AIRCRAFT COMPANY SCHOLARSHIP, \$600. Awarded to outstanding senior student in aeronautical, electrical, or mechanical engineering.

DOW CHEMICAL COMPANY SCHOLARSHIPS. Tuition scholarship awarded to ten undergraduate students in chemical engineering.

DOW CHEMICAL COMPANY FELLOWSHIP, \$1,650. Awarded to two graduate students in chemical engineering.

ENGINEERING COUNCIL SERVICE AWARD. Awarded to outstanding undergraduate student in the College.

MAJOR REUBEN H. FLEET SCHOLARSHIP IN AERONAUTICAL ENGINEERING, \$500. For undergraduate or graduate students.

HOOVER ELECTROCHEMICAL COMPANY RESEARCH FELLOWSHIP IN CHEMICAL ENGINEERING, \$1,500. For graduate students.

CLIFFORD A. HOULAHAN MEMORIAL SCHOLARSHIP IN CERAMIC ENGINEERING, \$100. For freshman students planning to major in ceramic engineering.

LIVINGSTON WERNECKE MEMORIAL SCHOLARSHIP IN MINERAL ENGINEERING, stipend variable. For undergraduate students, including freshmen.

GLADDING McBEAN & Co. SCHOLARSHIPS IN CERAMIC ENGINEERING, \$350. Two available each year to incoming freshmen, continuing for four years.

GLADDING McBEAN & Co. FELLOWSHIP IN CERAMIC ENGINEERING, \$1,500. For graduate students.

WILLIAM MCKAY SCHOLARSHIP IN MINERAL ENGINEERING, stipend variable. For upper-division undergraduate students.

PROCTER AND GAMBLE COMPANY FELLOWSHIP IN CHEMICAL ENGINEERING, \$1,500. For graduate students.

RAYONIER FOUNDATION SCHOLARSHIP, \$500. Awarded to two outstanding senior students in chemical engineering and mechanical engineering.

RAYONIER FOUNDATION FELLOWSHIP, \$2,500. Awarded to graduate students in chemical engineering.

R.C.A. SCHOLARSHIP IN ELECTRICAL ENGINEERING, \$600. For upper-division undergraduate students.

SQUARE D. SCHOLARSHIP, \$250. Awarded to junior in mechanical engineering.

STANDARD OIL COMPANY TECHNICAL FELLOWSHIP IN CHEMICAL ENGINEERING, \$1,500. For graduate students.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY FELLOWSHIP, \$1,620. For graduate students.

TEXAS COMPANY FELLOWSHIP IN CHEMICAL ENGINEERING, \$1,620. For graduate students.

U.S. BUREAU OF MINES FELLOWSHIPS IN MINERAL ENGINEERING, \$1,875. For graduate students.

WEST COAST ELECTRONIC MANUFACTURERS' SCHOLARSHIP, \$500. For entering freshman, sophomore, or junior transfer student.

WESTINGHOUSE ACHIEVEMENT SCHOLARSHIP IN ELECTRICAL ENGINEERING, \$500. For junior undergraduate students.

An Engineering Student Loan Fund is 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.

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 Dean of Students Office also provides current information on Selective Service regulations.

The Counselor for International Services, a member of the Dean of Students staff, offers 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 counselor. 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 offers vocational and personal counseling to students who need help in their adjustments to college living. The staff of the Center, which includes vocational counselors, psychiatric social workers, and clinical psychologists, works closely with other student facilities on campus and supplements the academic advisory program.

HOUSING

Men students may obtain rooms in the Men's Residence Hall through the Office of Student Residences. Housing for women is available in the Women's Residence Halls on the campus. Interested students should write to the Director of Student Residences or the Business Manager of the Women's Residence Halls. The Student Cooperative Association, 1114 East Forty-fifth Street, Seattle 5, provides housing for men and women students. Information about fraternities may be obtained from the Interfraternity Council; information about sororities from the Panhellenic Council.

It is expected that women students under twenty-one who are not living at home will live in approved group residences, such as the Women's Residence Halls, student cooperatives, Wesley House, and sorority houses. Other living arrangements must be approved by the Office of the Dean of Students.

The Office of Student Residences keeps listings of rooms, rooms with board, housekeeping rooms, and a few apartments and houses. These listings must be

consulted in person. Married students who are veterans of World War II or Korea may apply to this office for accommodations in Union Bay Village, the University's family housing project. Since there is a long waiting list, new students should not rely on the possibility of immediate housing there.

HEALTH CENTER

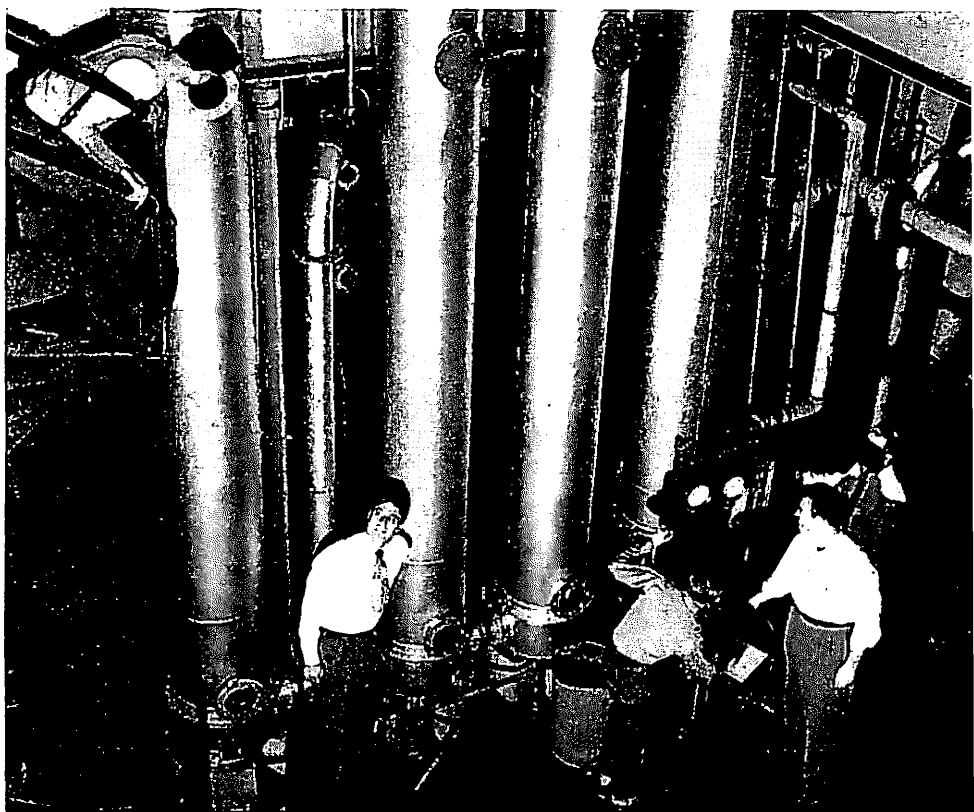
The University maintains a health center and infirmary which help to guard against infectious diseases and incipient ill health.

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 two dollars a day is made. At their own expense, infirmary patients may consult any licensed physician in good standing.

PLACEMENT

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. Placement in jobs on the campus is handled by the Nonacademic 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. 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.



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.

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.

The Department of General Engineering administers the first-year curriculum for the other departments in the College. It provides courses in basic engineering subjects, orientation courses, and advisory services to help freshmen prepare for entrance to their major departments.

The Department of Humanistic-Social Studies offers an integrated sequence of courses in the humanities and the social sciences. These courses are included in all engineering programs of study and do not constitute a separate curriculum.

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.

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 nuclear engineering, 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*.

BACHELOR'S DEGREES

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 39-80). 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. A student may choose to graduate under the graduation requirements of the appropriate school or college bulletin published most recently before the date of his entry into the college in which he is to graduate, provided that not more than ten years have elapsed since that date. As an alternative he may choose to fulfill the graduation requirements of the appropriate school or college bulletin published most recently before the date of his graduation. All responsibility for fulfilling graduation requirements will 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.

MILITARY TRAINING

Male students who enter the University as freshmen or sophomores are required to complete six quarters of military training. Students should meet this requirement during the first two years they are in residence (registered in regular University classes).

Students may meet the military training requirement with courses in the Department of Air Science, Military Science and Tactics, or Naval Science (see pages 81-86).

Exemptions from the requirement are granted to:

1. Students who are twenty-three or over at the time of original entrance.
2. Special students.
3. Part-time students, those registered for 6 credits or less.
4. Students who are not citizens of the United States.
5. Students who because of physical condition are exempted by the University Health Officer.
6. 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.
7. Students who are active members or reserve officers of the Armed Forces or Coast Guard, or commissioned officers of the National Guard.
8. Students who are active enlisted members of the National Guard or of the Organized Reserve of the Armed Forces or Coast Guard at the time of initial entrance.
9. 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.
10. 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 concerned after consultation with the appropriate ROTC commander.

Those who are exempted under paragraph 4, 8, or 10 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

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.

Men students must take one quarter of swimming, unless the required swimming proficiency (exemption) test has been passed. In the other two quarters, a student may elect any activity course he desires, but only one quarter of any one activity can be counted toward graduation. Any freshman or varsity sport may be substituted for any activity course except swimming.

Women students must pass a swimming test. For specific requirements in the other two quarters, students must consult the Women's Physical Education Department.

Exemptions from the activity requirement are granted to:

1. Students who are twenty-five or older at the time of original entrance.
2. Special students.
3. Part-time students, those registered for 6 credits or less.

4. 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 School of Physical Education. All other students who are reported by the University Health Officer as unfitted to join regular classes will be assigned by the Executive Officer of the School of Physical Education to special programs adapted to their needs.

5. Students who are veterans of military service. Complete exemption is granted for six months or more of active service. Veterans with less than six months of service receive no exemption.

6. 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 undergraduates are required to take Physical Education 175, a course in personal health, within the first three quarters of residence. Veterans with six months or more of active service are exempt from this requirement. Other exemptions are by examination and by transfer of credit for a similar course in an accredited college.

Women students who enter the University as freshmen are required to take Physical Education 110, a course in health education, within the first three quarters of residence. This requirement may be satisfied by passing a health-knowledge examination given during the Autumn Quarter registration period for women entering the University for the first time.

SCHOLARSHIP AND MINIMUM CREDITS

The rules of the College of Engineering provide that, as a prerequisite to registration for required junior and senior courses, students must earn a grade-point average of 2.30 in the required courses for the first two years. Grade points are awarded on the following basis: a grade of A earns 4 points; B, 3 points; C, 2 points; and D, 1 point. The grade of E signifies failure and the grade-point equivalent 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.

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). In order to graduate, the student must earn a grade-point average of at least 2.30 in the upper-division subjects in his major

department. 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.

SENIOR-YEAR RESIDENCE

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

ADVANCED DEGREES

Graduate study leading to a Master of Science degree with departmental designation is available in the Departments of Aeronautical, Chemical, Civil, Electrical, and Mechanical Engineering, and in the School of Mineral Engineering through the Divisions of Ceramic, Metallurgical, and Mining Engineering.

The degree of Master of Science in Engineering (without departmental designation) is offered to qualified advanced students whose undergraduate majors have been in departments different from those in which they have worked toward master's degrees, and to students who are doing graduate work in several engineering departments with the approval of advisers in their major departments. This degree may be of particular interest to those students who are planning a program of graduate studies that will prepare them for the field of nuclear engineering. Elective courses in nuclear physics may be incorporated in the study program for such students.

The degrees of Master of Aeronautical Engineering and Master of Electrical Engineering are offered to students who satisfactorily complete an approved two-year program of graduate work in aeronautical or electrical engineering.

Graduate study leading to the Doctor of Philosophy degree is available in chemical, civil, and electrical engineering.

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. The choice of bulletin (see page 40) 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.

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.

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 quarterly *Time Schedule and Room Assignments*.

AERONAUTICAL ENGINEERING

Executive Officer: VICTOR M. GANZER, 207 Guggenheim Hall

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 42), and Master of Aeronautical Engineering.

BACHELOR OF SCIENCE IN AERONAUTICAL ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 58).

First Year		Second Year		Third Year	
FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Civil Engr. 291 Dynamics.	3	Aero. Engr. 200 Intro.	2	Civil Engr. 293 Mechanics.	3
Mech. Engr. 201 Metal Castings	1	Civil Engr. 292 Mechanics of Matls.	3	H.-S.S. 270 Report Writing	2
Mech. Engr. 260 Mechanism	3	H.-S.S. 265 Tech. of Comm.	3	Mech. Engr. 220 Heat Engines	3
Math. 252 Analytic Geom. & Calc.	5	Mech. Engr. 202 Welding	1	Mech. Engr. 340 Engr. Matls.	3
Physics 217 Engr. Physics.	4	Math. 253 Analytic Geom. & Calc.	3	Physics 219 Engr. Physics.	4
ROTC	2-3	Physics 218 Engr. Physics.	4	ROTC	2-3
	16-19	ROTC	2-3		15-18
			16-19		

First Year		Second Year		Third Year	
FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Aero. Engr. 300 Aerodynamics	3	Aero. Engr. 301 Aerodynamics	3	Aero. Engr. 302 Aerodynamics	3
Mech. Engr. 203 Metal Machining	1	Aero. Engr. 330 Aircraft Struct. Anal.	3	Aero. Engr. 320 Aerodyn. Lab.	3
Mech. Engr. 320 Thermodynamics	5	Aero. Engr. 360 Engines	3	Aero. Engr. 331 Aircraft Struct. Anal.	3
Mech. Engr. 361 Machine Design	3	H.-S.S. 331 Hum.-Soc. St.	3	Elect. Engr. 300 Elem. of Elect. Engr.	5
Math. 421 Differential Equations	3	Mech. Engr. 362 Machine Design	3	Mech. Engr. 341 Aircraft Matls.	2
	15		15		16

First Year		Second Year		Third Year	
FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Aero. Engr. 332 Aircraft Struct. Anal.	3	Aero. Engr. -N391 Seminar	0	Aero. Engr.-392 Seminar	1
Aero. Engr. 350 Aircraft Struct. Lab.	2	Aero. Engr. 411 Aircraft Design	3	Aero. Engr. 412 Aircraft Design	3
Aero. Engr. -N390-Seminar	0	H.-S.S. 491 Hum.-Soc. St.	2	Bus. Law 307 Bus. Law	3
Aero. Engr. 410 Aircraft Design	3	Econ. 211 General	3	Hum. Rel. 365 Indust. Rel.	3
Elect. Engr. 400 Vacuum Tubes & Electronics	5	Electives	7	Electives	5
H.-S.S. 332 Hum.-Soc. St.	3		15		15
	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 AERONAUTICAL ENGINEERING. Candidates for this degree must have the degree of Bachelor of Science in Aeronautical Engineering or its equivalent. A total of 36 credits of course work and a thesis, equivalent to 9 credits of course work, are required. Courses 505, 508, 516, -522, 530, 533, 553, 556, 571, 572, and 573 are usually a part of the program. 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. This is a more advanced degree than that of Master of Science in Aeronautical Engineering. A total of 72 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 degree.

COURSES FOR UNDERGRADUATES

- 200 Introduction to Aeronautics (2)** **Staff**
History, sources of information, nomenclature, and a summary of the field of aeronautical engineering showing important differences between it and other engineering fields.
- 300 Aerodynamics (3)** **Staff**
Air properties and their variation with altitude, the continuity and Bernoulli equations; pressure distribution; dimensional analysis and dynamic similarity; aerodynamic characteristics of airfoils in a perfect and real fluid; momentum and circulation theory of lift. Prerequisites, Civil Engineering 291, Physics 217, 218, 219, and Mathematics 251.
- 301 Aerodynamics (3)** **Staff**
Induced effects; airplane efficiency factor; spanwise lift distribution; viscosity and compressibility effects on bodies and in pipes. Prerequisites, 300 and Mechanical Engineering 320.
- 302 Aerodynamics (3)** **Staff**
Parasite drag and power required by an airplane; performance of propeller- and jet-driven aircraft; stability and control. Prerequisite, 301.
- 320 Aerodynamics Laboratory (3)** **Staff**
Laboratory facilities; wind-tunnel-wall corrections; tests of subsonic and supersonic operating characteristics of wind tunnels; pressure distribution and wake tests of two-dimensional airfoils; three-dimensional tests involving model build-up. Prerequisite, 302, which may be taken concurrently.
- 330 Aircraft Structural Analysis (3)** **Weikel**
Statically determinate plane and space trusses; bending stresses in the general unsymmetrical and tapered beam; deflections of determinate trusses and beams; introduction to stressed-skin structures. Prerequisites, Civil Engineering 292 and Mechanical Engineering 340.
- 331 Aircraft Structural Analysis (3)** **Weikel**
Shear stresses in stressed-skin structures; statically indeterminate airplane structures. Prerequisite, 330.
- 332 Aircraft Structural Analysis (3)** **Weikel**
Statically indeterminate rings and frames; buckling and instability problems; fitting analysis. Prerequisite, 331.
- 350 Aircraft Structural Laboratory (2)** **Weikel**
Methods and techniques of aircraft structural testing; laboratory tests of typical structural components 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.
- 380 Aeronautical Engineering Measurements (2)** **Staff**
Problems of instrumentation in the aeronautical laboratory and in flight; analysis, calibration problems, and use of standard and special aeronautical measuring equipment; wind-tunnel balance systems, strain gauges, hot-wire anemometer, flexure pivots, flight instruments, and cathode-ray oscillograph. Prerequisite, senior standing.
- 385 Selected Subjects in Aeronautical Design (2)** **Staff**
Lectures and typical problems presented by men with aeronautical engineering experience. Prerequisite, permission.
- N390-N391-392 Seminar (0-0-1)** **Eastman, Staff**
Preparation and presentation of at least one topic by the student. Prerequisite, senior standing.
- 395 Special Projects (2-5)** **Staff**
An investigation on a special project by the student under the supervision of a staff member. Prerequisite, senior standing.
- 404 Introduction to Theoretical Aerodynamics (3)** **Ganzer, Stroet**
Euler's equations of motion; use of potential and stream functions; sources, sinks, and vortices; three-dimensional flow; two-dimensional flow; theory of airfoils and wings. Prerequisite, Mathematics 253.
- 410 Aircraft Design (3)** **Ganzer, Weikel**
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, Weikel**
Stability and control; elementary dynamics of the rigid airplane; flight and handling loads; CAA load requirements. Prerequisite, 410.
- 412 Aircraft Design (3)** **Ganzer, Weikel**
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)** **Staff**
Tests in the 12-foot wind tunnel for determining performance, stability, and control characteristics of a typical two-engined airplane. Prerequisite, 320.

- 425 Flight Test Laboratory (3)** **Joppa**
Theory of flight test; calibration of flight instruments, performance measurement in flight; reduction of flight test data. Prerequisite, 302.
- 441 Advanced Structural Design (3)** **Weikel**
Comprehensive approach to the aircraft structural design problem; such factors as materials, weight, and aerodynamic considerations will be taken into account. Prerequisite, 332.
- 461 Jet Propulsion (3)** **Ganzer**
Study of jet 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)** **Martin, Street**
Problems in aerodynamics, structures, and dynamics which can be formulated as ordinary differential equations; their solution and interpretation. Prerequisite, Mathematics 421 or permission.
- 480 Elementary Dynamics (3)** **Ganzer, Martin**
Discussion of dynamics problems in aircraft design; equations of motion and solutions for selected problems; response of simple systems to applied loadings. Prerequisite, senior standing.
- 481 Elementary Aero-elasticity (3)** **Ganzer, Martin**
Discussion of aero-elastic problems in aircraft design; elementary development of static and dynamic aero-elastic problems. Prerequisite, senior standing.

COURSES FOR GRADUATES ONLY

- 505 Aerodynamics of Incompressible Fluids (3)** **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.
- 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. Prerequisite, 505.
- 508 Aerodynamics of Compressible Fluids (3)** **Street**
Thermodynamics of ideal gases; isentropic flow in one dimension, shock waves, equations of motion in nonviscous flow; airfoils and wings; similarity laws.
- 509 Aerodynamics of Compressible Fluids (3)** **Street**
Theory of characteristics; equations in the hodograph plane, exact solutions; linearized supersonic flow over wings and bodies of revolution; laminar compressible boundary layer. Prerequisite, 508.
- 513 Heat Transfer in Aeronautics (3)** **Street**
The fundamental laws of heat transfer; temperature boundary layer in laminar and turbulent flow and its relation to the fluid flow; thermal radiation; applications to high-speed aerodynamic heating of aircraft. (Offered when demand is sufficient.) Prerequisites, 506 and Physics 350 or equivalent.
- 516 Stability and Control (3)** **Ganzer**
Aerodynamics of control; the general problem of dynamic stability; the influence of aerodynamic parameters on flying characteristics.
- N520-N521-522 Seminar (0-0-1)** **Staff**
- 530 Theory of Elastic Structures (3)** **Martin, Weikel**
Discussion of stresses, strains, displacements; development of the basic equations of elasticity; principle of virtual work and the energy theorems; approximate methods; application of basic theory in formulating and solving problems in elastic structures.
- 533 Theory of Plasticity (3)** **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.
- 540 Aircraft Structural Problems (3)** **Martin**
Application of the methods of elasticity to aircraft structural problems using original papers and reports as source material; discussion of problems of current interest. (Offered when demand is sufficient.) Prerequisite, 530 or Civil Engineering 572.
- 545 Experimental Stress Analysis (3)** **Martin**
A survey of the experimental methods commonly used in investigating and testing aircraft structures; demonstration experiments; visits to experimental projects and facilities on the campus.
- 550 Dynamics of Aircraft Structures (3)** **Martin**
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, 530, 553, and 572.

- 553 Aircraft Vibrations (3)** **Martin**
Natural frequencies and modes of vibration of simple linear systems; free, damped, and forced vibrations; continuous systems with emphasis on aircraft-type structures; development of Lagrange's equation; matrix methods.
- 556 Aero-elasticity (3)** **Martin**
Two- and three-dimensional flutter theory; aerodynamic forces; flutter stability determinant and its solution; wing divergence and aileron reversal; flutter prevention; control effectiveness. Prerequisite, 553.
- 557 Nonlinear Problems in Airplane Dynamics (3)** **Martin, Street**
The application to aeronautics of nonlinear ordinary differential equations of motion, and the topology of their integral curves in the phase plane; dynamical interpretation of singular points; existence of periodic solutions; questions of stability; nonlinear resonance; frequency demultiplication; relaxation oscillations. (Offered when demand is sufficient.)
- 571, 572, 573 Analysis in Aeronautics (3,3,3)** **Martin, Street**
Mathematical methods for solving problems arising in aeronautical engineering; complex variables, vector analysis, matrices, cartesian tensors, calculus of variations, operational calculus, finite difference methods, partial differential equations, and boundary value problems. Prerequisite, Mathematics 421.
- 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 (2-5)** **Staff**
- Thesis (*)** **Staff**

CHEMICAL ENGINEERING

Executive Officer: 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 42), 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 58).

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. Engr. 271 Intro...	1	Chem. Engr. 272 Intro...	1	Chem. Engr. 273 Intro...	1
Chem. 355 Physical.....	3	H.-S.S. 270 Report		Civil Engr. 292	
H.-S.S. 265 Tech. of		Writing	2	Mechanics of Mats.....	3
Comm.	3	Mech. Engr. 202 Welding ..	1	Chem. 357 Physical.....	3
Math. 252 Analytic		Chem. 356 Physical.....	4	Math. 421 Diff. Equations..	3
Geom. & Calc.....	5	Math. 253 Analytic		Physics 219 Engr. Physics 4	4
Physics 217 Engr. Physics 4		Geom. & Calc.....	3	ROTC	2-3
ROTC	2-3	Physics 218 Engr. Physics 4			
	16-19	ROTC	2-3		14-17
			15-18		

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. Engr. 384 Indust.		Chem. Engr. 385 Chem.		Chem. Engr. 470 Trans.	
Stoichiometry	4	Engr. Thermodynamics ..	4	Process Principles	4
Chem. 335 Organic Chem..	3	Chem. 336 Organic Chem..	3	H.-S.S. 332 Hum.-Soc. St..	3
Chem. 345 Organic		Chem. 346 Organic Chem.		Mech. Engr. 203 Metal	
Chem. Lab.	2	Lab.	2	Mach.	1
Chem. 358 Physical		Chem. 359 Phys. Chem.		Mech. Engr. 361	
Chem. Lab.	3	Lab.	3	Mach. Design	3
Elect. Engr. 300 Elem. of		H.-S.S. 331 Hum.-Soc. St..		Chem. 337 Organic Chem..	3
Elect. Engr.	5		15	Electives	2
	17				16

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. Engr. 471 Unit		Chem. Engr. 472 Unit		Chem. Engr. 473 Unit	
Oper. 3		Oper. 3		Oper. 3	
Chem. Engr. 474 Unit		Chem. Engr. 475 Unit		Chem. Engr. 476 Unit	
Oper. Lab. 2		Oper. Lab. 2		Oper. Lab. 2	
Chem. Engr. 481		Chem. Engr. 482 Organic		Chem. Engr. 483 Process	
Inorganic Chem.		Chem. Processes 3		Design 4	
Processes 3		Chem. Engr. 492 Unit		Chem. Engr. 498 Thesis ... 3	
Chem. Engr. 491 Unit		Processes Lab. 1		H.S.S. 493 Hum.-Soc. St.. 1	
Processes Lab. 1		Chem. Engr. 498 Thesis ... 1		Electives 3	
Chem. Engr. 498 Thesis ... 1		Bus. Law 307 Bus. Law... 3			
H.S.S. 491 Hum.-Soc. St.. 2		Electives 3			
Econ. 211 General 3					
	15		16		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*. 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 36 credits of course work and a thesis. The course work is usually divided in the ratio of about two to one between the major department and other departments. 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)** **David**
Calculation techniques; industrial analysis experiments; plant visits. Prerequisite, sophomore standing or permission.
- N381 Field Trip (0)** **David**
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)** **David**
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)** **David**
Material balances and sources of data therefor. Introduction to first law of thermodynamics. Heat balances; thermophysics and thermochemistry. Prerequisite, 273 or permission.
- 385 Chemical Engineering Thermodynamics (4)** **McCarthy**
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)** **McCarthy**
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.
- 471 Unit Operations (3)** **Johanson**
Applications of transport principles are made to such unit operations as fluid flow, filtration, fluidized beds, heat transfer, and evaporation. Prerequisite, 470.
- 472 Unit Operations (3)** **Moulton**
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.
- 473 Unit Operations (3)** **Johanson**
A continuation of 472. Drying and absorption operations are studied. Chemical reaction kinetics and transport principles are applied to reactor design. Prerequisite, 472.
- 474 Unit Operations Laboratory (2)** **Babb**
The laboratory experiments cover primarily the subject matter of 470. Prerequisite, 470.
- 475 Unit Operations Laboratory (2)** **Babb**
The laboratory experiments cover the subject matter of 471, together with evaporation and instrumentation. Prerequisite, 471.
- 476 Unit Operations Laboratory (2)** **Babb**
The laboratory experiments cover primarily the subject matter of 472 and 473. Prerequisite, 472.
- 477 Advanced Chemical Calculations (3)** **Staff**
Application of differential equations to chemical engineering problems. The use of statistics in the treatment of laboratory data. Graphical representation and the construction and use of nomographs. Prerequisite, Mathematics 253 or permission.
- 481 Inorganic Chemical Processes (3)** **Moulton**
Fuels; coal distillation; carbon cement; potassium salts; fertilizers; sodium compounds; chlorine; electrochemical industries; sulfur and sulfuric acid; nitrogen industries. Prerequisite, 384 or permission.
- 482 Organic Chemical Processes (3)** **Babb, Moulton**
Nuclear engineering; petroleum chemicals and products; plastics; polymers; synthetic fibers; silvi chemicals; pulp and paper. Prerequisite, Chemistry 221 or equivalent.
- 483 Chemical Engineering Process Design (4)** **Babb, Moulton**
Process instrumentation; electrochemical corrosion and materials of construction; economics and marketing. Comprehensive design problem. Prerequisites, 472 and Chemistry 221 or equivalent.
- 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.
- 491 Unit Process Laboratory (1)** **Moulton**
Synthetic drying oils; synthetic detergents; cracking of petroleum. Prerequisite, Chemistry 325 or equivalent.
- 492 Unit Process Laboratory (1)** **Moulton**
Electrolysis; sulfonation; causticization; manufacture of lithopone. Prerequisite, Chemistry 325 or equivalent.
- 498 Chemical Engineering Thesis (1-5)** **Staff**
An assigned problem in unit operations or applied chemistry is investigated first in the literature and then in the laboratory and the results are incorporated into a thesis.

COURSES FOR GRADUATES ONLY

- 520 Graduate Seminar (1-5)** **Staff**
- 570 Introduction to Transport Properties (3)** **Babb**
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 Distillation (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. (Offered alternate years; offered 1956-57.) Prerequisites, 570 and 575 or permission.
- 573 Absorption and Extraction (3)** **Babb**
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 1955-56.) Prerequisites, 570 and 575 or permission.

- 574 Fluid Flow (3)** **McCarthy**
 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**
 Principle of thermodynamics. Applications to unit operations and to prediction of phase equilibria and chemical equilibria. Prerequisite, 375.
- 580 Nuclear Engineering (3)** **Moulton**
 Fundamentals of nuclear reactions. Elementary pile theory, design and construction of nuclear reactors, shielding, control, waste disposal. Methods of isotope separation, chemical separation processes for the recovery of fissionable products. (Offered alternate years; offered 1955-56.) Prerequisite, 570.
- 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 Multistage Separation Processes (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 Topics in Chemical Engineering Unit Operations (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 Topics in Chemical Engineering Unit Processes (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 1955-56.) Prerequisites, 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 1956-57.) 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**
Thesis (*) **Staff**

CIVIL ENGINEERING

Executive Officer: ROBERT B. VAN HORN, 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 42), 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 58).

The fourth-year program calls for five 3-credit civil engineering elective courses. Electives in the field of hydraulics are courses 445, 447, 448; in materials, courses 467, 468; in structures, course 485; in sanitary, courses 452, 453, 454, 456, 457; in transportation, courses 315, 403, 422, 423, 424, 426, 428, 429. One of these electives must be in the sanitary engineering field, preferably 454. Students planning graduate work in structures should elect Mathematics 421 (Differential Equations) and those planning to take a degree in industrial engineering should elect Accounting 150 (Fundamentals of Accounting).

Second Year

FIRST QUARTER	CREDITS
Civil Engr. 212 Route Surv.	3
H.-S.S. 265 Tech. of Comm.	3
Math. 252 Analytic Geom. & Calc.	5
Physics 217 Engr. Phys.	4
ROTC	2-3
	<hr/> 15-18

SECOND QUARTER	CREDITS
Civil Engr. 213 Earthwork	3
Civil Engr. 291 Dynamics	3
H.-S.S. 270 Report Writing	2
Math. 253 Analytic Geom. & Calc.	3
Physics 218 Engr. Phys.	4
ROTC	2-3
	<hr/> 15-18

THIRD QUARTER	CREDITS
Civil Engr. 214 Surv.	3
Civil Engr. 292 Mechanics of Matls.	3
Civil Engr. 350 Sanitary	3
Econ. 211 General	3
Physics 219 Engr. Phys.	4
ROTC	2-3
	<hr/> 16-19

Third Year

FIRST QUARTER	CREDITS
Civil Engr. 293 Mechanics	3
Civil Engr. 342 Fluid Mechanics	5
Elect. Engr. 300 Elem. of Elect. Engr.	5
H.-S.S. 491 Hum.-Soc. St.	2
	<hr/> 15

SECOND QUARTER	CREDITS
Civil Engr. 343 Hyd. Engr.	5
Civil Engr. 362 Matls. of Constr.	3
Civil Engr. 371 Struct. Theory	3
Geol. 310 Engineering	5
	<hr/> 16

THIRD QUARTER	CREDITS
Civil Engr. 321 Roads	3
Civil Engr. 363 Matls. of Constr.	3
Civil Engr. 372 Struct. Theory	3
Civil Engr. 373 Struct. Theory	3
Mech. Engr. 325 Thermodynamics	3
	<hr/> 15

Fourth Year

FIRST QUARTER	CREDITS
Civil Engr. 466 Soil Mechanics	3
Civil Engr. 475 Struct. Design	3
Civil Engr. Tech. Elective or Physics 320 Modern	3
H.-S.S. 331 Hum.-Soc. St.	3
H.-S.S. 492 Hum.-Soc. St.	2
	<hr/> 14

SECOND QUARTER	CREDITS
Civil Engr. 476 Struct. Design	3
Civil Engr. Tech. Elective	3
Civil Engr. Tech. Elective	3
H.-S.S. 332 Hum.-Soc. St.	3
H.-S.S. 493 Hum.-Soc. St.	3
Hum. Rel. 365 Indust. Rel.	3
	<hr/> 16

THIRD QUARTER	CREDITS
Civil Engr. 477 Struct. Design	3
Civil Engr. Tech. Elective	3
Civil Engr. Tech. Elective	3
H.-S.S. 333 Hum.-Soc. St.	3
Bus. Law 307 Bus. Law	3
	<hr/> 15

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, structural engineering, and transportation (highway) engineering. The requirements are: a minimum of 45 credits, of which 36 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, structural engineering, or transportation engineering.

COURSES FOR UNDERGRADUATES

SURVEYING AND MECHANICS

212 Route Surveying (3)

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.

Chittenden, Colcord, W. M. Miller

213 Location and Earthwork (3)

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.

Chittenden, Colcord, W. M. Miller

214 Intermediate Surveying (3)

Primary emphasis on control and topographic surveys as required for engineering projects approximating second-order accuracy. Includes adjustment of instruments, calibration of tapes, baseline measurement, engineering astronomy, triangulation, traversing, leveling, and topographic mapping. The course is built around a comprehensive field project extending through the quarter. All plotting data is expressed on the State Plane Coordinate System

Chittenden, Colcord

(Lambert Conformal Projection for Washington). Office and field time are about equally divided. Prerequisite, General Engineering 121.

- 256 Forest Surveying (5)** **Colcord, Hoag**
A second course in plane surveying, with special emphasis on forest topographic mapping, including establishment of basic control. Use, operation, and adjustment of the steel tape, compass, clinometer, level, transit, and plane table. A combined topographic mapping and cruising project covering approximately one-quarter section (160 acres) of forest and logged-off land is a major feature. Given at Pack Forest for forestry majors only. Prerequisite, General Engineering 121.
- 291 Dynamics (3)** **Campbell, Staff**
Static and kinetic friction, equations of motion; translation and rotation of rigid bodies; kinetics, energy, work, power, momentum and impulse, and impact. Prerequisites, General Engineering 112, Mathematics 153 or equivalent, and Physics 217.
- 292 Mechanics of Materials (3)** **Campbell, Staff**
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, 291, Mathematics 153 or equivalent, and Physics 217, 292 may be taken prior to 291 or concurrently with 291 with permission.
- 293 Dynamics and Mechanics of Materials (3)** **Campbell, Staff**
Review problems on material of 291 and 292, with emphasis on engineering applications. Combined stresses, introduction to structural continuity, eccentric loadings, resilience, dynamic loadings. Prerequisites, 291, 292, and Mathematics 252 or equivalent.
- 315 Photogrammetry (3)** **Chittenden, Colcord**
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, 256 for foresters, 212 for civil engineering students, General Engineering 121 for non-civil engineering students, and a basic plane surveying course or equivalent experience for non-engineering students.

TRANSPORTATION ENGINEERING

- 321 Roads and Pavements (3)** **Ekse, Meese**
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.
- 403 Principles of Urban Planning (3)** **Horwood**
An introduction to modern urban planning. Recent historical developments. The interrelation of land uses and utilities. Enabling legislation and forms of municipal regulations. Prerequisite, senior or graduate standing.
- 422 Railway Engineering (3)** **Ekse**
Locomotive performance and train resistances; permanent way; economics of railway location; sidings and terminals. Prerequisite, 213.
- 423 River and Harbor Engineering (3)** **Ekse, Meese**
Breakwaters, shore protection, channel protection, and channel regulation; theory of waves. Prerequisites, 213 and 342.
- 424 Highway Design (3)** **Ekse**
Design for the intersection: emphasis on geometric design, traffic lane capacities, and grade separation; laboratory design and field control of bituminous paving mixtures; theories of flexible and rigid pavement design; culvert design with emphasis on types, size requirements, and strength requirements for resistance to earth pressures. Two lectures and one laboratory period. 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 Economics and Administration (3)** **Hennes, Horwood**
The planning, financing, and operation of highways. Studies in the overall cost of highway transportation. Capital improvements in relation to reduced vehicular operating costs. The economics of truck operation on grades. The theory of random arrival at intersections. The state and federal highway systems. Toll facilities, limited access highways, and roadside protection. Prerequisite, senior or graduate standing in engineering.
- 429 Urban Traffic (3)** **Ekse, Horwood**
Traffic engineering functions and administration. Street and intersection capacities. Urban arterial and freeway planning. Traffic and parking surveys. One-way street systems. Signal timing for traffic movement and traffic control warrants. Prerequisite, senior or graduate standing in engineering or graduate standing in urban planning.

HYDRAULIC ENGINEERING

- 342 Fluid Mechanics (5)** **Campbell, Chenoweth, Kent, Moritz, Richey**
Practical fluid mechanics with engineering application to the energy and flow of real liquids through various orifices, intakes, pipes, reducing and expanding passages, open channels, including streams, over weirs, and in tangential wheels, reaction turbines, and centrifugal

pumps. Emphasis is on fundamental principles, accompanied by laboratory verification. Three lectures, three hours problems, three hours laboratory. Prerequisite, 291.

- 343 Hydraulic Engineering (5)** **Chenoweth, Moritz, Richey**
Complete projects and hydrometric methods; design of gravity spillway; flume intakes; surge; economical design of pipe line. Prerequisite, 342.
- 445 Hydraulic Machinery (3)** **Chenoweth, 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 Hydraulic Power (3)** **Campbell, Richey**
Theory and applications 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. Prerequisite, 343 or 342.
- 448 Reclamation (3)** **Campbell, Van Horn**
A study of the transportation of water especially by gravity flow using the project method. Conduit sections include earth and lined canals, flumes, tunnels, transitions, and inverted siphons. Preliminary design of division structures, drops and checks. Distribution of water and special problems pertaining to irrigation engineering. Prerequisite, 343.

SANITARY ENGINEERING

- 350 Introduction to Sanitary Engineering (3)** **Bogan, Sylvester**
Basic concepts of water supply, sewerage, refuse disposal, and stream pollution; chemical, bacteriological, and physical analysis of water and sewage. Prerequisite, Chemistry 107 or equivalent.
- 452 Water Supply (3)** **Bogan, 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 and 350.
- 453 Water Treatment (3)** **Bogan, 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, 342 and 350.
- 454 Sewerage (3)** **Bogan, 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, 342 and 350.
- 456 Sewage Treatment (3)** **Bogan, Sylvester**
Theory and fundamental principles of the major unit operations and processes employed in sewage treatment together with their applications and design. Prerequisites, 342 and 350.
- 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. Prerequisites, 343, 350, and senior or graduate standing.

ENGINEERING MATERIALS

- 362 Materials of Construction (3)** **Mittet**
Concrete, Portland cement, and concrete mixtures. Prerequisite, 292.
- 363 Materials of Construction (3)** **Vasarhelyi**
Strength and physical characteristics of timber, steel, and structural aluminum alloys. Prerequisite, 292.
- 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.
- 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.

STRUCTURAL ANALYSIS AND DESIGN

- 371 Structural Theory (3)** **Chenoweth, Clanton, Mittet**
Introduction to the theory of continuous beams and rigid frames by moment-area and moment-distribution methods. Basic reinforced concrete theory. Analysis of retaining walls. Prerequisite, 293.

- 372 Structural Theory (3)** **Clanton, Mittet, Vasarhelyi**
Strength and deflection of beams, columns, and combined stress members of steel and of wood. Unsymmetrical bending. Supports, attachments, and connections of wood and steel members. Prerequisite, 293.
- 373 Structural Theory (3)** **Clanton, Mittet, 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, 371.
- 475 Structural Design (3)** **Clanton, Miller, Rhodes, Sergev**
Design of reinforced concrete buildings, retaining walls and footings. Continuity and rigid frame action. Reinforced concrete details. Use of building codes. Prerequisite, 371.
- 476 Structural Design (3)** **Clanton, Hechtman, Rhodes, Sergev**
Design of steel bridges with R/C roadways. Steel details including bolted, riveted, and welded connections. Highway and railway design specifications. Prerequisites, 372 and 373.
- 477 Structural Design (3)** **Clanton, Miller, Rhodes, Sergev**
Design of wood and steel building elements. Trussed beams. Wood details including modern connectors and glue-laminated members. Wind loads. Prerequisites, 372 and 373.
- 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. Prerequisites, 373 and 475.
- 491 Advanced Professional Design (2-5, maximum in one field 15)** **Staff**
Students should register for H (hydraulic), M (materials), P (planning), S (structural), W (sanitary), or T (transportation). Prerequisite, permission of Executive Officer.

COURSES FOR GRADUATES ONLY

- 509 Engineering Relations (2)** **Staff**
Methods of setting up engineering problems and investigations; written and oral presentation of professional ideas and analysis of current research and investigations, both professional and economic, in the student's major field. Prerequisite, graduate standing.
- 520 Seminar (1)** **Staff**
Formal presentation for discussion and criticism of all research of the graduate year. Required of all candidates for an advanced degree during their final quarter in residence.
- 523 Port Development (4)** **Honnes, Meese**
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)** **Ekso**
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.
- 547 Advanced Hydraulic Power (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.
- 560 Photoelasticity (3)** **Sergev**
Introduction of stress determination using polarized light and transparent plastics. To gain familiarity with the polariscope, the making of models, and solution of some common engineering problems in two dimensions. Modern photoelastic theory, plastics and similitude. Prerequisite, graduate standing or permission.
- 567 Advanced Soil Mechanics and Foundations (4)** **Honnes, 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.
- 569 Applied Soil Mechanics (3)** **Honnes, Meese**
Soil mechanics in engineering practice; the application of theory to the analysis of footings, piling, retaining walls, tunnels, and other substructures. Prerequisites, 467 and senior or graduate standing.
- 571 Advanced Strength of Materials (3)** **Chenoweth, 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.
- 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.

- 573 Elastic Stability (3)** **Sergev**
The study of buckling phenomena in columns, beams, plates, and tubes, with practical application.
- 581 Advanced Structures (3)** **Miller**
Truss deflection and secondary stresses. Trussed arches. Multi-span trusses. Redundant members. Mueller-Breslau, Maxwell-Mohr, and strain-energy methods.
- 582 Advanced Structures (3)** **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.
- 583 Advanced Structures (3)** **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.
- 585 Structural Model Analysis (3)** **Hechtman, Vasarhelyi**
Basic structural theory taught in laboratory by structural model analysis. A rational examination of structural theory, its development from the elements of physics, geometry, and properties of materials, and its application to statically determinate and indeterminate structures.
- 586 Structural Materials and Design (3)** **Hechtman, 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.
- 587 Design of Welded Structures (3)** **Hechtman, 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 Suspension Structures (3)** **Farquharson**
Fundamental principles of structural action as applied to suspension bridges, suspended pipe lines, conveyors, and transmission lines. Analysis for dead and live loading and static wind action. The mechanisms of wind excitation on typical cross sections and their application to various modes of vibration.
- 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 investigations by graduate students under the direction of staff members. Students should register for H, M, P, S, W, or T.
- Thesis (*)** **Staff**

ELECTRICAL ENGINEERING

Executive Officer: AUSTIN V. EASTMAN, 201 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 42), 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 58).

In the third and fourth years, students may either follow the prescribed curriculum or make substitutions in it to take an option in communication or power. In the communication option, Electrical Engineering 470 and 1 more credit of elective may be substituted for 450; in the power option, Electrical Engineering 440 and 4 credits in electrical electives may be substituted for 460 and 461.

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. Such students must include Mathematics 421 (Differential Equations) in their undergraduate program and preferably should include Mathematics 422 (Differential Equations).

Students planning to take a degree in industrial engineering should elect Accounting 150 (Fundamentals of Accounting).

Second Year

FIRST QUARTER	CREDITS
Elect. Engr. 222 Electric Circuits & Fields I....	5
Mech. Engr. 201 Metal Castings	1
Math. 252 Analytic Geom. & Calc.	5
Physics 217 Engr. Physics. 4	
ROTC	2-3
	15-18

SECOND QUARTER	CREDITS
Elect. Engr. 223 Electric Circuits & Fields II....	5
H.-S.S. 265 Tech. of Comm.	3
Math. 253 Analytic Geom. & Calc.	3
Physics 219 Engr. Physics 4	
ROTC	2-3
	15-18

THIRD QUARTER	CREDITS
Elect. Engr. 224 Electric Circuits & Fields III....	5
Civil Engr. 291 Dynamics. 3	
H.-S.S. 270 Report Writing	2
Mech. Engr. 202 Welding. 1	
Physics 320 Intro. to Modern Physics	3
ROTC	2-3
	14-17

Third Year

FIRST QUARTER	CREDITS
Elect. Engr. 322 Electric Transients	4
Elect. Engr. 420 Vacuum Tubes	4
Civil Engr. 292 Mechanics of Matls.	3
H.-S.S. 331 Hum.-Soc. St. 3	
Mech. Engr. 203 Metal Machining	1
	15

SECOND QUARTER	CREDITS
Elect. Engr. 429 Field Theory I	3
Elect. Engr. 460 Vacuum-Tube Circuits	5
H.-S.S. 332 Hum.-Soc. St. 3	
Mech. Engr. 340 Engr. Matls.	3
	14

THIRD QUARTER	CREDITS
Elect. Engr. 461 Vacuum-Tube Circuits	5
Civil Engr. 342 Fluid Mechanics	5
H.-S.S. 333 Hum.-Soc. St. 3	
Mech. Engr. 368 Kinematics	3
	16

Fourth Year

FIRST QUARTER	CREDITS
Elect. Engr. 325 D.C. Mach.	5
Mech. Engr. 466 Mach. Design	4
Bus. Law 307 Bus. Law. 3	
Econ. 211 General.	3
	15

SECOND QUARTER	CREDITS
Elect. Engr. 340 A.C. Mach.	4
Elect. Engr. 341 A.C. Mach. Lab.	4
H.-S.S. 491 Hum.-Soc. St. 2	
Mech. Engr. 325 Thermodynamics	3
Hum. Rel. 365 Indust. Rel. 3	
	16

THIRD QUARTER	CREDITS
Elect. Engr. 450 Advanced A.C.	6
H.-S.S. 493 Hum.-Soc. St. 1	
Mech. Engr. 426 Thermodynamics	5
Electives	3
	15

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 36 credits of course work and a suitable thesis are required for this degree. Course work should be divided between electrical engineering and supporting courses in other fields in the ratio of approximately two to one. Electrical engineering courses must be chosen from those numbered above 500 and must include Electrical Engineering 510 and 520-521-522.

MASTER OF ELECTRICAL ENGINEERING. This is a more advanced degree than that of Master of Science in Electrical Engineering. A total of 72 credits of course work and a more extensive thesis are required. Other requirements are similar to those for the Master of Science degree. Certain physics courses may be used in partial satisfaction of the major requirements.

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 taken must include Electrical Engineering 510, 511, 512, and 520-521-522.

COURSES FOR UNDERGRADUATES

- 200 Elementary Electronics (5)** **Staff**
Vacuum and gas-filled tubes, photocells; rectifiers, amplifiers, and simple control circuits; cathode-ray oscilloscope; elementary instrumentation. Short course for chemistry majors. Not open to engineering students. Includes one four-hour laboratory and one two-hour problem period on alternate weeks. Prerequisites, Physics 122 and Mathematics 252.
- 222 Electric Circuits and Fields I (5)** **Staff**
Basic concepts of electric fields and direct-current circuits. Includes study and application of Ohm's Law, Kirchhoff's Laws, Thevenin's Theorem, superposition theorem, effects of temperature and capacitance. Includes one four-hour laboratory on alternate weeks. Prerequisites, General Engineering 111 and Mathematics 251. Mathematics 251 may be taken concurrently with 222.
- 223 Electric Circuits and Fields II (5)** **Staff**
The magnetic field and the inductance parameter. Introduction to alternating-current circuit theory including sinusoidal wave forms, phasor representation, and simple series circuits. Includes one four-hour laboratory on alternate weeks. Prerequisite, 222.
- 224 Electric Circuits and Fields III (5)** **Staff**
Alternating-current circuit theory extended to cover the topics of series-parallel circuits and network analysis including the admittance viewpoint, polyphase circuits, and non-sinusoidal wave forms. Includes one four-hour laboratory on alternate weeks. Prerequisite, 223.
- 300 Elements of Electrical Engineering (5)** **Staff**
Short course in direct- and alternating-current circuits with introduction to electronics. For nonelectrical engineering majors. Includes one three-hour laboratory per week. Prerequisites, Physics 218, Mathematics 153, and General Engineering 111.
- 301 Electrical Machinery (5)** **Staff**
Short course in electrical machinery. For nonelectrical engineering majors. Includes one three-hour laboratory per week. Prerequisite, 300.
- 322 Electric Transients (4)** **Staff**
Single- and double-energy transients in circuits containing R, L, and C either singly or in combinations, and with direct, alternating, or other types of applied emf's; magnetically coupled circuits and circuits with variable parameters; use of classical, Laplace, and step-by-step methods of solving the differential equations involved. Includes one four-hour laboratory on alternate weeks. Prerequisite, 224.
- 325 Direct-Current Machinery (5)** **Staff**
Construction, operation, characteristics, and applications of direct-current machinery. Includes two four-hour laboratories per week. Prerequisite, 322.
- 340 Alternating-Current Machinery (4)** **Staff**
Theory of synchronous machines, induction motors, and transformers. To be taken concurrently with 341. Prerequisite, 325.
- 341 Alternating-Current Machinery Laboratory (4)** **Staff**
Two four-hour laboratories per week covering experimental work with alternating-current machinery. To be taken concurrently with 340.
- 400 Vacuum Tubes and Electronics (5)** **Staff**
Vacuum and gas-filled tubes, photocells; rectifiers, amplifiers, and simple control circuits; cathode-ray oscilloscope; oscillators and elementary instrumentation. Short course for non-electrical engineering majors. Includes one four-hour laboratory and one two-hour problem period on alternate weeks. Prerequisite, 300.
- 420 Vacuum Tubes and Electronics (4)** **Staff**
Electron emission; fundamentals of vacuum and gas-filled tubes; phototubes; elementary amplifier theory; theory of single-phase and polyphase rectifiers; control circuits. Includes one four-hour laboratory on alternate weeks. Prerequisite, 224.
- 429 Field Theory I (3)** **Staff**
Vector analysis and the study of electric and magnetic fields, leading to such basic equations as those of Maxwell and Poisson. Prerequisite, 224.
- 430 Individual Projects (2-5, maximum 10)** **Staff**
Assigned construction or design projects carried out under the supervision of the instructor.
- 440 Vacuum-Tube Circuits (6)** **Staff**
Short course for power majors covering the material of 460 and 461 with applications to the power and industrial control fields. Includes one four-hour laboratory alternate weeks. Prerequisite, 420.
- 450 Advanced Alternating Currents (6)** **Staff**
Theory of electrical and mechanical rectifiers; single-phase motors; introduction to symmetrical components and transmission lines. Includes one four-hour laboratory per week. Prerequisite, 340.
- 453 Electric Power Systems (3)** **Robbins**
Elements and economics of electrical power generation, transmission, and distribution. Theory, design, and operation of integrated power system. Includes one three-hour laboratory per week. Laboratory includes several field trips to typical electrical power installations. Prerequisite, 340.
- 457 Industrial Control (3)** **Hoard**
Introduction to theory and operation of control circuits; study of vacuum tubes, rotating amplifiers, magnetic amplifiers, and other circuit components and their application to

typical control circuits. Includes one four-hour laboratory on alternate weeks. Prerequisites, 340 and 420.

460, 461 Vacuum-Tube Circuits (5,5)

Staff

Analysis and design of voltage and power amplifiers; feedback theory; tuned amplifiers and oscillators; theoretical analysis of amplitude, frequency, and pulse modulation; modulator and demodulator circuits; applications in the communication field. Includes one four-hour laboratory on alternate weeks. Prerequisites, 420 for 460; 460 for 461.

469 Field Theory II (4)

Staff

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 four-hour laboratory on alternate weeks. Prerequisite, 429.

470 Communications Networks (5)

Staff

Theory of transmission lines; use of Smith chart and other transmission-line charts; theory and design of constant-K, m-derived, and other types of filters; impedance-matching with transmission-line stubs and with lumped constants; series and parallel resonance. Includes one four-hour laboratory on alternate weeks. Prerequisite, 224.

473 High-Frequency Circuits and Tubes (5)

Cochran

Wave shaping circuits including clipping circuits, square-wave generators, differentiator and integrator circuits, d-c restoration, and clippers. Free-running and driven trigger circuits, utilizing high-vacuum and gas-type tubes. Ringing circuits. Applications to high-frequency circuits including television and radar. Use of special negative-grid, magnetron, and klystron tubes in very-high and ultra-high frequency circuits. Preliminary study of wave propagation. Includes one four-hour laboratory per week. Prerequisite, 460.

479 Radio Design (2)

Cochran

Problems of designing radio receivers and transmitters and audio and video amplifiers; selection of suitable components; proper layouts. Must be preceded or accompanied by 461.

COURSES FOR GRADUATES ONLY

510 Advanced Circuit Theory I (3)

Lewis

Mathematical concepts applied to circuit analysis, including Fourier series and integrals, network transfer characteristics and response in transient and steady state. Elements of complex variable, including complex potentials and conformal transformations, applicable to both fields and networks. Prerequisites, 224 and Mathematics 421.

511 Network Analysis (4)

Lewis

Matrix formulation of network equations, analysis in the complex frequency domain, realizability conditions for network synthesis, stability criteria, steady-state relationships in closed loop systems, and design criteria applied to feedback amplifiers. Prerequisite, 510.

512 Advanced Circuit Theory II (3)

Lewis

Application of operational calculus and Laplace transformation to transient response systems, direct and inverse transforms in the complex domain, network equivalents in transient state, extension to distributed systems, and boundary-value problems. 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.

515 Measurements and Circuit Components (3)

Swarm

Measurements of resistance, inductance, capacitance, and frequency at all frequencies from d-c to 10,000 megacycles; use of inductance bridges, r-f bridges, Twin-T circuits, Q meters, susceptance variation methods, frequency standards, and standing wave detectors. Prerequisite, 470.

N520-N521-522 Seminar (0-0-2)

Lewis

Required for all graduate students.

541 Advanced Transients (5)

Smith

Transient phenomena in transmission lines and rotating machinery; lightning and corona characteristics and effects; insulation coordination and design; theory and use of impulse generator for insulation study and tests; precision use of oscillographs. Includes one four-hour laboratory per week. (Offered alternate years; offered 1956-57.) Prerequisite, 322.

545 Power Transmission (5)

Bergseth

Circuit theory; lumped and distributed constants; power circle equations and power transmission diagrams; voltage control and line compensation. Surge impedance loading and loading for maximum economy; transmission line design; traveling waves. Prerequisite, 514.

547 Advanced Studies in Power Systems (5)

Bergseth

Power flow in systems with two voltage sources. General network equations; synchronous-machine power-angle characteristics; composite systems. Equivalent reactance of synchronous machines; stability criteria, stability characteristics of turbo-generators; transmission-line electrical loadings and comparative economic study. System design; torque-angle characteristics, two-machine stability. Multi-machine problems. Prerequisite, 545.

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. Prerequisite, 514.

- 560 Wave Phenomena (4)** **Rogers**
Solution of ordinary differential equations as applied to the vibrations of lumped systems; vector analysis and the solution of the partial differential equations of continuous systems; Fourier series, Bessel's functions, and orthogonality; solution of the field equations for wave guides and radiating systems. Prerequisite, 429.
- 562 Advanced Vacuum Tubes (4)** **Hill**
Energy distribution functions, emission theory; conformal transformation and solution of electric fields; current flow in diodes, triodes, and tetrodes; noise in vacuum tubes; analysis of problems in electron optics; high-intensity cathodes and beam formation. (Offered alternate years; offered 1956-57.) Prerequisites, 420 and 510, 510 may be taken concurrently with 562.
- 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, 460 and 470.
- 567 Microwave Vacuum Tubes (5)** **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. Includes one three-hour laboratory per week. Prerequisite, 566 or permission.
- 570 Radiation and Propagation (4)** **Held**
Theory of radiation; impedance characteristics and radiation patterns of thin linear antenna elements; properties and synthesis of antenna arrays; field intensity calculations; theory of tropospheric and ionospheric propagation; propagation anomalies. Includes one four-hour laboratory on alternate weeks. Prerequisite, 560.
- 580 Electroacoustics (5)** **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 per week. (Offered alternate years; offered 1955-56.) Prerequisite, 470.
- 582 Servomechanisms in Electrical Engineering (4)** **Fisher**
Function of servomechanisms; analysis of transient and frequency response; components and their characteristics; system synthesis; analytic and experimental techniques. Prerequisite, 510 or permission.
- 586 Electrical Computing Methods (4)** **Staff**
Study of field models, analogue and digital computers, and various special-purpose computers for solving electrical problems. Includes one three-hour laboratory per week. (Offered alternate years; offered 1955-56.) Prerequisite, 510.
- 600 Research (2-5)** **Staff**
- Thesis (*)** **Staff**

GENERAL ENGINEERING

Executive Officer: E. R. WILCOX, 311 Miller Hall

The Department of General Engineering administers the first-year curriculum in the College of Engineering. The courses given provide orientation and basic training for all entering students, and special attention is given to advising and personnel work with freshmen. At the beginning of the sophomore year students enter the curriculum of the department in which they have decided to major.

The standard first-year curriculum is outlined below. Exceptions to it are as follows: Students without high school chemistry will substitute Chemistry 103 and 104 (General) for Chemistry 105 and 106. Those who have not had high school trigonometry or who have had it but do not pass a qualifying examination must take Mathematics 104 (Plane Trigonometry) instead of Mathematics 105 (College Algebra) in the first quarter. Students who expect to major in ceramic or metallurgical engineering in the School of Mineral Engineering will substitute Chemistry 115, 112, and 113, and students who expect to enter the Department of Chemical Engineering will substitute Chemistry 115, 116, and 325 for Chemistry 105, 106, and 107. In the first quarter, these students will omit General Engineering 100, taking it the second quarter and omitting General Engineering 121 from the third quarter.

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Gen. Engr. 100		Gen. Engr. 102 Drawing..	3	Gen. Engr. 103 Applied	
Orientation	1	Gen. Engr. 112 Problems..	3	Descriptive Geom.	3
Gen. Engr. 101 Drawing..	3	Chem. 106 General.....	3	Gen. Engr. 121 Plane	
Gen. Engr. 111 Problems..	3	Math. 153 Analytic		Surveying	3
Chem. 105 General.....	3	Geom. & Calc.	5	Chem. 107 General.....	3
Math. 105 College Algebra	5	Phys. Educ. activity.....	1	Math. 251 Analytic	
Phys. Educ. activity.....	1	ROTC	2-3	Geom. & Calc.	5
ROTC	2-3			Phys. Educ. 175 Health..	2
				Phys. Educ. activity.....	1
				ROTC	2-3
	16-19		15-18		17-20

COURSES FOR UNDERGRADUATES

- 100 Engineering Orientation (1)** **Macartney, Staff**
Lectures, discussion, and reading assignments on the various fields of professional engineering and on the College of Engineering.
- 101 Engineering Drawing (3)** **Boehmer, Staff**
Orthographic projection including three-view drawing and related views; use of instruments, sections, sketching, and isometric and scale practice; reading of drawings and techniques of lettering and line work. Simple line and plane problems.
- 102 Engineering Drawing (3)** **Messer, Staff**
Machine drawing. Study of drawing standards, notes, conventions, shop language, and proper dimensioning. Practice in free-hand sketching and the making of acceptable shop drawings; ink and pencil tracings; reading of drawings. Prerequisite, 101.
- 103 Applied Descriptive Geometry (3)** **Douglass, Staff**
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.
- 107 Engineering Drawing (3)** **Hoag, Staff**
Short course for forestry and art students. An abbreviated course in 101 and 102.
- 111 Engineering Problems (3)** **Brown, Staff**
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.
- 112 Engineering Problems (3)** **Gullikson, Staff**
Fundamental principles of statics; mathematical and graphical analysis of simple force systems; stresses in frames, trusses, and simple mechanisms. Prerequisites, 101, 111, and trigonometry.
- 121 Plane Surveying (3)** **McNeese, 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.
- 351 Inventions and Patents (1)** **Seed**
Law and procedures for patenting inventions, employer-employee relationship, and trademarks. Primarily for engineering students. Prerequisite, junior standing.

HUMANISTIC-SOCIAL STUDIES FOR ENGINEERS

Executive Officer: **STUART W. CHAPMAN, 312 Engineering 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. Most of these courses 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 art; 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.

Several nontechnical courses offered in other colleges of the University are also required as part of the various engineering curricula: Business Law 307 (Business Law), Human Relations 365 (Industrial Relations for Engineers), and Economics 211 (General).

COURSES FOR UNDERGRADUATES

- 10 Rudiments of Writing (0)** **Staff**
A course given for students who do not come up to departmental standards in tests in grammar, spelling, and punctuation. Carries no credit, but is the equivalent of 3 credits in figuring student load.
- 265 Techniques of Communication (3)** **Staff**
Understanding of and practice in written and oral communication; similarities and differences in the organization, development, and presentation of ideas in writing and speech; acceptable usage and adaptation of presentation to the situation, the purpose, and the audience. Prerequisite, 10 or passing of tests.
- 270 Engineering Report Writing (2)** **Staff**
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.
- 302 Technical Writing (3)** **Staff**
Advanced technical report writing; technical and semi-technical articles; emphasis on organization, effective use of illustrative materials, and functional use of layout. Prerequisite, 270 or equivalent.
- 331 Humanities-Social Studies (3)** **Staff**
The nature of man, the nature of culture, and the individual's relationship to his culture; application of these concepts to an understanding of the ancient past and of modern cultures and values. Prerequisite, 270 or equivalent.
- 332 Humanities-Social Studies (3)** **Staff**
The shaping of modern institutions and of the ideas behind them; the process of historical change as seen especially in the development of scientific, artistic, and religious thought; the nature and implications of modern changes in politics and technology. Prerequisite, 331 or equivalent.
- 333 Humanities-Social Studies (3)** **Staff**
Background and nature of some contemporary political and social problems; conflicting modern philosophies; recent trends as reflected in literature and the arts. Prerequisite, 332 or equivalent.
- 491 Humanities-Social Studies (2)** **Staff**
Reading and discussion of great works of literature; literature as an art form, as a reflection of the culture which produced it, and as a manifestation of man's motivations and beliefs. Prerequisite, 270 or equivalent.
- 492 Humanities-Social Studies (2)** **Staff**
Further analysis of particular forms of literature; analysis of other arts. Prerequisite, 491 or equivalent.
- 493 Humanities-Social Studies (1)** **Staff**
Reading and discussion, primarily in the area of the humanities. Prerequisite, 491 or equivalent.

INDUSTRIAL ENGINEERING

The industrial engineering curriculum consists of a regular four-year course of study in any engineering department that offers a full curriculum, supplemented by a fifth year devoted to study in industrial management, accounting, quality control, and related subjects. Since the College does not have a department of industrial engineering, students registering for this fifth year of study must have their schedule of courses approved by the department through which they received their first bachelor's degree.

Students who plan to enter the industrial engineering curriculum should take Accounting 150 (Fundamentals of Accounting) as an elective subject for the first bachelor's degree. Those who fail to do so will need to take Accounting 150 as a prerequisite to the accounting courses listed below, during their fifth year. This will require completion of Accounting 330 (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
Acctg. 151 Fundamentals . . . 3		Mech. Engr. 410 Engr.		Mech. Engr. 411 Engr.	
Fin. 201 Banking & Bus. . . 5		Admin. 3		Econ. 3	
Electives 7		Acctg. 310 Intermediate . . . 5		Acctg. 330 Cost Acctg. . . . 5	
	15	Fin. 301 Corporation 5		Electives 6	
		Electives 3			14
			16		

MECHANICAL ENGINEERING

Executive Officer: BRYAN T. McMINN, 316 Guggenheim 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 42), and Master of Science in Mechanical Engineering.

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 58).

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Mech. Engr. 201 Metal Castings 1		Mech. Engr. 202 Welding . . . 1		Mech. Engr. 203 Metal Machining 1	
Mech. Engr. 220 Heat Engines 3		Civil Engr. 291 Dynamics . . 3		Mech. Engr. 221 Lab. . . . 3	
Mech. Engr. 260 Mechanism 3		H.-S.S. 265 Tech. of Comm. 3		Civil Engr. 292 Mechanics of Matls. 3	
Math. 252 Analytic Geom. & Calc. 5		Math. 253 Analytic Geom. & Calc. 3		H.-S.S. 270 Engr. Report Writing 2	
Physics 217 Engr. Physics 4		Physics 218 Engr. Physics 4		Econ. 211 General 3	
ROTC 2-3		ROTC 2-3		Physics 219 Engr. Physics 4	
	16-19		14-18	ROTC 2-3	
					16-19

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Mech. Engr. 305 Prod. Tooling 1		Mech. Engr. 306 Prod. Tech. 1		Mech. Engr. 307 Prod. Plan. 1	
Mech. Engr. 320 Thermodynamics 5		Mech. Engr. 322 Exp. Engr. 3		Mech. Engr. 323 Exp. Engr. 3	
Mech. Engr. 340 Materials 3		Mech. Engr. 361 Mach. Design 3		Mech. Engr. 362 Mach. Design 3	
Civil Engr. 293 Dynamics 3		Mech. Engr. 367 Dynamics 3		Elect. Engr. 301 Elect. Mach. 5	
H.-S.S. 491 Hum.-Soc. St. 2		Elect. Engr. 300 Elem. of Elect. Engr. 5		H.-S.S. 331 Hum.-Soc. St. 3	
Bus. Law 307 Business Law 3		H.-S.S. 492 Hum.-Soc. St. 2			15
	17		17		

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Mech. Engr. 481 Internal Combustion Engines . . . 3		Mech. Engr. 468 Mach. Design 3		Electives 15	
Civil Engr. 342 Fluid Mechanics 5		Mech. Engr. 482 Internal Combust. Lab. 3			15
H.-S.S. 332 Hum.-Soc. St. 3		H.-S.S. 333 Hum.-Soc. St. 3			
Electives 5		Hum. Rel. 365 Indust. Rel. 3			
	16	Electives 3			
			15		

Although options are not designated, the 23 elective credits provided in the curriculum allow students to develop special aptitudes and interests and to achieve a moderate degree of specialization. At least 15 of these credits must be in technical courses. Technical electives appropriate to the fields indicated are listed here as recommendations. All electives must be approved by the Department.

DESIGN. Mechanical Engineering 403 (Tool Design), 464 (Machine Design), 469 (Dynamics of Machines), and 483 (Internal Combustion Engine Design). See also graduate courses.

HEAT POWER. Mechanical Engineering 424 (Power Plants), 425 (Air Conditioning), 428 (Refrigeration), and 443 (Instrumentation). See also graduate courses.

MARINE ENGINEERING AND NAVAL ARCHITECTURE. Mechanical Engineering 433 (Marine Engineering) and 490, 491, 492 (Naval Architecture).

PRODUCTION ENGINEERING. Mechanical Engineering 403 (Tool Design), 410 (Engineering Administration), 411 (Engineering Economy), 415 (Quality Control), 417 (Methods Analysis), and 443 (Instrumentation).

ADVANCED DEGREE

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, air conditioning and refrigeration, and advanced engineering materials and design will find well-integrated programs available. Subject to the approval of the candidate's committee, work beyond bachelor requirements in physics, mathematics, and civil and electrical engineering is permitted, and sometimes required. The thesis is normally the equivalent of 9 credits, in which case 36 credits of course work are required for the master's degree. No foreign language is required.

COURSES FOR UNDERGRADUATES

- | | |
|---|----------------------------------|
| 201 Metal Castings (1) | Snyder, Zylstra |
| 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. Laboratory. | |
| 202 Welding (1) | Holt, Zylstra |
| 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. Laboratory. | |
| 203 Metal Machining (1) | Konecny, Zylstra |
| Introduction to basic machining methods used in industrial metal processing. Fundamental concepts of the use of machine tools, layout methods, and measuring tools. Laboratory. | |
| 220 Heat Engines (3) | Childs, Crain, Watson |
| Studies of the function and operation of the various components making up a heat power plant, covering steam and internal combustion installations. Elementary work in thermodynamics. Prerequisite, General Engineering 102. | |
| 221 Mechanical Engineering Laboratory (3) | Crain, Firey, Hendrickson |
| Laboratory and industrial techniques in the measurement of pressure, temperature, power output from prime movers, and power input to nonprime movers. Methods of performance testing of steam generators, steam engines, and internal combustion engines. Prerequisite, 220. | |
| 260 Mechanism (3) | Balise, Day, Watson |
| Velocity analysis of linkages and other mechanisms; geometry of gearing; transmission of motion by links, gears, cams, and flexible couplings. Prerequisites, General Engineering 103 and Mathematics 153. | |
| 305 Production Tooling (1) | Konecny, Zylstra |
| Application of production aids to machine-tool operation. The use of jigs and fixtures to facilitate a higher rate of production on basic machine tools. The production of a mechanical project using applied tooling. Laboratory. Prerequisite, 203. | |
| 306 Production Techniques (1) | Schaller, Snyder |
| Application of techniques in founding, welding, forging, stamping, and heat treating of engineering metals to manufacturing and production methods. Lecture. Prerequisite, 305. | |
| 307 Production Planning (1) | Schaller, Snyder |
| 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) | Konecny, Zylstra |
| 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 (5)** **Childs, McMin, 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, 221.
- 322, 323 Experimental Engineering (3,3)** **Crain, Firey, McIntyre**
Study of the properties of lubricants; calorimetry and flue gas analysis; performance testing of fans, air compressors, refrigeration equipment, and a steam power plant. Prerequisite, 320
- 325 Thermodynamics for Nonmajors (3)** **Childs, McMin, Nordquist, Waibler**
The general energy equation; second law; ideal and actual cycles; media; elements of power plants; elements of refrigeration; nozzles. Prerequisite, junior standing in engineering.
- 328 Elementary Thermodynamics (3)** **Hendrickson**
For fisheries students and others concerned with foods-processing involving thermodynamics, heat-power equipment and processes. Class and laboratory. Not open to engineering students. Prerequisite, junior standing in fisheries or permission.
- 329 Refrigeration (3)** **Hendrickson**
For fisheries students and others concerned with refrigeration in the food-preservation and food-processing industries. Class and laboratory. Not open to engineering students. Prerequisite, 328.
- 340 Engineering Materials (3)** **Baliso, Day, Mills**
The nature and behavior of the most important engineering materials, including metals, plastics, rubber, wood, and concrete. Study of creep and fatigue of materials. Laboratory investigations of the behavior of typical materials and methods of testing. Prerequisite, Civil Engineering 292.
- 341 Aircraft Materials (2)** **Schaller**
Fabrication, processing, and heat treatment of nonferrous and ferrous materials and non-metals in aircraft construction. Lecture. Prerequisites, 201, 202, and 203.
- 342 Industrial Materials and Processes (3)** **Mills**
Study of the problems and uses of wood materials, glass, and plastics in the manufacture of products of interest to industrial designers. Not open to engineering students. Classwork and field trips. Prerequisite, junior standing in industrial education or permission.
- 361, 362 Machine Design (3,3)** **Baliso, Crain, Day, Morrison**
Application of the principles of mechanics, strength of materials, materials of engineering, and manufacturing methods to the design of machine elements. Design problems on shafting, bolts and rivets, pressure vessels, springs, gears, brakes, clutches, and bearings. Lecture and laboratory. Prerequisites, 260, 340, and Civil Engineering 292.
- 367 Dynamics of Machines (3)** **Baliso, Morrison, Nordquist**
A study of the principles of dynamics as applied to the analysis and design of machinery in motion. Problems on engine torque diagrams, flywheels, governors, and the balancing of rotating and reciprocating machinery. Prerequisites, 260 and Civil Engineering 291.
- 368 Kinematics (3)** **Day, Morrison**
Linkages, velocity and acceleration analysis; cams; principles of gear design; trains of mechanisms; inertia and balancing of rotating masses; fly wheels. For nonmechanical engineering students. Prerequisites, 340 and Civil Engineering 292.
- 403 Tool Design (3)** **Konecny**
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. Lectures and laboratory. Prerequisites, 306 and 340.
- 410 Engineering Administration (3)** **Owens, 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)** **Konecny, Schaller**
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)** **Zylstra**
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 Quality Control (3)** **Owens, Zylstra**
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)** **Konecny, 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. Lectures 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; economics and human factors involved in methods-study applications. Lectures and laboratory. Prerequisite, senior standing in nursing or home economics or permission.
- 424 Power Plants (5)** **Waibler**
The application of the elements of thermo-dynamics, 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, Hendrickson**
Theory and practice in the field of heating, ventilating, and air conditioning for human comfort, including psychometry, heat transfer, air distribution, humidity and temperature control, cooling and dehumidifying equipment, and air cleaning. Prerequisite, 320.
- 426 Thermodynamics for Nonmajors (5)** **Childs, Crain, Nordquist**
Vapors vs. perfect gases; basic processes; basic cycles; elements of heat transfer; thermodynamics of combustion; laboratory exercises in measuring efficiency and performance of thermodynamic machines and in heat transfer. Lectures and laboratory. Prerequisite, 325.
- 428 Refrigeration (3)** **Hendrickson, 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. Lectures and laboratory. Prerequisite, 320.
- 433 Marine Engineering (3)** **McMinn, Rowlands**
A study of steam and diesel marine power plants, with particular emphasis on the differences in marine and stationary equipment and practices. Prerequisites, 320 and 490.
- 443 Instrumentation (3)** **Balise**
Study of the problems of measurement and control as related to industrial instrumentation. Analysis of industrial indicating, recording and telemetering instruments. Lectures and laboratory. Prerequisite, senior standing in engineering.
- 466 Machine Design (4)** **Balise, Day, Morrison**
Design of machine elements. Application of statics, dynamics, strength of materials, and shop practices to the design of machine parts. For nonmechanical engineering students. Prerequisite, 368.
- 468 Machine Design (3)** **Balise, Day, Morrison**
Advanced topics in machine design, including analysis of curved beams and thick cylinders, force fits, and design of major machine assemblies. Prerequisite, 362.
- 469 Dynamics of Machines (3)** **Balise, Morrison, Nordquist**
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, 340.
- 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. Lectures and laboratory. Prerequisite, 481.
- 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 Undergraduate Research (2-5)** **Staff**

COURSES FOR GRADUATES ONLY

- 521 Thermodynamics (3)** **McMinn, Nordquist, Waibler**
A critical study of the fundamental concepts of thermodynamics; nonflow and steady-flow processes; enthalpy; point properties; reversibility; vapors vs. perfect gases. Prerequisites, 320 and graduate standing or permission.
- 526 Air Conditioning (3)** **Hendrickson**
Study at the graduate level of heat-transfer aspects of air-conditioning problems; special problems in humidifying and dehumidifying; automatic control and zoning; noise and vibration control; laboratory and field tests of air-conditioning installations. Prerequisites, 425 and graduate standing or permission.
- 529 Advanced Refrigeration (3)** **Hendrickson**
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.

- 531 Heat Transfer (3)** **Childs, Watson**
Study of conduction, convection, and radiation, separately and in combination; steady and unsteady states; mathematical treatments; dimensional analyses; graphical solutions; change-of-phase problems. Prerequisites, 320 and graduate standing or permission.
- 535 Reactor Engineering (3)** **Mills**
Review of pile theory; analysis of thermodynamic and heat-transfer problems of reactors; shielding and thermal stress factors; problems of instrumentation and control. Prerequisite, graduate standing in mechanical engineering or permission.
- 541 Advanced Engineering Materials (3)** **Mills**
A second course in the nature and behavior of engineering materials. Ferrous and non-ferrous alloys, plastics, and wood-fiber products. Corrosion, surface coatings, powdered metals, and investment casting. Laboratory studies of X-ray radiography, electron microscopy, hardenability, heat treatment, mechanical properties, wood-fiber utilization, and magnetic and fluorescent methods of defect detection. Lectures and laboratory. Prerequisites, 340 and graduate standing in engineering.
- 542 Topics in Engineering Materials (3)** **Mills**
Topics of current importance, including behavior of materials at high and low temperatures, developments in plastic and wood products, dynamic behavior of materials, significance of residual stresses, and engineering applications of radioisotopes. Prerequisite, 541 or permission.
- 544 Automatic Control (3)** **Baliso**
Theory and practice of industrial process control; effects of system parameters on difficulty of control; modes of control; analysis of pneumatic components; advantages and limitations of equipment. Lectures and laboratory. Prerequisite, graduate standing in engineering or permission.
- 546 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. Lectures and laboratory. Prerequisite, graduate standing in engineering or permission.
- 547 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, 546.
- 564 Mechanical Engineering Analysis (3)** **Baliso**
Development of solutions to mathematically analogous problems from various fields in mechanical engineering with emphasis on analytical thinking. Applications of linear differential equations to mechanical systems and electrical and mechanical analogs. Significance of steady-state and transient solutions. Distributed parameters in heat flow and dynamics problems. Prerequisite, graduate standing in mechanical engineering 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 (3)** **Baliso**
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.
- 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, 481 and graduate standing in engineering.
- 600 Research (2-5)** **Staff**
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 Bachelor of Science in Mining Engineering (with options in mineral preparation engineering and geological engineering); Bachelor of Science in Metallurgical Engineering; Bachelor of Science in Ceramic Engineering; Master of Science in Engineering

(see page 42); Master of Science in Mining, Coal Mining, Metallurgical, or Ceramic Engineering; and Master of Science in Ceramics or Metallurgy.

A one-quarter Prospector's Course which carries no academic credit is offered through the Division of Mining Engineering (see page 75).

Ceramic Engineering

BACHELOR OF SCIENCE IN CERAMIC ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 58). Chemistry 115, 112, and 113 should be taken instead of Chemistry 105, 106, and 107, and General Engineering 100 should be omitted in the first quarter and taken in the second quarter. General Engineering 121 should be omitted in the third quarter. Students who decide to transfer into ceramic engineering may complete the chemistry requirements by rearranging the required curriculum in consultation with the Director of the School.

As part of their course, students should have ceramic industrial experience during the summer vacations 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. Engr. 201 Intro.	2	Cer. Engr. 202 Raw Matls. 4		Cer. Engr. 203 Prep.	3
Chem. 221 Quant. Anal. . . .	5	Civil Engr. 292 Mechanics	3	Cer. Engr. 208J Pyrometry 3	
Math. 252 Analytic		of Matls.	3	Cer. Engr. 204J	
Geom. & Calc.	5	H.-S.S. 265 Tech. of		Stoichiometry	3
Physics 217 Engr. Physics 4		Comm.	3	H.-S.S. 270 Report	
ROTC	2-3	Mech. Engr. 202 Welding. 1		Writing	2
	16-19	Physics 218 Engr. Physics 4		Mech. Engr. 203 Metal	
		ROTC	2-3	Mach.	1
			15-18	Physics 219 Engr. Physics 4	
				ROTC	2-3
					16-19

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Cer. Engr. 302 Forming. . . .	4	Cer. Engr. 304 Drying		Cer. Engr. 303 Coatings . . .	3
Cer. Engr. N306 Excursion 0		and Firing	4	Cer. Engr. 312 Colloids . . .	3
H.-S.S. 331 Hum.-Soc. St. 3		Cer. Engr. 311 Structure . 3		Elect. Engr. 300 Elem. of	
Chem. 355 Physical	3	H.-S.S. 332 Hum.-Soc. St. 3		Elect. Engr.	1
Physics 350 Heat	3	Chem. 356 Physical	4	Chem. 357 Physical	1
Tech. Electives	3	Tech. Electives	3	H.-S.S. 333 Hum.-Soc. St. 3	
	16		17		17

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Cer. Engr. N307 Excursion 0		Cer. Engr. 402 Equip. &		Cer. Engr. 403 Equip. &	
Cer. Engr. 411 Equilibria. 3		Plant Design	2	Plant Design	2
Cer. Engr. 441 Seminar. . . .	1	Cer. Engr. 421 Lab.	3	Cer. Engr. 441 Seminar. . . .	1
Cer. Engr. 470		Cer. Engr. 441 Seminar. . 1		Cer. Engr. 498 Thesis	1
Refractories	3	Cer. Engr. 498 Thesis . . . 2		H.-S.S. 493 Hum.-Soc. St. 3	
Cer. Engr. 498 Thesis	2	H.-S.S. 492 Hum.-Soc. St. 2		Econ. 211 General	1
H.-S.S. 491 Hum.-Soc. St. 2		Hum. Rel. 365 Indust. Rel. 3		Tech. Electives	1
Electives	5	Electives	3		11
	16		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*. No foreign language is required for these degrees.

MASTER OF SCIENCE IN CERAMIC ENGINEERING. Candidates for this degree select courses and research in accordance with their special interests and objectives. A study of advanced theory is usually part of the work. Courses may be selected in preparation for plant operation, production and management, sales engineering, o

research and product development. Graduates of accredited ceramic engineering curricula and graduates of other accredited engineering curricula who complete the basic undergraduate courses in ceramic engineering may become candidates.

MASTER OF SCIENCE IN CERAMICS. Students with undergraduate majors in science, particularly chemistry or physics, may become candidates for this degree after completing basic undergraduate courses in ceramics.

COURSES FOR UNDERGRADUATES

- N307 Ceramic Engineering Excursion (0)** **Staff**
Plant inspection trip; senior year.
- 201 Introduction to Ceramics (2)** **Staff**
History and scope of the ceramic industries; industrial growth and scientific development; economic importance; place in modern civilization.
- 202 Ceramic Raw Materials (4)** **Staff**
Rocks and minerals used in ceramic industries; their mineralogy, physical properties, compositions, sources, and origins.
- 203 Process Ceramics: Preparation (3)** **Shoffner**
Production and preparation of raw materials; outlines of manufacturing procedures for ceramic products.
- 204J Mineral Industries Stoichiometry (3)** **Gleason**
Principles of material and heat balances in the metallurgical and ceramic process industries. Offered jointly with the Division of Metallurgical Engineering.
- 208J Pyrometry (3)** **J. I. Mueller**
Theory, methods, and equipment for high temperature measurement and instrumentation. Offered jointly with the Division of Metallurgical Engineering. Prerequisite, Physics 219 or concurrently with Physics 219.
- 302 Process Ceramics: Forming (4)** **Shoffner**
Principles and practices; casting from slips; hand and mechanical forming of unfired bodies; forming from melts.
- 303 Process Ceramics: Coatings (3)** **E. E. Mueller**
Preparation, composition, and application of glazes and colors: color theory; solution, colloidal, transition, and stain coloring. Prerequisite, 202.
- 304 Process Ceramics: Drying and Firing (4)** **Staff**
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.
- N306 Ceramic Engineering Excursion (0)** **Staff**
Plant inspection trip; junior year.
- 311 Physical Ceramics: Structure and Reactions (3)** **J. I. Mueller**
Laws of chemistry and physics applied to ceramic research and production control: crystalline and glassy state; physical-chemical reactions of ceramic materials. Prerequisite, Chemistry 355 or permission.
- 312 Physical Ceramics: Colloids and Rheology (3)** **J. I. Mueller**
Structural chemistry: colloidal and rheological phenomena and their effects on ceramic materials. Prerequisite, 311.
- 331 Ceramic Craftsmanship: Pottery Techniques (4)** **Shoffner**
Craftsmanship methods of forming ceramic bodies: slab, hand molding, slip casting, turning and jiggering; drying and small kiln firing.
- 332 Ceramic Craftsmanship: Elementary Glazes (4)** **Shoffner**
Simple glazes and their application to ware: practice in firing; fitting glazes to bodies; textures.
- 333 Ceramic Craftsmanship: Decoration (4)** **Shoffner**
Glaze studies: methods of color production; practice in color production with test tiles; methods of decorating ware. Prerequisite, 332.
- 402-403 Equipment and Plant Design (2-2)** **E. E. Mueller**
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, 304. 403: equipment selection, layout plans, and economics applied to specific problems.
- 411 Physical Ceramics: Ceramic Equilibria (3)** **J. I. Mueller**
Equilibrium diagrams and their application to ceramic research and control problems. Prerequisite, 312 or permission.
- 412J X-ray Analytical Techniques (2)** **J. I. Mueller**
Introduction to the use of X-ray diffraction and spectroscopy as analytical methods. Offered jointly with the Division of Metallurgical Engineering. Prerequisite, Physics 219 or equivalent.
- 420 Abrasives (3)** **E. E. Mueller**
Production, preparation, products, and uses; natural and manufactured abrasives; physical properties characteristic of kinds. (Offered alternate years; offered 1956-57.) Prerequisites, junior standing and permission.

- 421 Ceramic Bodies Laboratory (3)** **Shoffner**
Quantitative determination of physical properties of ceramic bodies; study of the effects of variables in composition, forming, and firing. Prerequisite, 304.
- 422 Ceramic Petrography (2)** **Kelly, Staff**
Polarizing microscope study of natural and artificial minerals peculiar to the ceramic industry. Prerequisite, Geology 323.
- 440 Glass Technology (3)** **E. E. Mueller**
Raw materials; chemistry and physics of glass; batches and calculations; melting and fabrication practices; physical properties; special glasses. (Offered alternate years; offered 1955-56.) Prerequisites, junior standing and permission.
- 441 Undergraduate Seminar (1, maximum 3)** **Staff**
- 450 Pyroprocessing of Nonmetallics (3)** **Bauer, Staff**
Composition; reactions; plant control; grinding and burning; manufacture; chemistry and physics of processes. (Offered alternate years; offered 1956-57.) Prerequisites, junior standing and permission.
- 460 Ceramic Coatings for Metals (3)** **E. E. Mueller**
Production techniques for porcelain enamels and other ceramic coatings; enamels, insulation coatings, refractory coatings. (Offered alternate years; offered 1955-56.) Prerequisites, junior standing and permission.
- 470 Refractories (3)** **E. E. Mueller**
Physical and chemical composition; properties under service conditions; testing; utilization.
- 498 Undergraduate Thesis (*, maximum 5)** **Staff**
Problems in ceramics; laboratory investigations and bibliographic research. A total of 5 credits is required.

COURSES FOR GRADUATES ONLY

- 500 Ceramic Vitrology (3)** **E. E. Mueller**
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)** **J. I. Mueller**
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)** **E. E. Mueller**
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)** **E. E. Mueller**
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.
- 510 Advanced Ceramic Equilibria (3)** **E. E. Mueller**
Derivation of phase equilibrium relations in ceramics, studies of crystalline solutions, and analytical treatment of multicomponent phase equilibrium systems.
- 511 Theoretical Physical Ceramics (3)** **J. I. 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, 312.
- 512 Theoretical Physical Ceramics (3)** **J. I. 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)** **J. I. 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.
- 521 Identification of Ceramic Materials (3)** **J. I. Mueller**
Theory and use of X-ray diffraction techniques for qualitative identification. Prerequisite, Physics 355 or equivalent.
- 522 Structure and Analysis of Ceramic Materials (3)** **J. I. Mueller**
Theory and laboratory practice in use of X-ray diffraction for quantitative analysis; structure determinations. Prerequisite, 521 or equivalent.
- 523 Identification and Structure Problems (3, maximum 6)** **J. I. Mueller**
Laboratory practice in X-ray diffraction techniques applied to ceramic research. Prerequisite, 522 or equivalent.
- 590 Industrial Minerals Research (*)** **Staff**

600 Research (*)

Special problems investigated under staff direction; new products and processes; ceramic resources of the Pacific Northwest.

Staff**Thesis (*)****Staff**

Metallurgical Engineering

BACHELOR OF SCIENCE IN METALLURGICAL ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 58). Chemistry 115, 112, and 113 should be taken instead of Chemistry 105, 106, and 107, and General Engineering 100 should be omitted in the first quarter and taken in the second quarter. General Engineering 121 should be omitted in the third quarter. Students who decide to transfer into metallurgical engineering may complete the chemistry requirements by rearranging the required curriculum in consultation with the Director of the School.

As part of their course, students have experience in metallurgy, foundry, smelting, milling, or industrial plants during the summer vacations following their sophomore and junior years and must participate in scheduled field excursions.

In the fourth year, students may either follow the prescribed curriculum or make substitutions and choose electives in the field of physical metallurgy, extractive metallurgy, or mineral preparation engineering. Electives in labor relations and economics are recommended for students planning to specialize in plant operation and administration.

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Met. Engr. 201J Intro.		Met. Engr. 203 Elements..	3	Met. Engr. 204J	
Mineral Indust.	1	H.-S.S. 265 Tech. of		Stoichiometry	3
Met. Engr. 202 General..	1	Comm.	3	Met. Engr. 208J	
Chem. 221 Quant. Anal. .	5	Civil Engr. 291 Dynamics.	3	Pyrometry	3
Math. 252 Analytic Geom.		Math. 253 Analytic Geom.		Mech. Engr. 201 Metal	
& Calc.	5	& Calc.	3	Castings	1
Physics 217 Engr. Physics.	4	Physics 218 Engr. Physics	4	Geol. 221 Mineralogy....	5
ROTC	2-3	ROTC	2-3	Physics 219 Engr. Physics.	4
				ROTC	2-3
	16-19		16-19		16-19

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Met. Engr. 361 Physical..	4	Met. Engr. 321 Process..	4	Met. Engr. 306 Excursion.	1
Mining Engr. 461 Mineral		Met. Engr. 362 Physical..	4	Met. Engr. 322 Process..	3
Dressing: Prep.	4	Mining Engr. 462 Mineral		Met. Engr. 324 Lab.	2
Civil Engr. 292 Mechanics		Dressing: Concent.	4	Met. Engr. 363 Physical..	4
of Matls.	3	Chem. 356 Physical.....	4	Elect. Engr. 300 Elem. of	
H.-S.S. 270 Report Writing	2			Elect. Engr.	5
Chem. 355 Physical.....	3		16	Chem. 357 Physical.....	3
	16				18

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Met. Engr. 323 Process..	3	Met. Engr. 481J Mineral		Met. Engr. 307 Excursion	1
H.-S.S. 331 Hum.-Soc. St.	3	Econ.	3	Met. Engr. 498 Thesis ...	1
Met. Engr. 498 Thesis	2	Met. Engr. 498 Thesis	2	Elect. Engr. 400	
Cer. Engr. 470		H.-S.S. 332 Hum.-Soc. St.	3	Electronics	5
Refractories	3	Electives	7	H.-S.S. 333 Hum.-Soc. St.	3
Physics 320 Modern	3		15	H.-S.S. 491 Hum.-Soc. St.	2
Electives	3			Electives	3
	17				15

ADVANCED DEGREES

Students who intend to work toward advance 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 these degrees.

MASTER OF SCIENCE IN METALLURGICAL ENGINEERING. Candidates for this degree select courses in physical or extractive metallurgy in accordance with their particular interests and objectives. Special fields of study include metallurgical research, application metallurgy, chemical and extractive metallurgy, foundry metallurgy, and plant operation and management. Graduates of accredited metallurgical engineering curricula and graduates of other accredited engineering curricula who complete the basic undergraduate courses in metallurgical engineering may become candidates.

MASTER OF SCIENCE IN METALLURGY. Students with undergraduate majors in science, particularly physics or chemistry, may become candidates for this degree after completing basic undergraduate courses in metallurgy.

COURSES FOR UNDERGRADUATES

- 201J Introduction to the Mineral Industries (1)** **Pifer, Staff**
A series of lectures by representatives from the various divisions of the mineral industries. Historical and economic background; brief survey of technical processes and engineering; organization of the industry. Field trips required. Offered jointly with the Division of Mining Engineering.
- 203 Elements of Process Metallurgy (3)** **Gleason**
Introduction to extractive processes. Principles and practices applicable to recovery and refining of the principal metals. Commercial aspects.
- 204J Mineral Industries Stoichiometry (3)** **Gleason**
Principles of material and heat balances in the metallurgical and ceramic process industries. Offered jointly with the Division of Ceramic Engineering.
- 208J Pyrometry (3)** **J. I. Mueller**
Theory, methods, and equipment for high temperature measurement and instrumentation. Offered jointly with the Division of Ceramic Engineering. To be taken concurrently with Physics 219.
- 300 Assaying (3)** **Gleason**
Commercial and industrial methods of technical analysis of ores, metals, and furnace products. Rapid control methods are stressed. Introduction to fire assay for gold and silver. Prerequisite, Chemistry 221 or 325.
- 301 Fire Assaying (3)** **Gleason**
Quantitative determination of gold and silver in ores and mill products; testing of reagents; sampling methods; problems of slagging, fluxing, refractory reactions, and furnace conditions. Prerequisite, Chemistry 221 or 325.
- 306 Metallurgy Excursion (1)** **Staff**
Plant inspection trip; junior year.
- 307 Metallurgy Excursion (1)** **Staff**
Plant inspection trip; senior year.
- 321 Process Metallurgy (4)** **Gleason**
Principles of the unit processes in extractive metallurgy. Stoichiometry; heat balances; fuels and combustion; fluid flow; heat flow; engineering problems. Prerequisites, Physics 219 and Chemistry 116 or equivalent.
- 322 Process Metallurgy (3)** **Gleason**
Pyrometallurgical processes. Phases in metallurgical systems; chemistry and entropy of the processes; physical character of products. Roasting, sintering, smelting, converting, refining, fuming. Problems in thermochemistry. Should be taken concurrently with 324. Prerequisite, 321.
- 323 Process Metallurgy (3)** **Gleason**
Electrometallurgy. Theory and principles of electro-refining, plating, and forming. Electrolysis in aqueous and molten salt baths. Electrothermal processes. Prerequisite, Chemistry 356 or permission.
- 324 Metallurgical Laboratory (2)** **Gleason**
Quantitative experiments in extractive metallurgical processes. Roasting, sintering, smelting and reductions, slag problems, fire refining and electrolytic refining. Engineering problems. Prerequisite, 321 and 322. 322 should be taken concurrently with 324.
- 325 Process Metallurgy: Plant Practices (2)** **Gleason**
Auxiliary operations; dust and fume control; slime treatment; recovery from residues; casting. Plant layout and flow sheet; production control; instrumentation and automation; safety. Prerequisite, 322.
- 361 Physical Metallurgy (4)** **Roberts**
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)** **Robert**
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)** **Robert**
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.
- 412J X-ray Analytical Techniques (2)** **J. I. Mueller**
Introduction to the use of X-ray diffraction and spectroscopy as analytical methods. Laboratory practice. Offered jointly with the Division of Ceramic Engineering. Prerequisite, Physics 219 or equivalent.
- 441 Engineering Physical Metallurgy (3)** **Roberts**
For mechanical, chemical, and civil engineers and other nonmajors. Solidification of metals and alloys; crystallography; binary equilibrium diagrams; 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 in 442. Prerequisite, Physics 219.
- 442 Engineering Physical Metallurgy Laboratory (1)** **Roberts, Staff**
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; stress corrosion cracking investigations.
- 450 Modern Metals (3)** **Roberts**
A detailed study of the physical metallurgy of aluminum and its alloys; discussions on the metallurgy of magnesium, titanium, and less important light metals. Prerequisite, 361 or 441.
- 455 Iron and Steel (3)** **Gleason**
Process and production metallurgy. Theory and practice in operation of iron blast furnace and steel plants. Raw materials; furnaces; melting practices; ingot production; rolling and forming practices. Prerequisites, 362 or 441 and 321.
- 461 Advanced Physical Metallurgy (3)** **Roberts**
Discussion of recent metallurgical investigations. The findings, their significance, and the techniques used to obtain information of value. Prerequisite, 363.
- 465 Metallurgical Inspection of Metals (3)** **Staff**
Elements of industrial X-ray and gamma ray radiography; nondestructive testing methods. Laboratory practice in radiography and other methods. Prerequisite, 362 or 441.
- 466 Theory of Metals (3)** **Roberts**
Advanced discussion of metal constitution and metal behavior: electron theory of metals, band theory of solids, the cohesion of solids, the magnetic properties and electrical conductivity of metals. Prerequisite, 363.
- 467 Alloy Steels (2)** **Staff**
(Not offered 1955-56.)
- 468 Undergraduate Seminar (1, maximum 3)** **Staff**
- 471 Fuel Technology (3)** **Staff**
(Not offered 1955-56.)
- 472 Fuel Technology Laboratory (1)** **Staff**
(Not offered 1955-56.)
- 481J Mineral Industry Economics (3)** **Pifer**
Mineral resources, distribution, utilization, and depletion; government policies, taxation, and tariffs; industrial organization, cartels, and international control; markets and prices; financial provisions in the mineral industry; elements of costs in production. Offered jointly with the Division of Mining Engineering. Prerequisite, upper-division standing or permission.
- 498 Undergraduate Thesis (*, maximum 5)** **Staff**
Laboratory investigations of metallurgical problems and bibliographic research. Total of 5 credits required.

COURSES FOR GRADUATES ONLY

- 520 Seminar (1, maximum 6)** **Staff**
Review of research problems and recent literature. Required for all graduate students.
- 521 X-ray Metallography (3)** **J. I. Mueller**
Theory and use of the diffraction Xray in the study of metals; physical properties; gen-

eration and diffraction of Xrays; diffraction equipment; diffraction crystallography; single crystals and powders; interpretation and qualitative analysis. Prerequisite, Physics 355 or equivalent.

- 522 X-ray Metallography (3)** **J. I. Mueller**
Precision diffraction methods and their application to simple crystal structure and parameter determinations; chemical composition; grain size and distortion measurements; single-crystal orientation; determination of preferred orientation and polycrystalline metals; stress measurements. Prerequisite, 521 or equivalent.
- 523 X-ray Metallography (3)** **J. I. Mueller**
Laboratory practice on specific problems; application technique studies; research methods. Prerequisite, 522.
- 531 Advanced Metallurgy (*)** **Staff**
Study of selected problems, with particular attention to recent publications and scientific applications in physical or extractive metallurgy.
- 561 Theory of Metals and Alloys (3)** **Roberts**
Phase transformations in solid metals and alloys. An advanced treatment of phase transformations from the standpoint of crystallography, reaction kinetics, and thermodynamics. Prerequisite, 363.
- 562 Theory of Metals and Alloys (3)** **Roberts**
Theories of nucleation and grain growth phenomena, recrystallization, precipitation hardening, and martensitic transformations. Prerequisite, 561.
- 563 Theory of Metals and Alloys (3)** **Roberts**
Diffusion theory, dislocations in metals, ternary phase diagrams. Prerequisite, 562.
- 600 Research (*)** **Staff**
Thesis (*) **Staff**

Mining Engineering

BACHELOR OF SCIENCE IN MINING ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 58).

As part of their course, students have experience in mining, geology, or milling during the summer vacations following their sophomore and junior years, and must participate in scheduled field excursions.

In the third and fourth years, students may take the regular curriculum or may choose an option in either geological engineering or mineral preparation engineering. Electives in labor relations, economics, and business administration are recommended for students planning to specialize in mine operation and administration.

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Mining Engr. 201J		Mining Engr. 223 Rescue		Civil Engr. 214 Surveying	3
Intro. Mineral Indust. 1		Train.	1	Chem. 113 Qual. Anal. ...	5
Geol. 205 Rocks & Minerals	5	Mining Engr. 321 Drill.,		Geol. 221 Mineralogy ...	5
Math. 252 Analytic Geom.		Blast., Tunnel.	2	Physics 219 Engr. Physics	4
& Calc.	5	Civil Engr. 291 Dynamics	3	ROTC	2-3
Physics 217 Engr. Physics	4	H.S.S. 265 Tech. of			
ROTC	2-3	Comm.	3		
	15-18	Math. 253 Analytic Geom.			
		& Calc.	3		
		Physics 218 Engr. Physics	4		
		ROTC	2-3		
			16-19		

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Mining Engr. 322 Methods	4	Mining Engr. 323 Methods	3	Mining Engr. 306	
Mining Engr. 461 Mineral		Mining Engr. 462 Mineral		Excursion	1
Dressing: Prep.	3	Dressing: Concent.	4	Mining Engr. 430 Mine	
Civil Engr. 292 Mechanics		Elect. Engr. 300 Elem.	5	Surveying	2
of Maths.	3	Elect. Engr.	5	Mining Engr. 480 Land	
H.S.S. 270 Report		Geol. 324 Petrology	5	Valuation	2
Writing	2		17	Elect. Engr. 301 Elect.	
Geol. 323 Optical Mineral	5			Mach.	5
	17			H.S.S. 331 Hum.-Soc. St.	3
				Chem. 221 Quant. Anal. ...	5
					18

Fourth Year

FIRST QUARTER	CREDITS
Mining Engr. 425	
Barodynamics	2
Mining Engr. 431 Mapping	1
Mining Engr. 433	
Ventilation	3
Mining Engr. 498 Thesis	2
Civil Engr. 342 Hydraulics	5
H.-S.S. 332 Hum.-Soc. St.	3
	<hr/> 16

SECOND QUARTER	CREDITS
Mining Engr. 481J	
Mineral Econ.	3
Mining Engr. 498 Thesis	2
H.-S.S. 333 Hum.-Soc. St.	3
Met. Engr. 203 Elem. of	
Process	3
Geol. 427 Ore Deposits	5
	<hr/> 16

THIRD QUARTER	CREDITS
Mining Engr. 307	
Excursion	1
Mining Engr. 426	
Exploration	3
Mining Engr. 432 Mine	
Engr.	5
Mining Engr. 483 Laws	1
Mining Engr. 498 Thesis	1
Electives	5
	<hr/> 16

GEOLOGICAL ENGINEERING OPTION

Third Year

FIRST QUARTER	CREDITS
Mining Engr. 461 Mineral	
Dressing: Prep.	3
Mining Engr. 322 Methods	4
Civil Engr. 292 Mechanics	
of Mats.	3
H.-S.S. 270 Report	
Writing	2
Geol. 323 Optical	5
	<hr/> 17

SECOND QUARTER	CREDITS
Mining Engr. 323 Methods	3
Mining Engr. 462 Mineral	
Dressing: Concent.	4
Geol. 206 Physiography	5
Geol. 324 Petrography	5
	<hr/> 17

THIRD QUARTER	CREDITS
Mining Engr. 306	
Excursion	1
Mining Engr. 430	
Surveying	2
Mining Engr. 480 Land	
Valuation	2
Geol. 207 Historical	5
Geol. 425 Petrology	5
	<hr/> 15

Fourth Year

FIRST QUARTER	CREDITS
Mining Engr. 431 Mapping	1
Mining Engr. 498 Thesis	1
H.-S.S. 331 Hum.-Soc. St.	3
Geol. 308 Structural	5
Geol. 361 Stratigraphy	
or elective	5
	<hr/> 15

SECOND QUARTER	CREDITS
Mining Engr. 481J	
Mineral Econ.	3
Mining Engr. 498 Thesis	2
H.-S.S. 332 Hum.-Soc. St.	3
Geol. 427 Ore Deposits	5
Electives	3
	<hr/> 16

THIRD QUARTER	CREDITS
Mining Engr. 307	
Excursion	1
Mining Engr. 426	
Exploration	3
Mining Engr. 483 Laws	1
Mining Engr. 498 Thesis	2
Elect. Engr. 300 Elem. of	
Elect. Engr.	5
H.-S.S. 333 Hum.-Soc. St.	3
Electives	2
	<hr/> 17

MINERAL PREPARATION ENGINEERING OPTION

Third Year

FIRST QUARTER	CREDITS
Mining Engr. 322 Methods	4
Mining Engr. 461 Mineral	
Dressing: Prep.	3
Civil Engr. 292 Mechanics	
of Mats.	3
H.-S.S. 270 Report	
Writing	2
Geol. 323 Optical	5
	<hr/> 17

SECOND QUARTER	CREDITS
Mining Engr. 462 Mineral	
Dressing: Concent.	4
Elect. Engr. 300 Elem. of	
Elect. Engr.	5
Met. Engr. 203 Elements	3
Chem. 221 Quant. Anal.	5
	<hr/> 17

THIRD QUARTER	CREDITS
Mining Engr. 306	
Excursion	1
Mining Engr. 464 Mineral	
Dressing: Leaching	3
Elect. Engr. 301	
Elect. Mach.	5
H.-S.S. 331 Hum.-Soc. St.	3
Met. Engr. 300 Assaying	3
Chem. 231 Organic	3
	<hr/> 18

Fourth Year

FIRST QUARTER	CREDITS
Mining Engr. 463 Mineral	
Dressing: Flotation	3
Mining Engr. 476 Coal	
Prep.	3
Mining Engr. 498 Thesis	5
Civil Engr. 342 Hydraulics	5
Chem. 351 Physical	3
	<hr/> 16

SECOND QUARTER	CREDITS
Mining Engr. 465 Mineral	
Dressing: Microscopy ..	2
Mining Engr. 481J Mineral	
Econ.	2
Mining Engr. 485 Indust.	3
Mining Engr. 498 Thesis	2
H.-S.S. 332 Hum.-Soc. St.	3
Chem. 352 Physical	3
	<hr/> 15

THIRD QUARTER	CREDITS
Mining Engr. 307	
Excursion	1
Mining Engr. 466 Mineral	
Dressing: Practices or	
elective	2
Mining Engr. 467 Mineral	
Dressing: Design or	
elective	2
Mining Engr. 498 Thesis	1
H.-S.S. 333 Hum.-Soc. St.	3
Chem. 353 Physical	4
Electives	3
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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 these degrees.

MASTER OF SCIENCE IN MINING ENGINEERING. Candidates for this degree may elect work in mining or mineral dressing in accordance with their special interests. Special study in the fields of labor relations and management is available. The student may select courses in preparation for exploration and development, operation and management, 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 and fuels technology in order to become candidates.

COURSES FOR UNDERGRADUATES

- 201J Introduction to the Mineral Industries (1)** **Pifer, Staff**
A series of lectures by representatives of the various divisions of the mineral industries. Historical and economic background; brief survey of the technical processes and engineering; organization of the industry. Field trips required. Offered jointly with the Division of Metallurgical Engineering.
- 223 Mine Rescue Training (1)** **Anderson, U.S.B.M. Safety Station Staff**
Instruction and practice in use of oxygen rescue apparatus; first aid; safety; U. S. Bureau of Mines course. Physical examination required.
- 306 Mine Excursion (1)** **Staff**
Five-day trip to a neighboring mining region.
- 307 Mine Excursion (1)** **Staff**
Five-day trip similar to 306.
- 321 Drilling, Blasting, and Tunnelling (2)** **Anderson**
Principles of rock breaking and excavation. Drilling equipment selection and application; characteristics of explosives and their selection for specific uses; design of blast and explosive loading patterns; safe practices and elements of cost. Prerequisite, General Engineering 102.
- 322 Methods of Mining (4)** **Anderson**
Working of placer, open pit, and underground mines. Prospecting and delineation of ore bodies; shafts and developments; level planning and underground stoping methods; support systems; surface mining of placer and ore deposits; introduction to transport, drainage, ventilation, hoisting, and mine organization. Prerequisite, 321 or permission.
- 323 Methods of Mining (3)** **Anderson**
Prospecting, development, and operation of coal and stratified-deposit mines. Principles of mechanized breaking, loading, and transportation. Prerequisites, 321 and 322.
- 425 Barodynamics (2)** **Pifer**
Barodynamic forces in mining. Pressure burst and its control; stress around workings; fragmentation by induced forces; subsidence; extracting pillars and remnants; support of workings. Prerequisites, 322 and Civil Engineering 292 or permission.
- 426 Exploration and Development of Mineral Deposits (3)** **Pifer**
Procurement of data by mapping, drilling and geophysical methods; principles of geophysical methods; solution of mine structural and fault problems; physiographic, mineralogical and structural guides to ore applied to mine exploration; exploration and development programs for evaluation and delineation; examination of prospects. Prerequisite, Geology 427.
- 430 Mine Surveying (2)** **Anderson**
Practice in underground methods, use of special instruments, stope measurements, underground curves, shaft surveying, solar observations, and carrying of meridian underground. Survey practice at Silverton Mine. Prerequisite, Civil Engineering 314.
- 431 Mine Mapping (1)** **Anderson**
Plotting of underground field notes made in 430; production of working and geological maps and sections. Prerequisite, 430.
- 432 Mine Engineering (5)** **Anderson**
Principles and application; mechanisms in mine machinery—foundations and erection of equipment; air compression thermodynamics—practice and distribution; pumping plant and hydraulics; electrical equipment and distribution systems in mines; plant design and construction. Studies at nearby mines and plants. Two hours lecture, nine hours laboratory, weekly. Prerequisites, 222 and Electrical Engineering 301.
- 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.

- 461 Mineral Dressing: Preparation (3)** **Brien**
Elementary principles of mineral dressing. Technology, equipment, and costs for unit process operations; comminution, sizing, classification, thickening, dewatering, filtration, and related auxiliary processes. Laboratory experiments illustrating fundamental operations and theory; use of standard preparation equipment.
- 462 Mineral Dressing: Concentration (4)** **Brien**
Fundamental principles of ore concentration. Flotation, gravity, magnetic, electrostatic, sink and float methods, and related methods of mineral separation; general concentrator arrangements and flow diagrams. Experiments in concentration using selected ores and small-size machines to demonstrate fundamental principles; integrated pilot plant test. Prerequisite, 461.
- 463 Mineral Dressing: Flotation (3)** **Brien**
Flotation theory and practice. Applied surface chemistry and technology of flotation; concentration for sulfide and nonmetallic minerals. Laboratory problems designed to illustrate basic chemical and physical phenomena; practical flotation testing and investigation. Prerequisites, 462 and Chemistry 221 or equivalent.
- 464 Mineral Dressing: Leaching (3)** **Brien**
Physical-chemical principles of hydrometallurgy. Cyanidation of gold and silver ores; sand and slime leaching of copper ores; leach-precipitation-flotation methods; plant detail—operation and control; economics. Prerequisites, 461 and Chemistry 221 or 325.
- 465 Mineral Dressing: Microscopy (2)** **Brien**
Elements of quantitative mineralogy, microchemistry, and mineral liberation studies of polished ore sections; index-liquid determinations for industrial minerals and grain-count studies of mineral dressing products. Prerequisites, 461 and Geology 323.
- 466 Mineral Dressing Practices (2)** **Brien**
Study of plant operations. Methods of laboratory investigation; advanced quantitative mineralogy and research. Prerequisites, 462 and 465.
- 467 Mineral Dressing Design (2)** **Brien**
General arrangement planning and design calculations for beneficiation plants on a project basis. Prerequisite, 466.
- 476 Coal Preparation (3)** **Brien**
Dry and wet cleaning processes; control by float-and-sink methods; characteristics of coal and associated impurities; economics of preparation; market requirements. Prerequisites, 461 and Metallurgical Engineering 471.
- 478 Coal Preparation Machinery (2)** **Brien**
Laboratory work in float-and-sink methods; screening, classification, tabling, jigging, and other cleaning methods. Prerequisites, 461, 476, and Metallurgical Engineering 471.
- 480 Mineral Land Valuation (2)** **Anderson**
Sampling methods in mines and placers; drill hole and coring methods; geologic aspects; estimation of mineral deposits and reserves; financial calculations; reports; professional ethics.
- 481J Mineral Industry Economics (3)** **Pifer**
Mineral resources, distribution, utilization, and depletion; government policies, taxation, and tariffs; industrial organization, cartels, and international control; markets and prices; financial provisions; elements in cost of plant and production. Offered jointly with the Division of Metallurgical Engineering. Prerequisite, upper-division standing or permission.
- 482 Mineral Industry Management (3)** **Pifer**
Administrative methods; personnel selection; methods of payment; labor relations; scientific management; social and economic aspects.
- 483 Mining Laws (1)** **Pifer**
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. Prerequisites, 322 and 481J or permission.
- 485 Industrial Minerals (3)** **Brien**
Nonmetallic mineral industry; sources of raw materials; processing technology and product specifications; marketing; economics, and utilization. Prerequisite, 461 or equivalent.
- 498 Undergraduate Thesis (*, maximum 5)** **Staff**
Problems in mining or mineral dressing; laboratory investigations and bibliographic research. Total of 5 credits required.

COURSES FOR GRADUATES ONLY

- 520 Seminar (1, maximum 6)** **Staff**
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, and collar preparation; sinking, support, stations and bottoms, and equipment and maintenance; safety and costs; rectangular, square, and circular shafts.

523 Coal Mining (*)	Pifer
Studies in coal mining, preparation, or coking with particular reference to the Pacific Northwest. Prerequisite, graduate standing.	
560 Mineral Dressing (*)	Brien
Special problems and research.	
561 Advanced Mineral Dressing Preparation (*)	Brien
Unit process studies in comminution, sizing, classifying, and auxiliary processes.	
562 Advanced Mineral Dressing Laboratory (*)	Brien
Experimental study of theoretical principles of preparation and concentration. Arranged concurrently with 561 and 563 or as required.	
563 Advanced Mineral Dressing Theory (*)	Brien
Physics and chemistry of beneficiation.	
564 Advanced Mineral Dressing Design (*)	Brien
Plant layout studies, economics, and equipment design.	
571 Cooperative Research with United States Bureau of Mines (6)	Staff
600 Research (*)	Staff
Thesis (*)	Staff

PROSPECTOR'S COURSE

The Prospector's Course is open without examination to anyone past high school age. It is offered during the Winter Quarter. The fee for each quarter is \$10.00, payable upon registration. The G.I. Bill applies to this course. The course occupies full time Monday through Friday, with occasional Saturday trips to mines and plants. A certificate is given upon completion of each quarter. Further information about the Prospector's Course is available from the Director of the School of Mineral Engineering.

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. Four lectures and three laboratory periods, weekly.	
20 Milling (0)	Brien
Use of standard ore dressing and concentration equipment; milling plant for prospects and small mines; typical flowsheets; mill sampling; illustrative operation of laboratory equipment. Two lectures and one laboratory period, weekly.	
Metallurgical Engineering 30 Metals (0)	Gleason
Elementary properties of metals; smelting processes; selling ores and concentrates; metal prices and smelter schedules. One lecture weekly.	

COURSES INCLUDED IN ENGINEERING PROGRAMS

COLLEGE OF ARTS AND SCIENCES

CHEMISTRY

103, 104 General Chemistry (5,5)	Staff
For engineering students only (except those in chemical, ceramic, and metallurgical engineering) who have taken no high school chemistry. 103: gases, liquids, solids, solutions, equilibria. 104: reaction rates, thermo- and electro-chemistry, acids and bases, oxidation and reduction.	
105, 106 General Chemistry (3,3)	Staff
Similar to 103 and 104 but with a prerequisite of high school chemistry.	
107 General Chemistry (3)	Staff
For engineering students. Structure, nuclear reactions, metals, organic and industrial processes. Prerequisite, 104, 106, or 112.	
112 General Chemistry (5)	Staff
Atomic and molecular structure, chemical bonding, oxidation-reduction, electro-chemistry, nonmetals, solutions, equilibria. Prerequisite, 111 or 115.	
113 Elementary Qualitative Analysis (5)	Staff
Semi-micro qualitative analysis for common cations; metals, metallurgy, carbon compounds, nuclear reactions. Prerequisite, 112.	
115 General Chemistry (5)	Staff
For students who have had high school chemistry. Primarily for those who expect to continue through 113 or 116. Content similar to 111. No credit if 111 has been taken. (This course is taken by chemical, ceramic, and metallurgical engineering students.)	
116 General Chemistry and Qualitative Analysis (5)	Staff
Content similar to 113. No credit if 113 has been taken. Prerequisites, 115 and permission.	
221 Quantitative Analysis (5)	Staff
Volumetric and gravimetric. Prerequisite, 113 or 116.	
231, 232 Organic Chemistry (3,3)	Staff
For students in premedicine and predentistry and others desiring two quarters of organic	

chemistry. Structure, nomenclature, reactions, and synthesis of the main types of organic compounds. Prerequisite, 104, 106, or 112.

- 241, 242 Organic Chemistry Laboratory (2,2)** **Staff**
241: preparation of representative compounds. Prerequisite, 231, which may be taken concurrently. 242: preparations and qualitative organic analysis. Prerequisites, 241 and 232, which may be taken concurrently.

- 325 Quantitative Analysis (5)** **Staff**
For chemistry and chemical engineering majors and other qualified students. Volumetric and gravimetric analysis. Prerequisite, 113 or 116.

- 335, 336, 337 Organic Chemistry (3,3,3)** **Staff**
For chemistry and chemical engineering majors and other qualified students. Structure, nomenclature, reactions, and synthesis of organic compounds. Theory and mechanism of organic reactions. Prerequisite, 113 or 116.

- 345, 346 Organic Chemistry Laboratory (2,2)** **Staff**
Organic synthesis. Prerequisite for 345, 335, which may be taken concurrently. Prerequisites for 346, 345 and 336, which may be taken concurrently.

- 351, 352 Elementary Physical Chemistry (3,3)** **Staff**
Structure of matter; theory of solids, liquids, and gases; solutions and their colligative properties. Prerequisites, 221 and college physics.

- 355, 356, 357 Physical Chemistry (3,4,3)** **Staff**
For chemistry and chemical engineering majors and other qualified students. Atomic and molecular structure. Thermodynamics and chemical equilibrium, solutions, thermo- and electro-chemistry, kinetics, colloid and surface chemistry. States of matter and phase equilibria. Prerequisites, 113 or 116, calculus, and college physics, or permission.

- 358, 359 Physical Chemistry Laboratory (3,3)** **Staff**
Prerequisites, 325 and 357 or 355, 356, and 357, which may be taken concurrently as offered.

- 415, 416, 417 Advanced Inorganic Chemistry (3,3,3)** **Staff**
Systematic study based upon atomic, molecular, and crystal structure, the nature of chemical bonds, and the periodic table. Prerequisite, 357 or permission.

- 550, 551, 552 Advanced Physical Chemistry (3,3,3)** **Staff**
Elementary concepts of quantum chemistry, statistical mechanics, thermodynamics, kinetic theory, and chemical kinetics. Prerequisite, 357 or permission.

ECONOMICS

- 211 General Economics (3)** **Staff**
Condensed presentation on 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.

GEOLOGY

- 205 Rocks and Minerals (5)** **Staff**
Prerequisite, high school chemistry.

- 206 Elements of Physiography (5)** **Staff**
Processes and agencies affecting the earth's surface; relationship of topography to structure, etc. Prerequisite, 101 or 205.

- 207 Historical Geology (5)** **Staff**
Origin and evolution of the earth, with emphasis on the general geological history of North America. Prerequisites, 205 and 206, or permission.

- 221 Mineralogy (3 or 5)** **Staff**
Determinative crystallography and blowpipe analysis. 3 credits can be obtained in extension, 5 credits in residence. Prerequisites, high school chemistry and 205.

- 308 Structural Geology (5)** **Staff**
Interpretation of rock structures and their genesis. Prerequisites, 205, 206, 207, and General Engineering 101, 102, 103.

- 310 Engineering Geology (5)** **Staff**
Elements of geology for civil engineers. Prerequisite, civil engineering major or permission.

- 323 Optical Mineralogy (5)** **Staff**
Petrographic microscope and recognition of common minerals in thin section. Prerequisites, 205 and 221.

- 324 Petrography and Petrology (5)** **Staff**
Systematic study of rocks with the petrographic microscope. Prerequisite, 323.

- 361 Stratigraphy (5)** **Staff**
Sedimentation and facies; rock and time units; evaluation of boundaries; principles of correlation. Prerequisites, 205, 206, and 207; suggested, 330 and 432.

- 425 Petrography and Petrology (5)** **Staff**
Metamorphic rocks, petrogenesis. Prerequisite, 324.

- 427 Ore Deposits (5)** **Staff**
Form, structure, mineralogy, petrology, and mode of origin. Prerequisites, 221 and 324.

MATHEMATICS

- 104 Plane Trigonometry (3)** **Staff**
Trigonometric functions, identities, graphs, logarithms, and solution of triangles. Mathematics 120 may be taken concurrently as a supplement to this course. Prerequisites, one and one-half years of high school algebra, qualifying test or 101, and one year of plane geometry.
- 105 College Algebra (5)** **Staff**
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.
- 153 Analytic Geometry and Calculus (5)** **Staff**
Equations of straight lines and simple curves. Differentiation of algebraic functions, applications. Differentials, indefinite integrals. Prerequisites, 104 and 105 or exemption by qualifying test.
- 251 Analytic Geometry and Calculus (5)** **Staff**
Definite integrals, integration of simple algebraic functions, applications. Conic sections, polar coordinates, and differentiation of transcendental functions. Prerequisite, 153.
- 252 Analytic Geometry and Calculus (5)** **Staff**
Parametric equations, curvature, integration of algebraic and transcendental functions, applications. Improper integrals, indeterminate forms, infinite series. Prerequisite, 251.
- 253 Analytic Geometry and Calculus (3)** **Staff**
Solid analytic geometry, multiple integrals, partial derivatives. Prerequisite, 252.
- 401 Linear Algebra (5)** **Staff**
Matrices; determinants; groups of transformations; linear spaces; linear transformations and their invariants. Prerequisite, 253 or 309.
- 421, 422 Differential Equations (3,3)** **Staff**
Elementary methods of solution, linear differential equations, systems of differential equations, series solutions. Prerequisites, 309 or 253 for 421; 421 for 422.
- 423 Advanced Calculus and Vector Analysis (3)** **Staff**
Line and surface integrals; Stokes' Theorem; vector methods; Jacobians; implicit function theorem. Prerequisite, 309 or 253.
- 427, 428, 429 Topics in Applied Analysis (3,3,3)** **Staff**
Elementary complex variable; Fourier series and integrals; Laplace transforms; orthogonal functions; partial differential equations. Prerequisites, 421 and 423 for 427; 427 for 428; 428 for 429.

PHYSICAL EDUCATION

- 106 through 150; 206 through 250 Physical Education Activities (Men) (1 each)** **Staff**
106, handball; 107, basketball; 108, tennis; 109, softball; 110, golf (fee, \$3.00 per quarter); 111, track; 112, crew (class), prerequisite, swimming; 113, fencing; 114, boxing; 115, tumbling and apparatus; 117, wrestling; 118, volleyball; 119, swimming; 120, Rugby; 121, touch football; 122, badminton; 123, archery; 125, skiing (fee); 126, speedball; 127, bowling (fee, \$3.00 per quarter); 128, weight training; 129, sailing; 131, beginning, 134, intermediate folk and square dancing; 141, freshman, 241, varsity basketball; 142, freshman, 242, varsity crew, prerequisite, swimming; 143, freshman, 243, varsity football; 144, freshman, 244, varsity track; 145, freshman, 245, varsity swimming; 146, freshman, 246, varsity baseball; 147, freshman, 247, varsity tennis; 148, freshman, 248, varsity golf; 149, freshman, 249, varsity skiing (fee); 150, freshman, 250, varsity volleyball.
- 110 Health Education (Women) (2)** **Staff**
Health problems of freshman women. Required of all freshmen.
- 111 through 170; 211 through 268 Physical Education Activities (Women) (1 each)** **Staff**
111, adapted activities; 113-114, basic activities; 115, archery; 118, badminton; 121, bowling (fee, \$3.00 per quarter); 124, fencing; 126, golf (fee, \$3.00 per quarter); 128, riding (fee); 129, sailing; 131, dry skiing; 132, elementary skiing (fee); 133, stunts and tumbling; 135, tennis; 141, basketball; 142, field sports; 143, hockey; 144, softball; 145, volleyball; 148, folk and square dancing; 149, European folk dance; 151, modern dance; 154, social dance; 155, tap and clog; 157, canoeing (fee, \$2.50 per quarter); 160, adapted swimming; 161, beginning swimming; 162, elementary swimming; 215, intermediate archery; 218, intermediate badminton; 221, intermediate bowling (fee, \$3.00 per quarter); 222, advanced bowling (fee, \$3.00 per quarter); 224, intermediate fencing; 228, intermediate riding (fee); 229, sailing; 230, ski racing (fee); 231, intermediate skiing (fee); 232, advanced skiing (fee); 235, intermediate tennis; 248, intermediate folk and square dancing; 251, intermediate modern dance; 252, advanced modern dance; 257, intermediate canoeing (fee, \$2.50 per quarter); 263, intermediate swimming; 264, advanced swimming; 265, rhythmic swimming; 266, diving; 267, lifesaving; 268, water safety instruction.
- 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 by examination.

PHYSICS

- 217, 218, 219 Physics for Engineers (4,4,4)** **Staff**
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 for Engineers (3) Staff

Emphasis is placed upon discoveries in modern physics which are particularly basic to applications in engineering, including the electrical nature of matter, elementary particles, interaction of radiation with matter, nuclear disintegration. Solid state, semiconductors, and nuclear reactors are especially treated. Prerequisite, 219 or permission.

323 Introductory Nuclear Physics (3) Staff

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, 322.

340 Sound (3) Staff

The sources of sound, transmission in different media, and elements of acoustics. Laboratory. Prerequisite, 103, 106 with concurrent registration in 109, or 123.

360, 361 Optics (3,3) Staff

Thick lenses and lens combinations; wave motion; interference and diffractions; propagation in moving media; polarization; dispersion; introduction to the electromagnetic and the discrete character of light. Laboratory. Prerequisites, 103, 106 with concurrent registration in 109, or 123, and calculus.

497 Experimental Nuclear Physics (3) Staff

The experiments are examples of the basic techniques and measurements discussed in the lectures, including measurement of beta and gamma ray energies, mean life of beta decay, and meson to proton mass ratio. Prerequisite, 320, 323, or permission.

SPEECH

327 Extempore Speaking (3) Staff

A course in public speaking primarily for engineering students. 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

150 Fundamentals of Accounting (4) Staff

Basic principles, financial statements, double-entry principles, capital and revenue expenditures, depreciation, etc.

151 Fundamentals of Accounting (3) Staff

Elements of manufacturing, partnership, and corporation accounting. Prerequisite, 150.

310 Intermediate Accounting (5) Staff

Advanced theory on inventory valuation, depreciation, etc.; analysis of profit variations. Prerequisite, 250 or 255.

330 Cost Accounting (5) Staff

Economics of cost accounting; industrial analysis; production control through costs; types of cost systems; burden application. Prerequisite, 250 or 255.

BUSINESS LAW

307 Business Law (3) Staff

For engineering students and others unable to take more than 3 credits in business law. Introduction to law, its origin and development; formation and performance of contracts; fraud, mistake, duress, and undue influence; rights of third parties and remedies available at law and in equity; the law of agency as affecting the rights and duties of the principal, the agent, and the third parties. Prerequisite, permission.

FINANCE

201 Banking and Business (5) Staff

Functions of the important financial institutions, including commercial banks and the banking system of the United States; investment banking, security markets, savings institutions, consumer credit agencies, governmental credit agencies, and international financial relationships. The role each institution plays in meeting the short-, intermediate-, and long-term credit needs of business and individuals is emphasized. Prerequisites, Accounting 151 and Economics 211 or permission.

301 Corporation Finance (5) Staff

Formation and financial organization of the business enterprise; corporate securities; promotion; long-term financing of various types of business; marketing of securities; working-capital analysis; sources of short-term funds; income determination; reserve and dividend policies; financing expansion; failure and reorganization. Prerequisite, 201.

HUMAN RELATIONS

365 Industrial Relations for Engineers (3) Staff

Actual cases are used to develop useful ways of dealing with human situations, making administrative decisions, supervising people, and building effective industrial and personnel relations.

RESERVE OFFICERS TRAINING PROGRAMS

THE DEPARTMENTS of Air Science, Military Science and Tactics, and Naval Science were established under the provisions of the National Defense Act of June 4, 1920, and function under directives from the United States Department of Defense. The Secretaries of the services are responsible for the operation of the ROTC programs. At the University, the programs are coordinated by the office of the Dean of the College of Engineering.

The Departments of Air Science and Military Science and Tactics provide two years of basic military training for male students and an additional two years of advanced training for a selected group of male students. The advanced programs prepare students to receive regular or reserve commissions in the United States Army and Air Force. The Department of Naval Science offers a four-year program which prepares selected male students for regular or reserve commissions in the United States Navy or Marine Corps. Students who take advanced training in the Air Force or Army ROTC program, and students in the Naval ROTC program, must agree in writing to accept a commission if offered, to serve on active duty, subject to the call of the Secretary of their service, for not less than two years, and to remain in the reserve of their service until the eighth anniversary of the date of their commission.

ROTC courses are included in the freshman and sophomore curricula of all male students (see page 40). The first six quarters of study in either of the three departments satisfy the military training requirements of the University, but students who attain junior or senior standing in the Naval ROTC program, and those who enter the advanced Air Force or Army ROTC program, must complete the program as a condition of graduation unless excused or released by authority of the Secretary of the service concerned.

AIR SCIENCE

Professor of Air Science: GEORGE H. DIETZ, Air Science Building

Eligibility to enroll in the Basic Course, Air Force Reserve Officers Training Corps, is limited to students who are citizens of the United States and have not yet reached their twenty-third birthday at the time of initial enrollment. Students enrolled in the Air Force ROTC may be deferred from the draft within quota

limitations subject to the approval of the Professor of Air Science. One criterion for military deferment is good standing at the University, which means the student must: (1) maintain an acceptable grade-point average; (2) be registered for at least 15 academic credits per quarter, exclusive of required lower-division ROTC and physical education activity; and (3) earn at least 45 academic credits during each academic year.

Students who are given an ROTC deferment agree to complete four years of ROTC, accept a commission, then serve three years on active duty when called, unless sooner relieved, and five additional years in a reserve organization.

First-year Air Force ROTC students are given an introductory course in the theory of flight, followed by a study of fundamentals of global geography, international tensions and security organizations, and instruments of national military security. This sequence of courses requires classroom attendance two hours each week. First-year students are also introduced to the principles of leadership and command through practice of basic elements of drill one hour each week. In the second year of the basic program, the emphasis is moved to a study of aerial warfare and the Air Force itself. Practice in leadership, drill, and exercise of command extends throughout the two years of the basic program and continues two additional years for students in the advanced program.

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 are selected for the advanced program, and each student selected must:

1. Successfully complete the two-year Basic Air Force ROTC program or receive equivalent credit for active service in the military forces of the United States.
2. Execute a written agreement with the government to complete the advanced program, contingent upon remaining in the University, and to attend 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.
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, unless excused or dismissed from this requirement by authority of the Secretary of the Air Force.

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 relations of the Air Force commander and his staff, problem solving techniques, communication, military instructional methods, military justice, navigation, weather, and Air Force base organization. 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 seminar on leadership and management, then study military aviation and the evolution of warfare, military aspects of global geography, and are briefed for 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 both basic and advanced programs are furnished complete uniforms of the type worn by Air Force personnel. Students 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 is refunded in full when the uniform and textbooks are returned undamaged.

Inquiries about enrollment or other matters should be addressed to the Professor of Air Science.

COURSES FOR UNDERGRADUATES

- 131, 132, 133 Air Science I—Basic (2,2,2)** **Staff**
Details of the Air Force ROTC program; the significance of the individual's obligations for military service; introduction to aviation; fundamentals of global geography; factors of world power; the nation's defense organization; drill.
- 231, 232, 233 Air Science II—Basic (2,2,2)** **Staff**
The purpose, process, and primary elements of aerial warfare: targets, weapons, delivery aircraft, operations, and bases; purpose and provisions of the Air Force Officer Career Program; survey of occupational fields open to Air Force officers; opportunities for and obligations of a career in the Air Force as an officer or airman; cadet non-commissioned-officer training.
- 301, 302, 303 Air Science III—Advanced (3,3,3)** **Staff**
Command and staff concepts; leadership laboratory; problem-solving techniques, communications processes; principles and techniques of learning and teaching; Air Force correspondence and publications; military law—courts and boards; applied air science, includes principles of flight, aircraft engineering, aerial navigation, and weather; functions of the Air Force base.
- 304 Air Science III—Advanced Camp (3)** **Staff**
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 IV—Advanced (3,3,3)** **Staff**
Critique of summer camp; Air Force leadership and management; relationship of geographical factors to national strength and international power patterns; foundations of national power; military aviation and the art of war; career guidance, briefing for commissioned service.

MILITARY SCIENCE AND TACTICS

Professor of Military Science and Tactics: WALTER A. RUDE, Army ROTC Building

Qualifications for entrance to the Army Reserve Officers Training Corps are in accordance with University requirements and Department of the Army regulations. Participation in the Army ROTC program may permit deferment from the draft under the Universal Military Training and Service Act of 1951.

Courses in the first and second years of the basic program require classroom attendance two hours each week. First and second year students are introduced to American military history, organization of the Army, map reading, and individual and crew-served weapons. School of the soldier and exercise of command extends throughout the two years of the basic program and continues two additional years for students in the advanced program.

After completing the basic program, students are eligible for entrance to the advanced Army ROTC, which is designed to train professionally qualified officers. Students in the advanced course are chosen from the group of most highly qualified students who have completed the basic program of senior-division ROTC, or have had twelve months or more of honorable active service in the military forces of the United States. Each student accepted for the advanced program must:

1. Not have reached twenty-seven years of age at the time of initial enrollment in the advanced course.
2. Execute a written agreement with the government to complete the advanced course contingent upon remaining in the University.
3. Be selected by the Professor of Military Science and Tactics and the President of the University.
4. Successfully complete whatever general survey and screening tests are prescribed.
5. Complete the course as a prerequisite for graduation from the University, unless excused or dismissed from this requirement by authority of the Secretary of the Army.

Courses in the advanced program require classroom attendance four hours a week, plus one hour of practice in school of the soldier, and exercise of command.

Advanced students are given courses in small unit tactics and communications, organization and functions of various arms and services, logistics, operations, and military administration. In addition, a summer camp is attended for six weeks between the first and second years of the advanced program.

Advanced Army ROTC students are paid a monetary allowance at a daily rate equal to the value of the commuted ration, which currently is 90 cents a day. The allowance is in addition to benefits received through the G.I. Bill.

Regulation ROTC uniforms are issued to students in the basic program, and uniforms similar to those of Army officers are issued to students in the advanced program. Students are required to wear the uniform on drill day. At the time of registration, each student must make a \$25.00 deposit. This deposit is refunded in full to those who have completed more than one year of either the basic or the advanced Army ROTC courses when the uniform is returned complete and undamaged. Those withdrawing from either the basic or the advanced Army ROTC courses after completing one year or less will be charged one-half the Army list price for the shoes issued to them. The student may retain these shoes. A student who completes one year or less of either the advanced or basic courses at the end of the Spring Quarter will be required to leave on deposit with the University during the summer months an amount equal to one-half the Army list price of the shoes issued. This amount will be treated as a partial payment toward the \$25.00 deposit when the student enrolls in military science courses at the beginning of the Autumn Quarter. The Army furnishes all textbooks and equipment used in military science classes.

Inquiries about enrollment or other matters should be addressed to the Professor of Military Science and Tactics.

COURSES FOR UNDERGRADUATES

- | | |
|--|--------------|
| 101, 102, 103 Military Science I—Basic (2,2,2) | Staff |
| Organization of the Army and ROTC; American military history; individual weapons and marksmanship; school of the soldier and exercise of command. | |
| 201, 202, 203 Military Science II—Basic (2,2,2) | Staff |
| Crew-served weapons and gunnery; map and aerial photograph reading; school of the soldier and exercise of command. | |
| 301, 302, 303 Military Science III—Advanced (3,3,3) | Staff |
| Small unit tactics and communications; organization, function, and mission of the arms and services; military teaching methods (objective and scope); leadership; school of the soldier and exercise of command. | |
| 360 Military Science III—Advanced Camp (3) | Staff |
| 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) | Staff |
| 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; the role of the United States in world affairs and the present situation; leadership; officer indoctrination; school of the soldier and exercise of command. | |

NAVAL SCIENCE

Professor of Naval Science: JOHN G. FOSTER, JR., 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 seventy 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 sixteen and twenty-one on July 1 of the year of entrance.
3. Meet physical requirements, which include vision of 20/20 uncorrected, no cavities in teeth, and height between 65½ and 76 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.

Students with not more than one year of previous attendance in college are eligible if they meet the qualifications and agree to finish the four-year program.

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 Educational Testing Service, Box 592, Princeton, New Jersey, 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)** **Staff**
 Naval courtesy and customs; leadership; naval history; naval regulations; ship construction and characteristics; standard ship organization; orientation in underseas, amphibious, logistics, communications, security, intelligence, seamanship, and rules-of-the-road phases of the naval service.
- 211 Naval Weapons (3)** **Staff**
 Principles of gun construction; ammunition components; gun assemblies; automatic guns; mines; introduction to fire control; aviation ordnance.
- 212 Fire Control (3)** **Staff**
 Surface fire control; battery alignment; antiaircraft fire control.
- 213 Applied Naval Electronics (3)** **Staff**
 Advanced fire control; radar, sonar; C.I.C.; shore bombardment; guided missiles; nuclear explosives; underwater ordnance; rockets.

LINE

- 312 Engineering and Navigation (3)** **Staff**
 Combination of diesel engines and elements of stability with piloting aspects of navigation.
- 313 Navigation (3)** **Staff**
 Nautical astronomy necessary for celestial navigation; daily work of the navigator at sea.
- 411 Naval Machinery (3)** **Staff**
 Marine engineering installations: boilers, power plants, auxiliary machinery, turbines, distillers, refrigeration plants.
- 412 Engineering and Administration (3)** **Staff**
 Combination of diesel engines and elements of stability and naval administration.
- 413 Military Justice and Leadership (3)** **Staff**
 Uniform code of military justice; practical application of leadership principles; duties and responsibilities of naval officers.

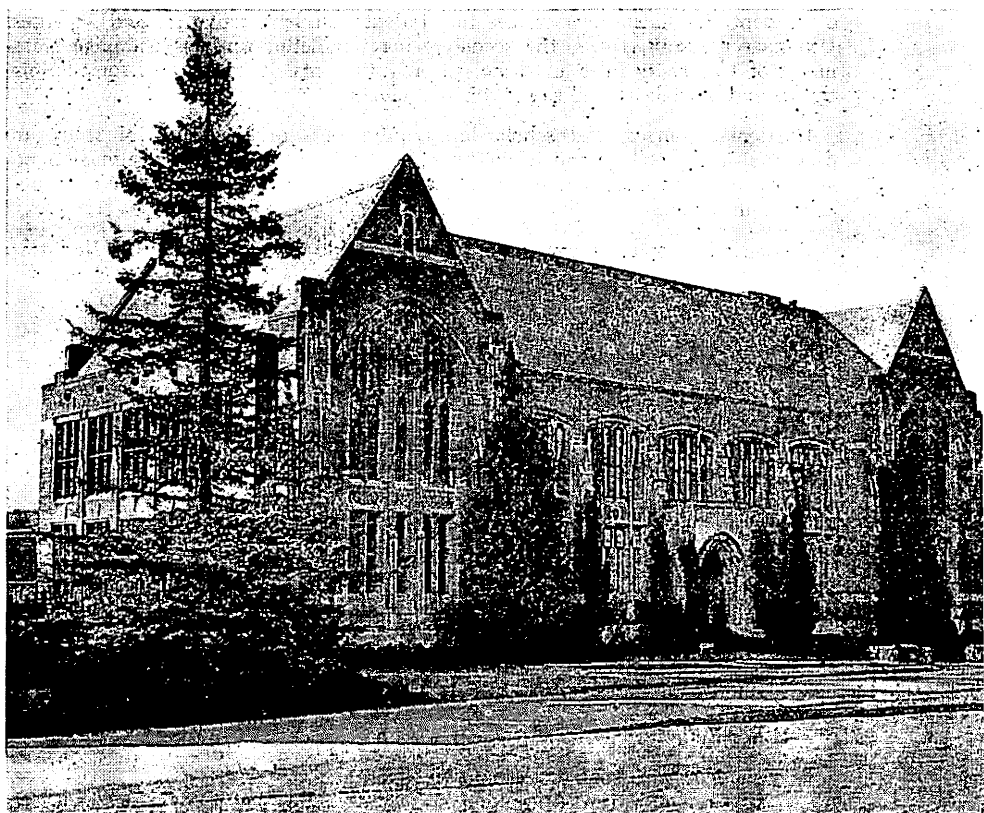
MARINE CORPS

- 311M Evolution of the Art of War (3)** **Staff**
 Introduction; the development of tactics and weapons as illustrated by specific battles of ancient and European history; a historical study of the causes and effects of war through 1864.
- 312M Evolution of the Art of War (3)** **Staff**
 Tactics and strategy from the rise of Germany through World War II; comparisons with modern basic strategy and tactics; foreign policy of the United States.
- 313M Modern Basic Strategy and Tactics (3)** **Staff**
 Tactics of the platoon and company; jungle warfare, river crossings; fortified positions. Strategy of the United States and Germany during World War II.
- 411M, 412M Amphibious Warfare (3,3)** **Staff**
 411M: a brief history of amphibious warfare development; a detailed study of the principles of amphibious warfare techniques. 412M: continued study of amphibious warfare, logistics, and operation orders; the Gallipoli campaign and the amphibious campaigns of World War II.
- 413M Leadership and Uniform Code of Military Justice (3)** **Staff**
 Military law; practical application of leadership principles; duties and responsibilities of Marine officers.

SUPPLY CORPS

- 311S Introduction to Supply, Naval Finance, and Basic Naval Accounting (4)** **Staff**
 Introduction to Supply Corps and accounting principles; national security organization; naval finance; appropriations; cost and fidelity accounting.
- 312S Advanced Naval Accounting, Basic Supply Afloat (4)** **Staff**
 Reports and returns; property and stores accounting; organization and administration of supply afloat; material identification, classification, and allowance.
- 313S Supply Afloat, Intermediate (4)** **Staff**
 Procedure and purchasing, receipt, surveys, and expenditure of special and regular naval materials.
- 411S Advanced Supply Afloat and Basic Ships' Stores (4)** **Staff**
 Records, reports, and returns for supply afloat, and ships' store operating procedure.
- 412S Advanced Ships' Stores, Commissary, Clothing, and Small Stores (4)** **Staff**
 Records, reports, and returns for ships' stores, commissary, clothing, and small stores.

BULLETIN • UNIVERSITY OF WASHINGTON



COLLEGE OF FORESTRY

1955-1957

Published by the
College of Forestry
University of Washington
Seattle, Washington
1955

Printed by
The University of Washington
Press
Seattle, Washington

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes two general bulletins; bulletins of the colleges and schools; two Summer Quarter announcements; and publications of the Division of Adult Education and Extension Services, the correspondence study and extension class announcements.

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 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.

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

UNIVERSITY REGULATIONS (FOR REGISTERED STUDENTS ONLY)
INTRODUCTION TO THE UNIVERSITY

Bulletins of the Colleges and Schools

COLLEGE OF ARTS AND SCIENCES
COLLEGE OF BUSINESS ADMINISTRATION
COLLEGE OF EDUCATION
COLLEGE OF ENGINEERING
COLLEGE OF FORESTRY
GRADUATE SCHOOL
SCHOOL OF LAW
COLLEGE OF PHARMACY
SCHOOLS OF MEDICINE AND DENTISTRY
SCHOOL OF NURSING

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT
SUMMER QUARTER ANNOUNCEMENT
CORRESPONDENCE STUDY
EXTENSION CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 887
January, 1955

Published monthly at Seattle, Washington, by the University of Washington from October to July, inclusive. No issues in August and September. Entered as second-class matter December 18, 1947, at the post office at Seattle, Washington, under the Act of August 24, 1912.

CONTENTS

ADMINISTRATION	4
Board of Regents	
Officers of Administration	
College of Forestry Faculty	
CALENDAR	5
GENERAL INFORMATION	13
College Facilities	
Admission	
Registration	
Tuition and Fees	
Estimate of Yearly Expenses	
Student Activities and Services	
THE PROGRAMS IN FORESTRY	29
Bachelor of Science in Forestry	
Advanced Degrees	
Curricula	
Courses	

ADMINISTRATION

BOARD OF REGENTS

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THOMAS BALMER	Seattle
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HENRY SCHMITZ, Ph.D.	<i>President of the University</i>
HAROLD P. EVEREST, M.A.	<i>Vice-President of the University</i>
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NELSON A. WAHLSTROM, B.B.A.	<i>Comptroller and Business Manager</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>
GORDON D. MARCKWORTH, M.F.	<i>Dean of the College of Forestry</i>

COLLEGE OF FORESTRY FACULTY

BROCKMAN, C. FRANK, 1946 (1949).....	<i>Associate Professor of Forestry</i>
B.S., 1924, Colorado State; M.S., 1931, Washington	
BRYANT, BENJAMIN SMYTH, 1949 (1952).....	<i>Assistant Professor of Forestry</i>
B.S.F., 1947; M.S.F., 1948, Washington; D.F., 1951, Yale	
COVINGTON, DUANE MONROE, 1945.....	<i>Instructor in Forestry;</i>
B.S.F., 1927, Washington	<i>Resident Manager of the Pack Forest</i>
ERICKSON, HARVEY D., 1947.....	<i>Associate Professor of Forest Products</i>
B.S., 1933, B.S., 1934, M.S., 1936, Ph.D., 1937, Minnesota	
GESSEL, STANLEY PAUL, 1948 (1951).....	<i>Assistant Professor of Forest Soils</i>
B.S., 1939, Utah State Agricultural College; Ph.D., 1950, California	
GRONDAL, BROR LEONARD, 1913 (1929).....	<i>Professor of Forest Products</i>
B.A., 1910, Bethany College (Kansas); M.S.F., 1913, Washington;	
D.Sc. (Hon.), 1943, Bethany College	
MARCKWORTH, GORDON DOTTER, 1939.....	<i>Professor of Forest Management;</i>
B.S.F., 1916, Ohio State; M.F., 1917, Yale	<i>Dean of the College of Forestry</i>
PEARCE, JOHN KENNETH, 1934 (1943).....	<i>Professor of Logging Engineering</i>
B.S.F., 1921, Washington	
ROBERTSON, JAMES CAMPBELL HAY, 1945.....	<i>Associate Professor</i>
B.S.F., 1927, Washington; M.S.F., 1933, California;	<i>of Forest Management</i>
D.F., 1947, Duke	
SCHAEFFER, WALTER HOWARD, 1952.....	<i>Associate Professor of Forestry</i>
B.S.F., 1936, Washington; M.S.F., 1937, Yale; Ph.D., 1952, Washington	
STAEBLER, GEORGE RUSSELL.....	<i>Assistant Professor of Forestry</i>
B.S.F., 1939, M.F., 1951, Michigan	
STENZEL, GEORGE, 1949 (1951).....	<i>Assistant Professor of Forestry</i>
B.S., 1938, New Hampshire; M.F., 1939, Yale	
THOMAS, DAVID PHILLIP, 1950.....	<i>Assistant Professor of Forest Products</i>
B.S.F., 1941, M.F., 1948, Washington	
Mulligan, Brian O.....	<i>Director, Arboretum</i>

CALENDAR

All fees must be paid at the time of registration. Registration is by appointment only.

SPRING QUARTER, 1955

REGISTRATION PERIOD

- FEB. 23-MAR. 11 Registration for students in residence Winter Quarter, 1955. (*Registration appointments will be issued on presentation of ASUW cards beginning January 21.*)
- MAR. 23-MAR. 25 Registration for former students not in residence Winter Quarter, 1955. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 17.*)
- MAR. 23-MAR. 25 Registration for new students. (*New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

- MAR. 28-MONDAY Instruction begins
- APR. 1-FRIDAY Last day to add a course
- MAY 20-FRIDAY Governor's Day
- MAY 30-MONDAY Memorial Day holiday
- JUNE 5-SUNDAY Baccalaureate Sunday
- JUNE 10-FRIDAY Instruction ends
- JUNE 11-SATURDAY Commencement

SUMMER QUARTER, 1955

ACADEMIC PERIOD

- JUNE 1-JUNE 3 Registration for all students. (*Registration appointments for students in residence Spring Quarter, 1955, and for former students not in residence Spring Quarter, 1955, may be obtained from the Registrar's Office beginning April 18. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.*)
- JUNE 13-JUNE 17

ACADEMIC PERIOD

- JUNE 20-MONDAY Instruction begins
- JUNE 21-TUESDAY Last day to add a course for the first term
- JUNE 24-FRIDAY Last day to add a course for the full quarter
- JULY 4-MONDAY Independence Day holiday
- JULY 20-WEDNESDAY First term ends
- JULY 21-THURSDAY Second term begins
- JULY 22-FRIDAY Last day to add a course for the second term
- AUG. 19-FRIDAY Instruction ends

AUTUMN QUARTER, 1955

REGISTRATION PERIOD

- SEPT. 6-SEPT. 27 Registration for students in residence Spring Quarter, 1955. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 23, but no later than September 16.*)
- SEPT. 9-SEPT. 27 Registration for former students not in residence Spring Quarter, 1955. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 23, but no later than September 16.*)
- SEPT. 12-SEPT. 23 Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (*August 26 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)
- SEPT. 12-SEPT. 27 Registration for new transfer students with at least full sophomore standing. (*August 26 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

- SEPT. 26—MONDAY Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing.
- SEPT. 28—WEDNESDAY Instruction begins (8 a.m.) for all other students
- SEPT. 30—FRIDAY President's Convocation (11 a.m.)
- OCT. 4—TUESDAY Last day to add a course
- NOV. 11—FRIDAY State Admission Day holiday
- NOV. 23—NOV. 28 Thanksgiving recess
- DEC. 16—FRIDAY Instruction ends (6 p.m.)

WINTER QUARTER, 1956

REGISTRATION PERIOD

- NOV. 21-DEC. 9 Registration for students in residence Autumn Quarter, 1955. (*Registration appointments will be issued on presentation of ASUW cards beginning October 21.*)
- DEC. 28-DEC. 30 Registration for former students not in residence Autumn Quarter, 1955. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 21.*)
- DEC. 28-DEC. 30 Registration for new students. (*New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Winter Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

JAN. 3—TUESDAY	Instruction begins
JAN. 9—MONDAY	Last day to add a course
FEB. 22—WEDNESDAY	Washington's Birthday and Founder's Day holiday
MAR. 16—FRIDAY	Instruction ends

SPRING QUARTER, 1956

REGISTRATION PERIOD

FEB. 23—MAR. 9	Registration for students in residence Winter Quarter, 1956. (<i>Registration appointments will be issued on presentation of ASUW cards beginning January 20.</i>)
MAR. 21—MAR. 23	Registration for former students not in residence Winter Quarter, 1956. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 20.</i>)
MAR. 21—MAR. 23	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

MAR. 26—MONDAY	Instruction begins
MAR. 30—FRIDAY	Last day to add a course
MAY 18—FRIDAY	Governor's Day
MAY 30—WEDNESDAY	Memorial Day holiday
JUNE 3—SUNDAY	Baccalaureate Sunday
JUNE 8—FRIDAY	Instruction ends
JUNE 9—SATURDAY	Commencement

SUMMER QUARTER, 1956

REGISTRATION PERIOD

MAY 29—JUNE 1	Registration for all students. (<i>Registration appointments for students in residence Spring Quarter, 1956, and for former students not in residence Spring Quarter, 1956, may be obtained from the Registrar's Office beginning April 16. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.</i>)
JUNE 11—JUNE 15	

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
JULY 4—WEDNESDAY	Independence Day holiday
JULY 18—WEDNESDAY	First term ends
JULY 19—THURSDAY	Second term begins
JULY 20—FRIDAY	Last day to add a course for the second term
AUG. 17—FRIDAY	Instruction ends

AUTUMN QUARTER, 1956

REGISTRATION PERIOD

- SEPT. 11-OCT. 2 Registration for students in residence Spring Quarter, 1956. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 21, but no later than September 21.*)
- SEPT. 14-OCT. 2 Registration for former students not in residence Spring Quarter, 1956. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 21, but no later than September 21.*)
- SEPT. 17-SEPT. 28 Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (*August 31 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)
- SEPT. 17-OCT. 2 Registration for new transfer students with at least full sophomore standing. (*August 31 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

- OCT. 1—MONDAY Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing.
- OCT. 3—WEDNESDAY Instruction begins (8 a.m.) for all other students
- OCT. 5—FRIDAY President's Convocation (11 a.m.)
- OCT. 9—TUESDAY Last day to add a course
- NOV. 12—MONDAY State Admission Day holiday
- NOV. 21—NOV. 26 Thanksgiving recess
- DEC. 21—FRIDAY Instruction ends (6 p.m.)

WINTER QUARTER, 1957

REGISTRATION PERIOD

- NOV. 26-DEC. 14 Registration for students in residence Autumn Quarter, 1956. (*Registration appointments will be issued on presentation of ASUW cards beginning October 26.*)
- JAN. 2-JAN. 4 Registration for former students not in residence Autumn Quarter, 1956. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 26.*)
- JAN. 2-JAN. 4 Registration for new students. (*New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Winter Quarter. Registration appointments will be mailed with notification of admission.*)

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. 22—FRIDAY	Instruction ends

SPRING QUARTER, 1957

REGISTRATION PERIOD

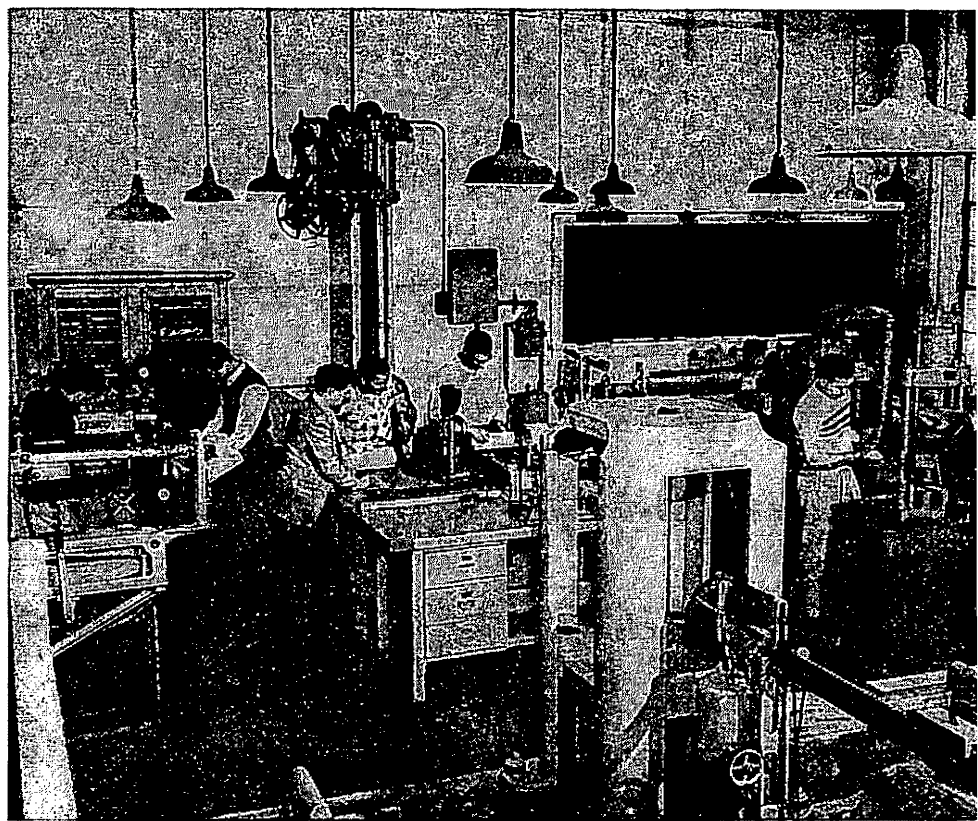
FEB. 27-MAR. 15	Registration for students in residence Winter Quarter, 1957. (<i>Registration appointments will be issued on presentation of ASUW cards beginning January 25.</i>)
MAR. 27-MAR. 29	Registration for former students not in residence Winter Quarter, 1957. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 25.</i>)
MAR. 27-MAR. 29	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

APR. 1—MONDAY	Instruction begins
APR. 5—FRIDAY	Last day to add a course
MAY 24—FRIDAY	Governor's Day
MAY 30—THURSDAY	Memorial Day holiday
JUNE 9—SUNDAY	Baccalaureate Sunday
JUNE 14—FRIDAY	Instruction ends
JUNE 15—SATURDAY	Commencement

CHANGES IN UNIVERSITY REGULATIONS

The University and its colleges and schools reserve the right to change the rules regulating admission to, instruction in, and graduation from the University and its various divisions, and to change any other regulations affecting the student body. 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 and change fees at any time.



GENERAL INFORMATION

GENERAL INFORMATION

THE UNIVERSITY OF WASHINGTON College of Forestry was established in 1907 in response to the need for professional management of the important forest resource of the Northwest. Subsequent needs for men especially trained to harvest the forest crop efficiently and wisely and for men skilled in techniques of converting the forest raw material to maximal economic use have led to a broadening of the forestry curriculum with the passage of years.

The College began its program with a staff of two instructors and a class of ten students at a time when professional forestry education in the United States was in its infancy. Accredited by the Society of American Foresters, a professional body of 10,000 members, the College today numbers 13 faculty, 250 students, and 1,500 alumni. The objectives of its founders have been pursued for nearly a half century. These objectives are to provide instruction in the principles and practices of forestry and to promote the interests of forestry in the state of Washington by encouraging the best use of the forest resource.

Since Washington is one of the leading timber-producing states, and Seattle is in the center of the Northwest timber industry, forestry students 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.

Forestry research is a fundamental precept of the College of Forestry. Advantage is taken of every opportunity for students to participate in new and continuing research projects in the College, in industrial plants, and in the forest. Throughout the forestry course, classroom instruction is supplemented by field studies and research projects on the University's two demonstration and experimental forests and in industry.

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.

COLLEGE FACILITIES

THE LIBRARY

The College of Forestry Library, a branch of the University's Henry Suzzallo Library, contains 7,000 bound volumes and 15,000 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 LABORATORY

The Forest Soils Laboratory, in Anderson Hall, serves a dual purpose as a research and teaching aid in the College. In addition to enabling graduate students to study all types of forest soil problems and thoroughly explore properties of forest soils, it familiarizes undergraduate students with important forest soil characteristics and acquaints them with methods of analyzing physical and chemical properties of forest soils.

Supplementing the Forest Soils Laboratory is a field laboratory at the Pack Demonstration Forest, where less elaborate studies of forest soils and other problems are conducted. These two laboratories have been important factors in expanding research on the growth of forest trees.

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 hardwood 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.

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 ten minutes' 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 makes 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.

Forestry sophomores spend the Summer Quarter at Pack Forest studying plane and topographic surveying, forest mensuration, and silviculture. The forest has its own electrically driven sawmill, and several large logging operations in the vicinity offer opportunity for practice in log scaling, collection of data for volume and growth tables, and other forest mensuration work requiring down trees and logs.

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 which maintains a branch forest-insect laboratory in the forest.

Complete facilities for classwork and living accommodations are available to students and instructors working at the Pack Forest.

ADMISSION

The University Board of Admissions gives first preference to applications from legal residents of Washington and Alaska and to out-of-state applicants who are sons and daughters of University of Washington alumni. The College of Forestry, like most colleges in the University, admits qualified out-of-state students and encourages those with good scholarship records to apply.

Applications for admission must be submitted by prescribed deadlines and must be substantiated by certain credentials and reports submitted in accordance with University rules and practices. It is important that the student's application be submitted by the proper time, for the University can accept no responsibility for applicants who come to the campus before their credentials have been forwarded or before they have been notified of acceptance.

Correspondence regarding requirements for admission to and graduation from any college or school of the University should be addressed to the Registrar.

It is the student's responsibility to make sure that complete credentials covering all his previous secondary and college education are submitted to the University. To be official they must be forwarded by the principal or registrar of the last

school 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.

For admission in Autumn Quarter, the required credentials should be forwarded after high school graduation and before July 15. *The last day for new students to submit applications with complete credentials for admission in Autumn Quarter is August 26, 1955, or August 31, 1956.* For admission in the other quarters, applications and credentials should be submitted at least thirty days before the opening of the quarter. This applies to *all* new students seeking admission as graduates or undergraduates. *It is imperative that students observe this deadline in order to insure prompt attention to credentials and replies to correspondence.*

Before notice of admission is given, a medical questionnaire, on a form supplied by the Registrar, is issued to new out-of-state students. This should be completed by a doctor of medicine and returned by him to the Registrar's Office.

ADMISSION FROM ACCREDITED HIGH SCHOOLS

Graduates who earn diplomas of graduation from accredited high schools and who meet the University unit and scholarship requirements for entrance are eligible for admission as freshmen with regular standing.

No out-of-state student will be accepted for admission who would not be acceptable to the university of his own state (see Scholarship Requirements, page 17).

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

UNIT REQUIREMENT. The University unit¹ requirement is 16 high school units (or 15 units exclusive of activity credit in physical education, debate, etc.) with grades certifiable for university entrance. The 16 units should include at least 9 units in academic subjects (a unit equals 2 semester credits, or one full year of high school study). No unit which received lower than the lowest passing grade as defined by the high school itself may be included in the required total. The College of Forestry requires that the 16 units include 3 units of English, 1½ units of algebra, and 1 unit of plane geometry. One unit of physics and 1 of chemistry are recommended but not required.

SUBJECT MATTER DEFICIENCIES. Applicants with diplomas of graduation from accredited high schools who meet the scholarship requirement and have at least 3 units in English and 6 in other academic subjects, including either 1 unit of algebra or 1 unit of plane geometry, may petition the Dean of the College for permission to enter. (Typical academic subjects are English, foreign languages, mathematics, science, history, and economics. Some nonacademic courses are those in commerce, manual training, home economics, and band.) Students who are permitted to enter with provisional standing must register each quarter for make-up courses in the subject they lack until the entrance deficiency is removed. Those deficient in both first-year algebra and plane geometry are seldom admitted on this basis. Provisional standing continues until the student has satisfied the entrance requirements of the college in which he is enrolled. *No application for a degree may be accepted until all entrance deficiencies have been removed.* Deficiencies

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

may be made up with university credit if college courses covering the high school material are available; 10 college credits are considered the equivalent of 1 high school unit, except that for foreign languages 15 quarter credits of college work are considered the equivalent of 2 units (4 semesters) of high school credit. No student may receive credit for repetition of work at the same or at a more elementary level, if credit has been granted in the earlier course. This rule applies whether the earlier course was taken in high school or in college, and whether, in the latter case, course numbers are duplicated or not. First-year algebra and plane geometry are offered by the Division of Adult Education and Extension Services (fee \$15.00 per course) and do not carry University credit.

SCHOLARSHIP REQUIREMENT. The University scholarship requirement is a high school grade point of 2.00 (equivalent to a C average on the Washington State grading system). Students from high schools in other states which use different grading systems will find their scholarship averages adjusted to the Washington four-point system. (See Admission from Accredited High Schools, second paragraph, page 16.)

Graduates of accredited high schools in Washington and Alaska who cannot meet the 2.00 scholarship standard may petition the Board of Admissions for permission to enter on probation if they meet all unit requirements of the University and the College. A petition for admission on probation must be accompanied by evidence that the applicant is able to do better work than is indicated by his school record.

The student who is admitted on probation may continue his attendance at the University at the discretion of the dean of his college but may not (1) be pledged to or initiated into a fraternity or sorority, or engage in those other student activities in which his right to participate is restricted by the regulations of the Committee on Student Welfare; (2) engage in those athletic activities in which his right to participate is restricted by the regulations of the University Athletic Committee. He will be removed from probation when he has earned a minimum of 12 credits exclusive of those in lower-division physical education activity and Army, Air Force, and Navy ROTC courses with a 2.00 grade average, except that if he carries less than 12 hours in one quarter, he may not be removed from probation unless he has earned at least a 2.00 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 then is subject to the regular scholarship rules.

ADMISSION BY EXAMINATION

Graduates of nonaccredited high schools in Washington and Alaska may petition the Board of Admissions for permission to enter if they meet other entrance requirements and are recommended by their high school principals. The Board may require these students to take special entrance examinations.

Prospective students who are not high school graduates must pass College Entrance Board Examinations and must meet without deficiency entrance requirements for admission to the University and the College. Those who plan to take entrance examinations should write for information to the Educational Testing Service, Box 592, Princeton, New Jersey, or Box 9896, Los Feliz Station, Los Angeles 27, California.

ADMISSION WITH ADVANCED UNDERGRADUATE STANDING

Students in other institutions who plan to transfer to the College of Forestry are urged to pattern their schedules after the curricula of this College, so that they may transfer as many credits as possible.

Applicants are admitted to the University and to the College of Forestry by transfer from accredited colleges, universities, and junior colleges under these conditions:

1. Except for one introductory course, credits for forestry courses may be transferred only from accredited forestry schools. This means that students entering

from junior colleges or liberal arts colleges normally cannot complete the requirements for graduation from the College of Forestry in less than three years. The College faculty must approve any exception to this rule.

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

3. Applicants who have completed a year or more of college work must have a 2.00 (C) grade-point average in their entire college records and in the last term. Those with less than a year of college work must have a 2.00 (C) average in both their college and high school records.

4. Complete transcripts and letters of honorable dismissal must be sent directly to the University Registrar by the registrar of the former school.

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

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 toward the work of the senior year. Extension and correspondence credits from schools that are members of the National University Extension Association are accepted without examination; credits from schools that are not members are accepted only after examination.

7. Credits earned in extension 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 correspondence credits is acceptable; the 90 credits may include the 45 extension or correspondence credits allowable from other institutions or may consist entirely of courses taken in this University's Division of Adult Education. All credits earned by advanced-credit examination must be counted in the 90-credit maximum. Up to 10 extension or correspondence credits from this University can apply toward the work of the senior year.

8. The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted. Definite advanced standing is not determined until 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. No credit will be allowed in the senior year.

For work done 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.

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

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Students educated entirely or partially in foreign countries must meet the same general requirements as those educated in American schools and must demonstrate

a satisfactory command of the English language. The official record of Canadian students is the matriculation certificate or university admission certificate of their province. A student who has graduated from a school system that provides less than twelve years of instruction may be required to take additional high school work. Students who have been in university attendance must have official transcripts forwarded (see Admission, page 15).

ADMISSION OF SPECIAL STUDENTS AND AUDITORS

Persons twenty-one or over who are legal residents of Washington or Alaska and are not eligible for admission as regular students may apply to the Board of Admissions for 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 requirements for admission to the College, special students may change their status to that of regular students and may receive degrees.

Persons twenty-one or over may register as auditors in nonlaboratory courses or the lecture parts 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. Students who have been dropped for low scholarship may not register as auditors until they have been reinstated in some college of the University.

ADMISSION WITH GRADUATE STANDING

Prospective graduate students must apply for admission to the Graduate School. Entrance requirements are described in the *Graduate School Bulletin*, which may be obtained from the Registrar.

WORLD WAR II AND KOREAN VETERANS

ADMISSION

The University welcomes veterans under the G.I. Bill, the Vocational Rehabilitation Act, and the Korean Bill, provided they can meet the University of Washington entrance requirements.

ENTITLEMENT TO EDUCATIONAL BENEFITS

Veterans who are accepted for entrance to the College of Forestry and who expect to study under the provisions of Public Laws 16, 894, or 346 should apply to a Veterans Administration regional office for a Certificate of Eligibility at least one month prior to registration. This certificate should be presented at the Veterans Division, 1B Administration Building, the day of registration. Those who do not have this certificate at the time they register must pay all charges; they will receive refunds when authorization from the Veterans Administration is established.

Korean veterans entering under the provisions of Public Law 550 should apply to a Veterans Administration regional office for a Certificate for Education and Training at least one month prior to registration. This certificate should be presented at the Veterans Division, 1B Administration Building, the day of registration or during the first week of instruction. Under this law students receive an educational allowance and pay their own tuition and fees. Korean veterans should be prepared to meet all their own expenses as well as the cost of tuition, fees, and supplies for at least two months. Educational allowances are not paid until a full month's attendance has been established.

REGISTRATION

All-students must have definite registration appointments each quarter. New students are given appointments when they are notified of admission and 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) may obtain registration appointments by writing or telephoning the Registrar's Office at the time specified in the Calendar (see page 5). Students in residence may obtain appointments at the time announced in the Calendar.

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 Dean's consent.

REGULAR STUDENTS

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

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 forestry students is assigned to faculty advisers in the College. The adviser for freshmen and new students is Professor Walter H. Schaeffer, whose office is 210 Anderson Hall.

APTITUDE AND ACHIEVEMENT TESTS

New freshman students (including transfer students with less than 45 quarter credits) are required as part of the registration process to take a battery of achievement tests selected on the basis of their proven value for the prediction of grades most likely to be earned by each student. Test results do not affect admission but are used in advising and in assigning students to appropriate sections of English, and other subjects. Special, foreign, and blind students and auditors are exempt.

MEDICAL EXAMINATIONS

All new students, and all former students who have not attended the University within the preceding calendar year, must take a medical examination, including a chest X ray. For out-of-state students, this examination is in addition to the medical questionnaire required of them as part of the application for admission. An annual chest X ray is required of all students.

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 Announcement*.

Tuition

Resident students, per quarter \$25.00

A resident student is one who has been domiciled in Washington or Alaska for at least a year immediately before entrance. The domicile of a minor is that of his parents.

Nonresident students, per quarter 75.00

Prospective students are classified as nonresidents when their credentials come from schools outside Washington and Alaska. If they believe they are residents, they may petition the Nonresident Tuition Office for a change of classification.

Auditors, per quarter 12.00

Veterans of World Wars I and 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 not 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, University Comptroller's Office. Nonresident students who meet one of these requirements pay one-half the nonresident tuition.

This exemption is not granted to Summer Quarter students.

Incidental Fee, per quarter

Full-time students 21.50

Part-time students (registered for 6 credits or less, exclusive of ROTC) 7.00

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), per year 5.00

Good for all athletic events in the school year; must be validated each quarter when fees are paid.

Military Uniform Deposit, per year 25.00

Paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition.

Pack Forest Fee 10.00

Paid in Summer Quarter when course is taken at Pack Forest.

Pack Forest Subsistence Fee 180.00

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 Sheet Fee .25

One grade sheet is furnished each quarter without charge; the fee is charged for each additional copy.

Transcript Fee .50

One transcript is furnished without charge; the fee is charged for each additional copy. Supplementary transcripts are .25 each.

Graduation Fee 10.00

SPECIAL FEES

From \$2.00 to \$5.00 is charged for late registration; \$2.00 for each change of registration; \$5.00 for a late medical examination; and \$1.00 for a late X ray. The fee for a special examination is \$1.00; for an advanced-credit examination, \$2.00 per credit; and for removal of an Incomplete, \$2.00.

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 is 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	\$165.00
Full-time nonresident student	315.00
<i>Athletic Admission Ticket</i> (optional)	5.00
<i>Accident Insurance</i> (optional)	4.95
<i>Special Fees and Deposits</i>	38.50
Military uniform deposit, breakage ticket, and locker fees.	
<i>Books and Supplies</i>	75.00
<i>Board and Room</i>	
Room and meals in Men's Residence Hall	570.00
Room and meals in Women's Residence Halls	525.00 to 600.00
Room and meals in student cooperative house	445.00 to 460.00
Room and meals in fraternity or sorority house	660.00 to 700.00
Initial cost of joining is not included; this information may be obtained from the Interfraternity or Panhellenic Council.	
<i>Personal Expenses</i>	200.00

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.

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 3.10 and participation in Forest Club activities.

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.

Several scholarships and awards are specifically for students in the College of Forestry. These are:

1. The Edward K. Bishop Scholarship, \$500.
2. The Paul H. Johns, Jr., Memorial Award to the outstanding junior and senior student, \$200 each.
3. The Biles-Coleman Lumber Company Scholarship to a graduate of Omak High School ranking in the upper half of his class and with an interest in forestry, \$500 a year for a four-year period.
4. The U. M. Dickey Award established by the Scott Paper Company, \$1,000 annually for a two-year period to the outstanding student completing the sophomore year.
5. The Agnes Healy Anderson Research Fellowship to a graduate student. Amount variable, depending on availability of funds and need (usually \$1,000 annually).
6. The Weyerhaeuser Fellowship in Forest Management to a graduate student, two at \$1,000 each.
7. The Northern Commercial Company Scholarship to a junior, senior, or graduate student, \$500.
8. The University of Washington Foresters' Alumni Association Scholarship to 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 at \$250 each.
9. The Customers of Elliott Bay Lumber Company Scholarship, one to a forest products major and one to a logging engineering major, at the completion of the junior year for the senior year, two at \$500 each.
10. The St. Regis Paper Company Scholarship, \$800 annually for a two-year period to an outstanding forestry student completing the sophomore year either at the University of Washington or Oregon State College.
11. The Hugo Winkenwerder Memorial Scholarship to outstanding high school seniors dedicated to the pursuit of forestry at the University of Washington, seven at \$200 each.
12. The Hugo Winkenwerder Graduate Fellowship, \$1,000 annually to a graduate student in forestry.
13. The Seattle Hoo-Hoo Club Scholarship, payment of freshman-year tuition fees to a high school graduate who is a resident of King County in the state of Washington and who plans to enter the College of Forestry.
14. The 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.
15. The 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.
16. The Homelite Corporation Scholarship to a junior or senior in the College of Forestry, \$500.

Further information on these awards may be obtained from the Office of 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 fall 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 Alfred H. Anderson Student Loan Fund. Information about the fund is available at the Office of the College of Forestry. Other emergency loans are made through the Office of the Dean of Students.

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 Dean of Students Office also provides current information on Selective Service regulations.

The Counselor for International Services, a member of the Dean of Students staff, offers 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 counselor. 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 offers vocational and personal counseling to students who need help in their adjustments to college living. The staff of the Center, which includes vocational counselors, psychiatric social workers, and clinical psychologists, works closely with other student services and supplements the academic advisory program.

HOUSING

Men students may obtain rooms in the Men's Residence Hall through the Office of Student Residences. Housing for women is available in the Women's Residence Halls on the campus. Interested students should write to the Director of Student Residences or the Business Manager of the Women's Residence Halls. The Student Cooperative Association, 1114 East Forty-fifth Street, Seattle 5, provides housing for men and women students. Information about fraternities may be obtained from the Interfraternity Council; information about sororities from the Panhellenic Council.

It is expected that women students under twenty-one who are not living at home will live in approved group residences, such as the Women's Residence Halls, student cooperatives, Wesley House, and sorority houses. Other living arrangements must be approved by the Office of the Dean of Students.

The Office of Student Residences keeps listings of rooms, rooms with board, housekeeping rooms, and a few apartments and houses. These listings must be consulted in person. Married students who are veterans of World War II or Korea may apply to this office for accommodations in Union Bay Village, the University's family housing project. Since there is a long waiting list, new students should not rely on the possibility of immediate housing there.

HEALTH CENTER

The University maintains a health center and infirmary which help to 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 two dollars a day is made. At their own expense, infirmary patients may consult any licensed physician in good standing.

PLACEMENT

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. Placement in jobs on the campus is handled by the Nonacademic 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 States Forest Service, Bureau of Land Management, and National Park Service, the State Division of Forestry, 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. Every student has the privilege of graduating under the requirements in effect either the year he enters (provided that not more than ten years have elapsed since that date) or the year he receives his degree. No application for a degree can be accepted until all entrance deficiencies have been removed.

MILITARY TRAINING

Male students who enter the University as freshmen or sophomores are required to complete six quarters of military training. Students should meet this requirement during the first two years they are in residence (registered in regular University classes).

The requirement may be met with courses in one of three University departments: Air Science and Tactics, Military Science and Tactics, or Naval Science. The Departments of Air Science and Military Science offer six-quarter (two-year) basic programs of class work and drill which fulfill University requirements, and two years of advanced ROTC training which selected students may enter after completing the basic program. Information about these programs may be obtained from the Professor of Air Science and Tactics and the Professor of Military Science and Tactics at the University. The Department of Naval Science offers four-year programs only, and prospective students who are interested in Naval

ROTC should write to the Professor of Naval Science after graduation from high school and before the beginning of Autumn Quarter for information about entrance into the Naval ROTC program. Students with junior or senior standing in the Naval ROTC, and those who enter advanced Air Force or Army ROTC, must complete the program as a condition of graduation unless excused or dismissed by authority of the Secretary of the service concerned.

Exemptions from the requirement are granted to:

1. Students who are twenty-three or over at the time of original entrance.
2. Special students.
3. Part-time students, those registered for 6 credits or less.
4. Students who are not citizens of the United States.
5. Students who because of physical condition are exempted by the University Health Officer.
6. 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.
7. Students who are active members or reserve officers of the Armed Forces or Coast Guard, or commissioned officers of the National Guard.
8. Students who are active enlisted members of the National Guard or of the Organized Reserve of the Armed Forces or Coast Guard at the time of initial entrance.
9. 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.
10. 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 concerned after consultation with the appropriate ROTC commander.

Those who are exempted under paragraph 4, 8, or 10 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

ACTIVITY COURSES. Students who enter the University as freshmen or sophomores are required to complete one physical education activity course each quarter for the first six quarters of residence.

Men students must take one quarter of swimming. In the other five quarters, a student can elect any activity course he desires. Any freshman or varsity sport may be substituted for any activity course except swimming.

Women students must pass a swimming test and complete one quarter of an individual or dual activity and one quarter of a rhythmic activity during the six quarters.

Exemptions from the activity requirement are granted to:

1. Students who are twenty-five or older at the time of original entrance.
2. Special students.
3. Part-time students, those registered for 6 credits or less.
4. 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 School of Physical Education. All other students who are reported by the University Health Officer as unfitted to join regular classes will be assigned by the Executive Officer of the School of Physical Education to special programs adapted to their needs.
5. Students who are veterans of military service. Complete exemption is granted for a year or more of active service, and exemption from three quarters is granted

for six months or more of active service. Veterans with less than six months of service receive no exemption.

6. 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 undergraduates are required to take Physical Education 175, a course in personal health, within the first three quarters of residence. Veterans with six months or more of active service are exempt from this requirement. Other exemptions are by examination and by transfer of credit for a similar course in an accredited college.

Women students who enter the University as freshmen are required to take Physical Education 110, a course in health education, within the first three quarters of residence. This requirement may be satisfied by a health-knowledge examination given during the Autumn Quarter registration period for women entering the University for the first time.

SCHOLARSHIPS AND CREDITS

Freshman students in their first three quarters, and transfer students in their first quarter, must maintain a 1.80 grade-point average. All other students must maintain a 2.00. A cumulative average of 2.00 is required for graduation.

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 number of total credits the course carries, totaling these values for all courses, and dividing by the total number of credits for which the student registered.

The University credit requirement for graduation (180 academic credits plus physical education activity and military training credits) is superseded by the College of Forestry requirement, which is completion of one of the three undergraduate curricula. Each curriculum has 201 academic credits distributed over thirteen quarters plus physical education activity and military training.

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.

SENIOR-YEAR RESIDENCE

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

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. 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. 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 are acceptable. Candidates admitted with a forestry-equivalent bachelor's degree ordinarily require two years to complete the degree. A foreign language is not required.

Doctor of Philosophy. Requirements are listed in the *Graduate School Bulletin*.

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	THIRD QUARTER	CREDITS
For. 101 Development.....	3	For. 130 Elem. Fire Control	3	For. 160 Elem. Forest Mensuration.....	5
Botany 114 Forestry.....	3	Botany 115 Forestry.....	3	Chemistry 112 or 116 General.....	5
Botany.....	3	Chemistry 111 or 115 General.....	5	Math. 156 Algebra & Calculus.....	3
English 101 Composition ..	3	Gen. Engr. 121 Plane Surveying.....	3	Phys. Educ. 175 Personal Health.....	2
Gen. Engr. 107 Engr. Drawing.....	3	Math. 155 Algebra & Calculus.....	3	Phys. Educ. activity.....	1
Math. 104 Plane Trig.....	3	Phys. Educ. activity.....	1	ROTC.....	2-3
Phys. Educ. activity.....	1	ROTC.....	2-3		
ROTC.....	2-3				
	18-19		20-21		18-19

Summer Quarter

(Pack Forest)

	CREDITS
For. 161 Mensuration Field Problems.....	5
For. 220 Silvicultural Field Studies.....	5
Civil Engr. 256 Forest Surveying.....	5
	15

Second Year					
FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 107 Dendrology.....	3	For. 206 Wood Technology..	4	For. 106 Dendrology.....	3
For. 260 Mensuration.....	5	Botany 116 Forestry.....	4	For. 210 Elem. Forest Soils	3
For. 403 Timber Physics ..	3	Botany.....	4	For. 240 General Logging ..	2
Physics 101 or 104 General	3	Economics 211 General ..	3	For. 273 Major Forest Industries.....	4
Phys. Educ. activity.....	1	Physics 102 or 105 General	3	Physics 103 or 106 General	5
ROTC.....	2-3	Phys. Educ. activity.....	1	Phys. Educ. activity.....	1
		ROTC.....	2-3	ROTC.....	2-3
	19-20		19-20		20-21

With the approval of their faculty advisers, third-year students choose a specialty and enter one of the three upper-division curricula in forestry.

CURRICULUM IN FOREST MANAGEMENT

Third Year					
FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 310 Gen. Forest Soils..	3	For. 321 Silvics.....	3	For. 322 Silvicultural Methods.....	3
For. 403 Timber Physics ..	3	For. 372 Seasoning & Preservation.....	2	For. 430 Adv. Fire Control	3
Botany 361 Pathology.....	5	For. 465 Forest Photo Interpretation.....	3	English 253 Factual Writing.....	3
Electives.....	4	Zoology 204 Forestry.....	5	Electives.....	6
	15	Zoology.....	5		
		Electives.....	2		
			15		15
Fourth Year					
FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 408 Economics & Finance.....	5	For. 335 Insect Control ...	3	For. 466 Field Studies ..	5
For. 423 Application of Silvicultural Methods ..	4	For. 409 Forest Policy & Administration.....	3	For. 467 Field Studies ..	5
Electives.....	5	For. 460 Forest Management.....	5	For. 468 Field Studies ..	4
	14	Electives.....	4	For. 469 Field Studies ..	2
			15		16

CURRICULUM IN LOGGING ENGINEERING

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 404 Timber Physics ..	5	For. 321 Silvics	3	For. 322 Silvicultural	
Botany 361 Forest		For. 372 Seasoning &		Methods	3
Pathology	5	Preservation	2	For. 335 Insect Control ..	3
Civil Engr. 212 Route		For. 440 Construction ..	4	For. 430 Adv. Fire Control	3
Surveying	3	Civil Engr. 213 Location		Civil Engr. 315	
Electives	2	& Earthwork	3	Photogrammetry	3
		Electives	3	Electives	3
	15		15		15

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 401 Safety Practices..	2	For. 442 Logging Engr. ..	5	For. 446 Field Studies	3
For. 408 Economics &		For. 460 Forest		For. 447 Field Studies	5
Finance	5	Management	5	For. 448 Field Studies	5
For. 407 Forest Engr.	5	Electives	4	For. 449 Field Studies	3
Electives	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	
For. 404 Timber Physics..	5	For. 461 Forest		Preservation	3
For. 408 Forest Economics.	2	Management	3	For. 371 Wood	
Electives	5	Bus. Law 307 Business		Preservation Lab.	2
		Law	3	For. 471 Timber Design ..	3
		Electives	6	Botany 361 Forest	
				Pathology	5
				Electives	2
	15		15		15

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 470 Forest Products		For. 472 Plywood,		For. 476 Wood Pulp	6
Industries	5	Lamination & Glues	5	For. 482 Manufacturing	
For. 481 Milling	5	For. 483 Kiln Drying	3	Problems	5
Electives	5	Electives	7	For. 484 Field Studies	2
				For. 485 Seminar	2
	15		15		15

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. 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 quarterly *Time Schedule and Room Assignments*.

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.

- 106, 107 Dendrology (3,3)** **Brockman**
Identification, classification, and distribution of the trees of North America. Prerequisite, Botany 114.
- 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.
- 160 Elementary Forest Mensuration (5)** **Stenzel**
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)** **Stenzel**
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 107, 121, and Mathematics 156. (Given only at Pack Forest.)
- 206 Wood Technology (4)** **Erickson, Thomas**
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, 107, Botany 115, 10 credits in chemistry, and Physics 101 or 104.
- 210 Elementary Forest Soils (3)** **Gessel**
Relations of soils to geology and physiography: rocks and minerals in soils and soil organisms. Introduction to physical, chemical, and biological properties of soils. One Saturday field trip required.
- 220 Silvicultural Field Studies (5)** **Gessel**
Field study of forest trees and factors affecting their growth. Introduction to silviculture and elementary plant identification. One three-day field trip required. (Given only at Pack Forest.)
- 240 General Logging (2)** **Stenzel**
Regional logging methods in the United States with emphasis on those used in the Pacific Northwest. Prerequisite, sophomore standing.
- 260 Forest Mensuration (5)** **Stenzel**
Analysis and presentation of field data; methods of tree and timber stand volume determination; theory of log rules and volume tables; method of yield analysis and computation. 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 Pacific Northwest. Prerequisite, 161.
- 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.
- 303 Forest Geography (3)** **Grondal**
Economic geography of the forest regions of the world.
- 307 Wood Structure (3)** **Thomas**
Microscopic study of the structural features of wood. Identification of wood and wood fibers by microscopic methods. Prerequisite, 206.
- 310 General Forest Soils (3)** **Gessel**
Advanced study of physical, chemical, biological, and morphological characteristics of forest soils. Consideration of soil properties important to tree growth. Introduction to soil development and classification. Prerequisites, 210, 220, and Botany 116.
- 320 Elements of Silviculture (3)** **Staebler**
The biological basis of silviculture; application in controlling reproduction and growth of forests with emphasis on silvicultural control of wood quality. For students specializing in forest products only. Prerequisites 106, 107, 210, 220, 260, and Botany 116.
- 321 Silvics (3)** **Staebler**
Ecological foundations of silviculture. Influence of genetics and physiologic and environmental factors on establishment, growth, and development of trees and stands. One Saturday field trip required. Prerequisites, 101, 106, 107, 220, 260, 310, and Botany 116.
- 322 Silvicultural Methods (3)** **Staebler**
Theory and technique of applying ecological knowledge to the control of establishment, composition, and growth of forest stands. Regeneration cuts, natural and artificial regeneration, and intermediate cuts. Two Saturday field trips required. Prerequisite, 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)** **Gessel**
Interrelations of plants, animals, and man on range lands. History of range-land use, principles of proper use, and economics of proper use. One Saturday field trip required. Prerequisite, Botany 116.
- 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)** **Erickson**
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)** **Bryant**
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, and permission.
- 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 of instructor.
- 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, Mathematics 156, and Physics 101 or 104.
- 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, Mathematics 156, and Physics 101 or 104.
- 406 Microtechnique (3)** **Thomas**
The technique of preparing, sectioning, staining, and mounting woody tissues and fibers for microscopic study. Prerequisite, 307.
- 407 Forest Economics (2)** **Robertson**
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. Prerequisite, 260.
- 408 Forest Economics and Finance (5)** **Robertson**
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 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. Prerequisite, 310 or permission of instructor.
- 420 Artificial Regeneration (3)** **Staebler**
Establishment of forests by artificial methods; biological and economic aspects of forest planting. One all-day field trip required. Prerequisites, 310 and 321.
- 423 Application of Silvicultural Methods (4)** **Staebler**
Application and comparison of silvicultural methods to principal commercial forest species, types, and regions of temperate North America with emphasis on the Pacific Northwest. Three Saturday and three half-day field trips required. Prerequisite, 322.
- 424 Advanced Practices in Silviculture (3)** **Staebler**
Problems in the silvicultural treatment of woodlands under intensive management. Marking, cutting, and detailed study of selected areas. Weekly trips to forest areas in Washington. Prerequisites, 423 and 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)** **Pearce**
Design and construction of forest roads; earth-moving methods and costs, explosives, surfacing drainage. Laboratory: design of timber bridges. Prerequisites, 403 or 404 and General Engineering 107.
- 441 Forest Engineering (5)** **Pearce**
Logging planning: road projection, selection of landings and settings, logging cost control. Land surveying, subdivision, platting, and boundaries. Prerequisites, 240 and Civil Engineering 256.
- 442 Logging Engineering (5)** **Pearce**
Logging machinery and equipment; application problems, with emphasis on motor truck performance. Field trips to logging equipment factories. Prerequisite, 441.
- 446, 447, 448, 449 Logging Engineering Field Studios (3,5,5,3)** **Pearce**
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 and Civil Engineering 213 and 315.

- 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. Prerequisites, 260, 408, and 423.
- 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. Prerequisites, 260 and 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. Prerequisites, 460 and 465.
- 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, 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)** **Grondal**
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 273.
- 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, and permission.
- 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, 476, and 481.
- 483 Theory and Practice of Kiln Drying (3)** **Grondal**
Wood-liquid relationships and hygrometry; application of gas laws. Problems in the design of dry kilns. Prerequisite, 372 or 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 each quarter)** **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, permission of the instructor.

COURSES FOR GRADUATES ONLY

- 510 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. Prerequisites, 410, Botany 114 and 450, Microbiology 101, and permission of instructor.

- 513 Methods of Forest Soil Survey (5)** **Gessel**
A course of field studies to acquaint the student with methods of determining the productive capacity of forested lands from soil properties. Prerequisites, 512 and permission of instructor.
- 520 Seminar (1, maximum 3)** **Staff**
Required of graduate students.
- 521 Advanced Silvics (5)** **Staebler**
A study of recent advances in the field of forest tree physiology and ecology, with special reference to the silviculture of western forest types. Prerequisites, 410, 423, and permission of instructor.
- 522 Advanced Silviculture (5)** **Staebler**
The use of ecological principles in controlling reproduction and growth of forests; the application of cultural methods to existing forests; a study of research methods and case histories. Prerequisites, 423 and permission.
- 540 Advanced Forest Engineering (5)** **Pearce**
Logging organization and management; logging cost analysis and budgeting. Prerequisite, permission of instructor.
- 555 Forest Influences (4)** **Gessel, Staebler**
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 of instructor.
- 560 Forest History and Policy (3)** **Marckworth**
Special studies in the development and administration of forest policies in the United States and/or in other countries. Prerequisites, 408, 409, and 460 or equivalent.
- 562 Forest-Management Plans (3-5)** **Robertson**
Preparation of management plans for large areas of public and private forest lands. Discussion of current literature, principles, and new developments in forest management. Special study of assigned problems. Prerequisite, 469 or equivalent.
- 570 Advanced Wood Preservation (3)** **Erickson**
Permeability of wood; theory of penetration; treating plants, their equipment and design. Prerequisites, 370 and 371.
- 590, 591, 592 Graduate Studies (2-5 each quarter)** **Staff**
Study in fields for which there is not sufficient demand to warrant the organization of regular courses.
- 600 Research (*)** **Staff**
Thesis (*) **Staff**

PREScribed COURSES IN OTHER FIELDS

BOTANY

- 114, 115, 116 Forestry Botany (3,3,4)** **Staff**
114: structure of seed plants. 115: morphology of fungi and reproduction of seed plants. 116: physiology of seed plants. Prerequisites, Botany 114 and Chemistry 112.
- 361 Forest Pathology (5)** **Staff**
Common wood-destroying fungi and diseases of forest trees. Prerequisite, Botany 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

- 111 General Chemistry (5)** **Staff**
Open only to students without high school chemistry. Primarily for those who expect to continue through 113 or beyond. Periodic system; some families of elements; laws of chemical combination; gases; atomic, kinetic, and ionic theories; electrolysis.
- 112 General Chemistry (5)** **Staff**
Atomic and molecular structure, chemical bonding, oxidation-reduction, electrochemistry, nonmetals, solutions, equilibria. Prerequisite, Chemistry 111 or 115.
- 115 General Chemistry (5)** **Staff**
For students who have had high school chemistry. Primarily for those who expect to continue through 113 or 116. Chemistry advisers should be consulted as to whether this course should be followed by Chemistry 112 or 116. Content similar to that of 111.
- 116 General Chemistry and Qualitative Analysis (5)** **Staff**
(Required for forest products majors.) Prerequisite, 115 and permission. Content similar to Chemistry 113.

CIVIL ENGINEERING

- 212 Route Surveying (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 Location and Earthwork (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.
- 256 Forest Surveying (5) Staff**
A comprehensive course in plane surveying, with special emphasis on forest topographic mapping, including establishment of basic control. Use, operation, and adjustment of the steel tape, compass, clinometer, level, transit, and plane table. A combined topographic mapping and cruising project covering approximately one quarter section (160 acres) of forest and logged-off land is a major feature. Given at Pack Forest for forestry majors only. 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, Civil Engineering 256.

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) Staff**
Term papers and reports. Prerequisites for foresters, English 101 and 102.

GENERAL ENGINEERING

- 107 Engineering Drawing (3) Staff**
Short course for forestry and art students.
- 121 Plane Surveying (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. Prerequisites, General Engineering 102 or 107 and Mathematics 104.

MATHEMATICS

- 104 Plane Trigonometry (3) Staff**
Trigonometric functions, identities, graphs, logarithms, and solution of triangles. Mathematics 100 may be taken concurrently as a supplement to this course. Prerequisites, one and one-half years of 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 and analytic geometry; differentiation and integration of elementary functions and applications. Not open to students who have taken 105, 106, or 153. Prerequisites, 104 for 155, 155 for 156.

PHYSICAL EDUCATION

- 106 through 150; 206 through 250 Physical Education Activities (Men) (1 each) Staff**
106, 206, handball; 107, 207, basketball; 108, 208, tennis; 109, 209, softball; 110, 210, golf (fee \$3.00 per quarter); 111, 211, track; 112, 212, crew (class), prerequisite, swimming; 113, 213, fencing; 114, 214, boxing; 115, 215, tumbling and apparatus; 117, 217, wrestling; 118, 218, volleyball; 119, 219, swimming; 120, 220, Rugby; 121, 221, touch football; 122, 222, badminton; 123, 223, archery; 125, 225, skiing (fee); 126, 226, speedball; 127, 227, bowling (fee, \$3.00 per quarter); 128, 228, weight training; 129, 229, sailing; 231, beginning, 234, intermediate folk and square dancing; 141, freshman, 241, varsity basketball; 142, freshman, 242, varsity crew, prerequisite, swimming; 143, freshman, 243, varsity football; 144, freshman, 244, varsity track; 145, freshman, 245, varsity swimming; 146, freshman, 246, varsity baseball; 147, freshman, 247, varsity tennis; 148, freshman, 248, varsity golf; 149, freshman, 249, varsity skiing (fee); 150, freshman, 250, varsity volleyball.
- 110 Health Education (Women) (2) Staff**
Health problems of freshman women. Required of all freshmen.
- 111 through 170; 211 through 268 Physical Education Activities (Women) (1 each) Staff**
111, adapted activities; 113-114, basic activities; 115, archery; 118, badminton; 121 bowling (fee, \$3.00 per quarter); 124, fencing; 126, golf (fee, \$3.00 per quarter); 128, riding (fee); 131, dry skiing; 132, elementary skiing (fee); 133, stunts and tumbling; 135, tennis; 141, basketball; 142, field sports; 143, hockey; 144, softball; 145, volleyball; 148, folk and square dancing; 149, European folk dance; 151, modern dance; 154, social dance; 155, tap and clog; 157, canoeing (fee, \$2.50 per quarter); 160, adapted swimming; 161, beginning swimming; 162, elementary swimming; 215, intermediate archery; 218, intermediate badminton; 221, intermediate bowling (fee, \$3.00 per quarter); 222, advanced bowl-

ing (fee, \$3.00 per quarter); 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 dancing; 251, intermediate modern dance; 252, advanced modern dance; 257, intermediate canoeing (fee, \$2.50 per quarter); 263, intermediate swimming; 264, advanced swimming; 265, rhythmic swimming; 266, diving; 267, lifesaving; 268, water safety instruction

175 Personal Health (Mon) (2)

Staff

Health information that affords a basis for intelligent guidance in the formation of health habits and attitudes. Required of all freshmen; exemption by examination.

PHYSICS

101, 102, 103 General Physics (5,5,5)

Staff

101: mechanics and sound. Prerequisite, one year of high school physics. 102: electricity and magnetism. Prerequisite 101. 103: heat and light. Prerequisite, 101.

104, 105, 106 General Physics (5,5,5)

Staff

Prerequisite, plane geometry; 104 for 105 and 106.

ZOOLOGY

204 Forestry Zoology (5)

Staff

Evolution of animals to the level of the Arthropoda and Chordata; emphasis on these as the groups of greatest practical importance in the forest fauna.

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

250 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

113 Elementary Qualitative Analysis (5)

Staff

221 Quantitative Analysis (5)

Staff

231, 232 Organic Chemistry (3, 3)

Staff

241, 242 Organic Chemistry Laboratory (2, 2)

Staff

CIVIL ENGINEERING

214 Intermediate Surveying (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)

Staff

GEOGRAPHY

360 Introductory Cartography (5)

Staff

370 Conservation of Natural Resources (5)

Staff

444 Water Resources in the Pacific Northwest (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 |

HUMAN RELATIONS

- | | | |
|-----|--|-------|
| 365 | Industrial Relations for Engineers (3) | Staff |
| 460 | Human Relations in Business and Industry (5) | Staff |

MATHEMATICS

- | | | |
|-----|--------------------------------------|-------|
| 153 | Analytical Geometry and Calculus (5) | Staff |
|-----|--------------------------------------|-------|

MECHANICAL ENGINEERING

- | | | |
|-----|--------------------------------|-------|
| 201 | Metal Castings (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 | 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 |
|-----|--------------------------------------|-------|

PSYCHOLOGY

- | | | |
|-----|---|-------|
| 336 | Industrial Psychology for Engineers (5) | Staff |
|-----|---|-------|

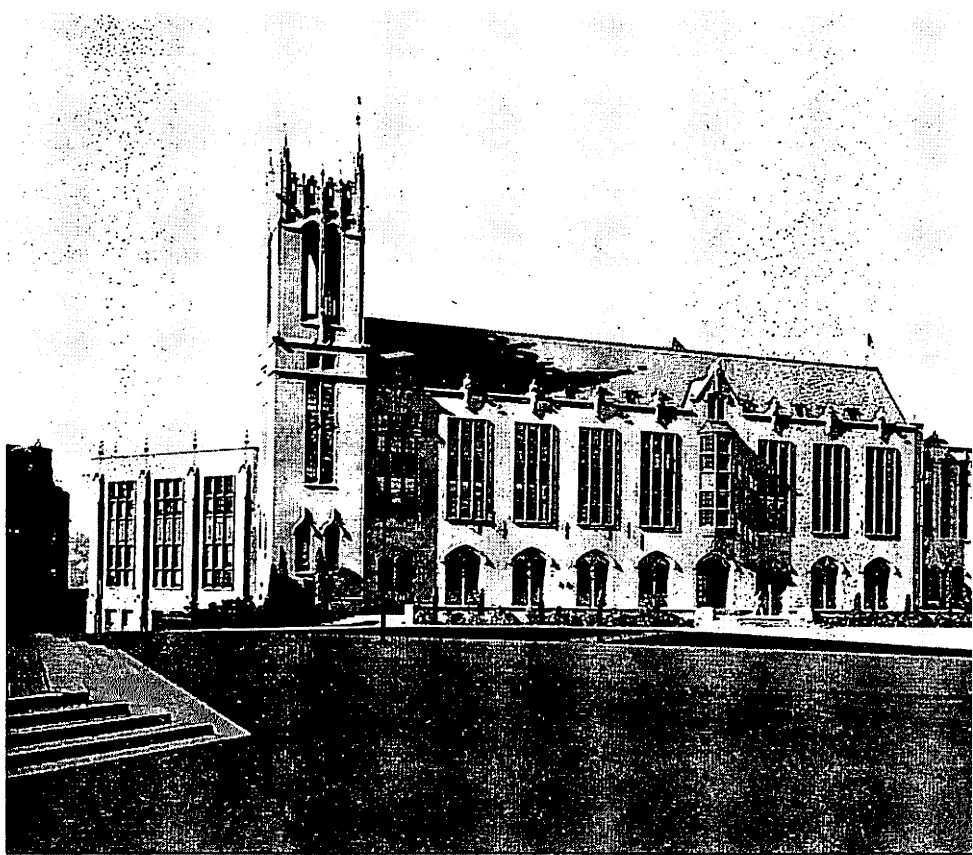
SPEECH

- | | | |
|-----|-------------------------------------|-------|
| 120 | Introduction to Public Speaking (5) | Staff |
| 327 | Extempore Speaking (3) | Staff |

ZOOLOGY

- | | | |
|-----|--|-------|
| 383 | Museum Technique (3) | Staff |
| 444 | Entomology (5) | Staff |
| 463 | Natural History of Amphibia and Reptiles (5) | Staff |
| 464 | Natural History of Birds (5) | Staff |
| 465 | Natural History of Mammals (5) | Staff |

BULLETIN • UNIVERSITY OF WASHINGTON



GRADUATE SCHOOL

1955-1957

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes two general bulletins; bulletins of the colleges and schools; two Summer Quarter announcements; and publications of the Division of Adult Education and Extension Services, the correspondence study and extension class announcements.

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 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.

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

UNIVERSITY REGULATIONS (FOR REGISTERED STUDENTS ONLY)
INTRODUCTION TO THE UNIVERSITY

Bulletins of the Colleges and Schools


COLLEGE OF ARTS AND SCIENCES
COLLEGE OF BUSINESS ADMINISTRATION
COLLEGE OF EDUCATION
COLLEGE OF ENGINEERING
COLLEGE OF FORESTRY
GRADUATE SCHOOL
SCHOOL OF LAW
SCHOOLS OF MEDICINE AND DENTISTRY
SCHOOL OF NURSING
COLLEGE OF PHARMACY

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT
SUMMER QUARTER ANNOUNCEMENT
CORRESPONDENCE STUDY
EXTENSION CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 892
June, 1955

Published monthly at Seattle, Washington, by the University of Washington from October to July, inclusive. No issues in August and September. Entered as second-class matter December 18, 1947, at the post office at Seattle, Washington, under the Act of August 24, 1912.



CONTENTS

CALENDAR	4
ADMINISTRATION	8
Board of Regents; Officers of Administration; Graduate School Research Committee; Graduate School Executive Committee; Graduate Faculty Council; Graduate Faculty	
GENERAL INFORMATION	35
Special Features; Admission; Registration; Veterans; Assistantships, Fel- lowships, and Scholarships; Tuition and Fees; Estimate of Yearly Ex- penses; Student Activities and Services	
THE GRADUATE PROGRAMS	47
Residence; Scholarship; Master's Degrees; Doctor's Degrees; Courses	
<i>College of Arts and Sciences</i>	52
Anthropology	52
Art	54
Botany	55
Chemistry	56
Classics	58
Drama	59
Economics	60
English	63
Far Eastern and Russian Institute	65
Far Eastern and Slavic Languages	67
Fisheries	70
General and Comparative Literature	71
Geography	73
Geology	74
Germanic Languages	75
History	77
Home Economics	80
Linguistics	81
Mathematics	82
Meteorology and Climatology	84
Music	86
Oceanography	88
Philosophy	89
Physical and Health Education	90
Physics	91
Political Science	94
Psychology	96
Romance Languages	98
Scandinavian Languages	101
Sociology	102
Speech	104
Zoology	106
<i>College of Business Administration</i>	108
<i>School of Dentistry</i>	114
<i>College of Education</i>	117
<i>College of Engineering</i>	121
Aeronautical	121
Chemical	123
Civil	125
<i>College of Forestry</i>	136
<i>School of Librarianship</i>	138
<i>School of Medicine</i>	143
Anatomy	143
Biochemistry	144
Microbiology	145
Pathology	146
Pharmacology	146
Physiology and Biophysics	147
Public Health	148
Conjoint, Pediatrics, Psychiatry	149
Surgery	150
<i>School of Nursing</i>	150
<i>College of Pharmacy</i>	152
<i>Graduate School of Social Work</i>	153
<i>Urban Planning</i>	157

CALENDAR

All fees must be paid at the time of registration. Registration is by appointment only.

AUTUMN QUARTER, 1955

REGISTRATION PERIOD

- SEPT. 6-SEPT. 27 Registration for students in residence Spring Quarter, 1955. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 23, but no later than September 16.*)
- SEPT. 9-SEPT. 27 Registration for former students not in residence Spring Quarter, 1955. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 23, but no later than September 16.*)
- SEPT. 12-SEPT. 27 Registration for new students. (*August 26 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

- SEPT. 28—WEDNESDAY Instruction begins (8 a.m.)
- OCT. 4—TUESDAY Last day to add a course
- OCT. 11—TUESDAY Last day for filing applications for the master's degree for Autumn Quarter
- NOV. 11—FRIDAY State Admission Day holiday
- NOV. 23-NOV. 28 Thanksgiving recess (6 p.m. to 8 a.m.)
- DEC. 16—FRIDAY Instruction ends (6 p.m.)

WINTER QUARTER, 1956

REGISTRATION PERIOD

- NOV. 21-DEC. 9 Registration for students in residence Autumn Quarter, 1955. (*Registration appointments will be issued on presentation of ASUW cards beginning October 21.*)
- DEC. 28-DEC. 30 Registration for former students not in residence Autumn Quarter, 1955. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 21.*)
- DEC. 28-DEC. 30 Registration for new students. (*New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Winter Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

- JAN. 3—TUESDAY Instruction begins
- JAN. 9—MONDAY Last day to add a course
- JAN. 17—TUESDAY Last day for filing applications for the master's degree for Winter Quarter
- FEB. 22—WEDNESDAY Washington's Birthday and Founder's Day holiday
- MAR. 16—FRIDAY Instruction ends

SPRING QUARTER, 1956

REGISTRATION PERIOD

FEB. 23-MAR. 9	Registration for students in residence Winter Quarter, 1956. (<i>Registration appointments will be issued on presentation of ASUW cards beginning January 20.</i>)
MAR. 21-MAR. 23	Registration for former students not in residence Winter Quarter, 1956. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 20.</i>)
MAR. 21-MAR. 23	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

MAR. 26-MONDAY	Instruction begins
MAR. 30-FRIDAY	Last day to add a course
APR. 6-FRIDAY	Last day for filing applications for the master's degree for Spring Quarter
MAY 18-FRIDAY	Governor's Day
MAY 30-WEDNESDAY	Memorial Day holiday
JUNE 3-SUNDAY	Baccalaureate Sunday
JUNE 8-FRIDAY	Instruction ends
JUNE 9-SATURDAY	Commencement

SUMMER QUARTER, 1956

REGISTRATION PERIOD

MAY 29-JUNE 1	Registration for all students. (<i>Registration appointments for students in residence Spring Quarter, 1956, and for former students not in residence Spring Quarter, 1956, may be obtained from the Registrar's Office beginning April 16. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.</i>)
JUNE 11-JUNE 15	

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 for filing applications for the master's degree for Summer Quarter
JULY 4-WEDNESDAY	Independence Day holiday
JULY 18-WEDNESDAY	First term ends
JULY 19-THURSDAY	Second term begins
JULY 20-FRIDAY	Last day to add a course for the second term
AUG. 17-FRIDAY	Instruction ends

AUTUMN QUARTER, 1956

REGISTRATION PERIOD

- SEPT. 11-OCT. 2 Registration for students in residence Spring Quarter, 1956. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 21, but no later than September 21.*)
- SEPT. 14-OCT. 2 Registration for former students not in residence Spring Quarter, 1956. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 21, but no later than September 21.*)
- SEPT. 17-OCT. 2 Registration for new students. (*August 31 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

- OCT. 3—WEDNESDAY Instruction begins (8 a.m.)
- OCT. 9—TUESDAY Last day to add a course
- OCT. 12—FRIDAY Last day for filing applications for the master's degree for Autumn Quarter
- NOV. 12—MONDAY State Admission Day holiday
- NOV. 21-NOV. 26 Thanksgiving recess (6 p.m. to 8 a.m.)
- DEC. 21—FRIDAY Instruction ends (6 p.m.)

WINTER QUARTER, 1957

REGISTRATION PERIOD

- NOV. 26-DEC. 14 Registration for students in residence Autumn Quarter, 1956. (*Registration appointments will be issued on presentation of ASUW cards beginning October 26.*)
- JAN. 2-JAN. 4 Registration for former students not in residence Autumn Quarter, 1956. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 26.*)
- JAN. 2-JAN. 4 Registration for new students. (*New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Winter Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

- JAN. 7—MONDAY Instruction begins
- JAN. 11—FRIDAY Last day to add a course
- JAN. 18—FRIDAY Last day for filing applications for the master's degree for Winter Quarter
- FEB. 22—FRIDAY Washington's Birthday and Founder's Day holiday
- MAR. 22—FRIDAY Instruction ends

SPRING QUARTER, 1957

REGISTRATION PERIOD

FEB. 27-MAR. 15	Registration for students in residence Winter Quarter, 1957. (<i>Registration appointments will be issued on presentation of ASUW cards beginning January 25.</i>)
MAR. 27-MAR. 29	Registration for former students not in residence Winter Quarter, 1957. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 25.</i>)
MAR. 27-MAR. 29	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

APR. 1-MONDAY	Instruction begins
APR. 5-FRIDAY	Last day to add a course
APR. 12-FRIDAY	Last day for filing applications for the master's degree for Spring Quarter
MAY 24-FRIDAY	Governor's Day
MAY 30-THURSDAY	Memorial Day holiday
JUNE 9-SUNDAY	Baccalaureate Sunday
JUNE 14-FRIDAY	Instruction ends
JUNE 15-SATURDAY	Commencement

SUMMER QUARTER, 1957

REGISTRATION PERIOD

JUNE 5-JUNE 7	Registration for all students. (<i>Registration appointments for students in residence Spring Quarter, 1957, and for former students not in residence Spring Quarter, 1957, may be obtained from the Registrar's Office beginning April 22. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.</i>)
JUNE 17-JUNE 21	

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 for filing applications for the master's degree for Summer Quarter
JULY 24-WEDNESDAY	First term ends
JULY 25-THURSDAY	Second term begins
JULY 26-FRIDAY	Last day to add a course for the second term
AUG. 23-FRIDAY	Instruction ends

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FRANCIS F. POWERS, *Education*

BRENTS STIRLING, *English*

CURTIS C. D. VAIL, *Germanic Languages
and Literature*

HARRY E. WHEELER, *Geology*

GRADUATE FACULTY COUNCIL

I. LETTERS AND ARTS

Hope Foote (Art), W. C. Grummel (Classics), Donal Harrington (Drama), Brents Stirling (English), Fang-Kuei Li (Far Eastern and Slavic Languages and Literature), Franz Sommerfeld (Germanic Languages and Literature), Demar Irvine (Music), Jean-Charles Chessex (Romance Languages and Literature), Sverre Arestad (Scandinavian Languages and Literature), Orville Pence (Speech).

II. SCIENCES

D. E. Stuntz (Botany), Paul C. Cross (Chemistry), Harry E. Wheeler (Geology), M. G. Arsove (Mathematics), Franklin I. Badgley (Meteorology and Climatology), Ronald Geballe (Physics), Paul Illg (Zoology).

III. TECHNOLOGY

Ronald C. Weikel (Aeronautical Engineering), Joseph L. McCarthy (Chemical Engineering), R. G. Hennes (Civil Engineering), Laurel Lewis (Electrical Engineering), Richard Van Cleve (Fisheries), Harvey Erickson (Forestry), Harold M. Hendrickson (Mechanical Engineering), E. E. Mueller (Mineral Engineering), Richard Fleming (Oceanography).

IV. SOCIAL STUDIES

Verne Ray (Anthropology), Douglass C. North (Economics), George E. Taylor (Far Eastern and Russian Institute), William Garrison (Geography), W. Stull Holt (History), Arthur E. Murphy (Philosophy), William Ballis (Political Science), Paul Horst (Psychology), Calvin F. Schmid (Sociology).

V. APPLIED SOCIAL STUDIES

Arthur N. Lorig (Accounting, Finance, and Statistics), Robert Sutermeister (Policy, Personnel Relations, and Production), N. H. Engle (Marketing, Transportation, and Foreign Trade), Dwight Robinson (General Business), Alice Hayden (Education), Doris Brockway (Home Economics), Norman Kunde (Physical Education for Men), Marion Broer (Physical Education for Women), Grace Ferguson (Social Work).

VI. HEALTH SCIENCES

N. B. Everett (Anatomy), Hans Neurath (Biochemistry), Alton Moore (Dentistry), Russell S. Weiser (Microbiology), Mary S. Tschudin (Nursing), T. C. West (Pharmacology), L. W. Rising (Pharmacy), Robert F. Rushmer (Physiology and Biophysics), Robert D. Ray (Surgery).

GRADUATE FACULTY

(As of May 6, 1955)

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
- ADAMS, ROBERT PARDEE, 1947..... *Associate Professor of English*
B.A., 1931, Oberlin College; Ph.D., 1937, Chicago
- ALLENDORFER, 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
- AMASSIAN, VAHE EUGENE, 1949 (1953)..... *Associate Professor of Physiology*
B.A., 1945, M.B.B.Ch., 1948, Cambridge (England)
- ANDERSON, ARTHUR G., JR., 1946 (1953)..... *Associate Professor of Chemistry*
A.B., 1940, Illinois; M.S., 1942, Ph.D., 1944, Michigan
- ANDERSON, BERTON EMMETT, 1948 (1950)..... *Associate Professor of Dental Science and Literature; Acting Dean of the School of Dentistry; Director of Postgraduate Dental Education; Director of Admissions*
D.M.D., 1925, Oregon
- ANDERSON, DONALD L., 1947..... *Assistant Professor of Mining Engineering*
B.S., 1938, St. Francis Xavier (Nova Scotia); B.S. in Mining E., 1941, Illinois

- ANDERSON, JULIA M., 1950..... *Assistant Professor of Nursing*
 B.S., 1931, Minnesota; R.N., 1936, Huntington Memorial School of Nursing,
 California; M.N., 1942, Washington
- ARESTAD, SVERRE, 1937 (1948)..... *Associate Professor of Scandinavian*
 B.A., 1929, Ph.D., 1938, *Languages; Executive Officer of the*
 Washington *Department of Scandinavian Languages*
- ARSOVE, MAYNARD GOODWIN, 1951 (1953)..... *Assistant Professor of Mathematics*
 B.S., 1943, Lehigh; M.S., 1948, Ph.D., 1950, Brown
- AUSTIN, KENNETH P., 1954..... *Professor of Prosthodontics*
 D.D.S., 1930, Denver
- AVANN, SHERWIN PARKER, 1946..... *Assistant Professor of Mathematics*
 B.S., 1938, Washington; M.S., 1940, Ph.D., 1942, California Institute
 of Technology
- BABB, ALBERT LESLIE, 1952..... *Assistant Professor of Chemical Engineering*
 B.A.Sc., 1948, British Columbia; M.S., 1949, Ph.D., 1951, Illinois
- BADGLEY, FRANKLIN ILSLEY, 1950 (1951)..... *Assistant Professor of Meteorology*
 B.S., 1935, Chicago; M.S., 1948, New York *and Climatology*
- 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., 1950 (1953)..... *Assistant Professor of Mechanical*
 S.B., 1948, S.M., 1950, Massachusetts Institute of Technology *Engineering*
- BALLANTINE, JOHN PERRY, 1926 (1937)..... *Professor of Mathematics*
 A.B., 1918, Harvard; Ph.D., 1923, Chicago
- BALLIS, WILLIAM BELCHER, 1948..... *Professor of Political Science*
 B.A., 1929, Stanford; Ph.D., 1936, 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*
 B.A., 1939, Morningside College; *Relations and Administration*
 M.A., 1940, Ph.D., 1946, Washington
- BASKERVILLE, BARNET, 1948 (1954)..... *Associate Professor of Speech*
 B.A., 1940, M.A., 1944, Washington; Ph.D., 1948, Northwestern
- BATIE, HARRIETT V., 1941 (1954)..... *Assistant Professor of Education;*
 B.S., 1935, Hastings College; *Certification and Academic Adviser*
 M.A., 1945, Ph.D., 1953, Washington
- BAUER, HARRY C., 1945 (1947)..... *Professor of Librarianship; Director of*
 A.B., 1927, M.S., 1929, Washington University, St. Louis; *Libraries*
 Certificate of Librarianship, 1931, St. Louis Library School
- BEALE, JAMES MACARTHUR, JR., 1948..... *Assistant Professor of Music*
 B.A., 1945, Harvard; B.Mus., 1946, M.Mus., 1947, Yale
- BEAUMONT, ROSS ALLEN, 1940 (1954)..... *Professor of Mathematics*
 A.B., 1936, M.S., 1937, Michigan; Ph.D., 1940, Illinois
- BELCHER, HELEN CAMP, 1952..... *Assistant Professor of Nursing; Assistant*
 A.B., 1942, Mount Holyoke College; R.N., 1944, *Director of the Basic*
 Massachusetts General Hospital School of Nursing; *Nursing Research*
 M.N., 1952, Washington *Program*
- BENNETT, H. STANLEY, 1948..... *Professor of Anatomy; Executive Officer of the*
 A.B., 1932, Oberlin College; M.D., 1936, Harvard *Department of Anatomy*
- BERG, KENNETH BERNARD, 1950 (1955)..... *Associate Professor of Accounting*
 B.S.C., 1939, North Dakota; M.S., 1941, Ph.D., 1952, Illinois;
 C.P.A., 1954, state of Washington
- BERGSETH, FREDERICK ROBERT, 1947 (1952)..... *Associate Professor of Electrical*
 B.S. in E.E., 1937, Washington; S.M. in E.E., 1938, *Engineering*
 Massachusetts Institute of Technology

- BEVIS, LEURA DOROTHY, 1947..... *Assistant Professor of Librarianship*
 B.A., 1927, Pomona College; B.S. in L.S., 1947, Southern California;
 M.A., 1951, Washington
- BIJOU, SIDNEY WILLIAM, 1948 (1951) *Professor of Psychology; Director of the*
 B.S., 1933, Florida; A.M., 1936, Columbia; *Institute of Child Development*
 Ph.D., 1941, Iowa
- BIRD, WINFRED WYLAH, 1928 (1946)..... *Associate Professor of Speech*
 A.B., 1926, Lawrence College; Ph.D., 1938, Iowa
- BIRNBAUM, ZYGMUNT WILLIAM, 1939 (1950) *Professor of Mathematics; Director*
 LL.M., 1925, Ph.D., 1929, *of the Laboratory of Statistical Research*
 John Casimir (Lwow, Poland)
- BLAIR, JOHN SANBORN, 1952 (1954)..... *Assistant Professor of Physics*
 B.S., 1943, Yale; M.S., 1949, Ph.D., 1951, Illinois
- BLANDAUF, RICHARD JULIUS, 1949 (1951)..... *Professor of Anatomy*
 A.B., 1935, Linfield College; Ph.D., 1939, Brown; M.D., 1948, Rochester
- BLANKENSHIP, WILLIAM RUSSELL, 1932 (1943)..... *Professor of English*
 A.B., 1914, Missouri; A.M., 1929, Ph.D., 1935, Washington
- BLASER, HENRY WESTON, 1946 (1948)..... *Associate Professor of Botany*
 B.S., 1931, A.M., 1933, Temple; Ph.D., 1940, Cornell
- BODANSKY, DAVID, 1954 *Assistant Professor of Physics*
 B.S., 1943, M.A., 1948, Ph.D., 1950, Harvard
- BONE, HUGH ALVIN, 1948 *Professor of Political Science*
 B.A., 1931, North Central College; M.A., 1935, Wisconsin; Ph.D., 1937,
 Northwestern
- BONIFAS, PAUL AMI, 1945 (1947)..... *Associate Professor of Art*
 1904-10, College of Calvin (Geneva); 1910-13, School of Fine Arts (Geneva);
 1913-14, Swiss Ceramic School (Lausanne)
- BOROUGH, HOMER, JR., 1948 (1950)..... *Assistant Professor of Elementary*
 B.A., 1939, Western Washington College of Education; *Education*
 M.A., 1947, Ph.D., 1949, Washington
- BOSTETTER, EDWARD EVERETT, 1940 (1947)..... *Associate Professor of English*
 B.A., 1935, Franklin and Marshall College; M.A., 1937, Ph.D., 1938,
 Princeton
- BOWERMAN, CHARLES EMERT, 1946..... *Assistant Professor of Sociology*
 A.B., 1935, Denison; M.A., 1941, Ph.D., 1948, Chicago
- BOYDEN, E. ALLEN, 1954 *Visiting Professor of Anatomy*
 B.A., 1909, M.A., 1911, Ph.D., 1916, Harvard
- BRAZEAU, WENDELL PHILLIPS, 1945 (1955) *Associate Professor of Art*
 B.F.A., 1933, M.F.A., 1947, Washington
- BREUL, FRANK RENNELL, 1951 (1953) *Associate Professor of Social Work*
 B.A., 1938, Amherst College; M.A., 1941, Chicago; Ph.D., 1951, McGill
- BREWER, STANLEY HAROLD, 1946 (1953)..... *Associate Professor of Transportation*
 B.A., 1942, M.B.A., 1943, Washington
- BRIEN, FREDERICK BLYTH, 1954 *Assistant Professor of Mineral Engineering*
 B.S., 1950, Alberta; M.S., 1951, Columbia
- BRIGGS, JAMES ROBERT, 1952 (1955) *Associate Professor of General Business*
 A.B., 1935, M.A., 1950, Washington; D.Ed., 1954, Stanford
- BROCKMAN, CHRISTIAN FRANK, 1946 (1949)..... *Associate Professor of Forestry*
 B.S., 1924, Colorado State College; M.S., 1931, Washington
- BROCKWAY, DORIS J., 1951..... *Associate Professor of Home Economics*
 B.A., 1926, Washington State College; M.A., 1939, Washington
- BROER, MARION RUTH, 1947 (1955)..... *Associate Professor of Physical Education*
 B.S., 1933, M.S., 1936, Wisconsin
- BROWN, EDWARD GORDON, 1948 (1951)..... *Professor of Business Administration;*
 A.B., 1929, Washington; *Executive Officer of the Department of Policy,*
 M.B.A., 1932, Harvard *Personnel Relations, and Production*
- BROWN, MALCOLM JOHNSTON, 1946 (1947)..... *Assistant 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
- BROWNE, FRANCIS HERBERT, III, 1950..... *Assistant Professor of Mathematics*
B.A., 1943, M.S., 1947, Yale; Ph.D., 1949, Princeton
- BRYAN, STANLEY EDWIN, 1952..... *Professor of Policy, Personnel Relations,*
B.S., 1938, M.S., 1946, California, Los Angeles; *and Production*
D.C.S., 1950, Indiana
- BRYANT, BENJAMIN SMITH, 1949 (1952)..... *Assistant Professor of Forestry*
B.S.F., 1947, M.S.F., 1948, Washington; D.For., 1951, Yale
- BUCK, GEORGE CRAWFORD, 1950 (1954)..... *Lecturer in German*
B.A., 1942, Amherst College; M.A., 1948, Ph.D., 1954, Yale
- BUETTNER, KONRAD JOHANNES KARL, 1953..... *Acting Associate Professor*
B.S., 1922, Gymnasium (Pforte, Germany); *of Meteorology and Climatology*
Dr.phil., 1926, Göttingen (Germany); Dr.phil.habil., 1934, Kiel (Germany)
- BURKE, AGNES EVELYN, 1943 (1953)..... *Associate Professor of Nursing*
B.S., 1930, Akron; R.N., 1930, M.A., 1941, Western Reserve;
C.P.H.N., 1943, 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
- BUTTERBAUGH, GRANT ILLION, 1925 (1951)..... *Associate Professor of Statistics*
A.B., 1916, Wisconsin; M.B.A., 1923, Washington; Ph.D., 1942, Chicago
- CADY, GEORGE HAMILTON, 1938 (1947)..... *Professor of Chemistry*
A.B., 1927, A.M., 1928, Kansas; Ph.D., 1930, California
- CAMPBELL, THOMAS HERBERT, 1945 (1955)..... *Professor of Civil*
B.S. in C.E., 1934, Washington; M.S. in C.E., 1938 *Engineering*
Massachusetts Institute of Technology
- CANNON, ARTHUR MONROE, JR., 1947 (1951)..... *Professor of Accounting,*
B.S., 1933, M.A., 1947, Oregon; C.P.A., 1936, *Finance, and Statistics*
state of Washington, Oregon
- CARLSON, LOREN DANIEL, 1945 (1951)..... *Associate Professor of Physiology*
B.S., 1937, St. Ambrose College; Ph.D., 1941, Iowa
- 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*
B.A., 1927, Nebraska Wesleyan; M.A., 1929, Ph.D., 1936, Northwestern
- CARTWRIGHT, PHILIP WINDSOR, 1947 (1952)..... *Associate Professor of Labor*
A.B., 1940, M.A., 1942 *Economics; Assistant Director of the*
Ph.D., 1950, Stanford *Institute of Labor Economics*
- CHANG, KUN, 1951 (1954)..... *Acting Assistant Professor of Far Eastern*
B.A., 1938, National Tsinghua (China); *and Slavic Languages*
M.A., 1949, Yale *and Literature*
- CHAPMAN, DOUGLAS GEORGE, 1949 (1953)..... *Associate Professor of Mathematics*
B.A., 1938, B.A., 1939, 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
- CHESSEX, JEAN-CHARLES, 1928 (1948)..... *Professor of French*
B.A., 1920, Gymnase Classique (Lausanne, Switzerland);
B.D., 1922, M.A., 1925, Lausanne (Switzerland)
- CHURCH, PHIL EDWARDS, 1935 (1951)..... *Professor of Meteorology and Climatology;*
B.S., 1923, Chicago; M.A., 1932, *Executive Officer of the Department*
Ph.D., 1937, Clark *of Meteorology and Climatology*
- CLARK, KENNETH COURTRIGHT, 1948 (1955)..... *Associate Professor of Physics*
B.A., 1940, Texas; A.M., 1941, Ph.D., 1947, Harvard
- 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; Executive B.Litt. in Law, 1924, Oxford (England); Officer of the Department of Political Science*
Ph.D., 1930, Harvard
- COMISH, NEWEL WILLIAM, 1949 (1955)..... *Associate Professor of Marketing*
B.S., 1947, M.S., 1948, Oregon; Ph.D., 1953, Ohio State
- CONWAY, JOHN ASHBY, 1927 (1950)..... *Professor of Drama*
B.A., 1927, Carnegie Institute of Technology
- COOMBS, HOWARD ABBOTT, 1934 (1949)..... *Professor of Geology;*
B.S., 1929, M.S., 1932, *Executive Officer of the Department of Geology*
Ph.D., 1935, Washington
- CORBALLY, JOHN EDWARD, 1927 (1942)..... *Professor of Secondary Education*
B.A., 1918, Whitworth College; *Director of Practice Teaching*
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
- 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
- COX, WILLIAM EDWARD, 1919 (1948)..... *Professor of Accounting*
A.B., 1909, A.M., 1910, Texas
- CRAIN, RICHARD WILLSON, SR., 1936 (1953)..... *Associate Professor of*
B.S. in E.E., 1930, B.S. in M.E., 1931, Colorado *Mechanical Engineering*
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
- CREORE, ALVIN EMERSON, 1940 (1953)..... *Associate Professor of Romance*
A.B., 1934, M.A., 1936, Rochester; *Languages and Literature*
Ph.D., 1939, Johns Hopkins
- CRIDER, JAMES ROBERTS, 1952..... *Instructor in Drama*
B.A., 1945, Cornell College, Iowa; M.A., 1950, Washington
- CRITTENDEN, ALDEN LARUE, 1947 (1949)..... *Assistant Professor of Chemistry*
B.S., 1942, Ph.D., 1947, Illinois
- CROSS, PAUL CLIFFORD, 1949 (1953)..... *Professor of Chemistry; Executive Officer*
B.S., 1928, Geneva College; M.S., 1930, *of the Department of Chemistry;*
Ph.D., 1932, Wisconsin *Director of Bagley Hall Laboratories*
- CROWELL, LAURA IRENE, 1949 (1955)..... *Associate Professor of Speech*
B.A., 1929, South Dakota; M.A., 1940, Ph.D., 1948, Iowa
- CRUTCHFIELD, JAMES ARTHUR, JR., 1949 (1951)..... *Assistant Professor*
A.B., 1940, M.A., 1942, California, Los Angeles; *of Economics*
Ph.D., 1954, California
- CULBERT, SIDNEY SPENCE, 1947 (1950)..... *Assistant Professor of Psychology*
B.A., 1943, Ph.D., 1950, Washington
- CURTIS, ELIZABETH LONG, 1930 (1947)..... *Assistant Professor of Art*
B.F.A., 1929, M.F.A., 1933, Washington
- CUTLER, RUSSELL KELSEY, 1946 (1948)..... *Associate Professor of Physical*
B.Ed., 1930, California, Los Angeles; *Education; Executive Officer of the*
M.S., 1934, Oregon *Department of Physical Education for Men*
- DANDLIKER, WALTER BEACH, 1951 (1955)..... *Associate Professor of Biochemistry*
B.S., 1940, Rollins College; Ph.D., 1945, California Institute of Technology
- DAUBEN, HYP JOSEPH, JR., 1945 (1950)..... *Associate Professor of Chemistry*
B.A., M.S., 1937, Ohio State; A.M., Ph.D., 1941, Harvard
- DAVID, JEAN FERDINAND, 1936..... *Assistant Professor of Romance Languages*
Bacc., 1923, College Grandchamp (Versailles, France); *and Literature*
A.B., 1929, M.A., 1932, Saskatchewan; Ph.D., 1936, Johns Hopkins
- DAVID, MORTON MORRIS, 1953..... *Assistant Professor of Chemical Engineering*
B.S. in Ch.E., 1942, Colorado; D.Eng., 1950, Yale
- DAVIS, ALANSON BEWICK, 1947 (1952)..... *Stage Designer in Drama*
B.A., 1947, Washington

- DAVIS, MERRELL REES, 1947 (1953) Associate Professor of English
A.B., 1935, Whitman College; M.A., 1937, Tufts College;
Ph.D., 1948, Yale
- 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
- DEKKER, DAVID BLISS, 1948 (1951) Assistant Professor of Mathematics
A.B., 1941, California; M.S., 1943, Illinois Institute of Technology;
Ph.D., 1948, California
- DE LACY, ALLAN CLARK, 1946 (1951) Associate Professor of Fisheries
B.S., 1932, M.S., 1933, Ph.D., 1941, Washington
- DEL GIUDICE, FRANK, 1948 Lecturer in Art
Pratt Institute
- DEMMERY, JOSEPH, 1928 (1949) Professor of General Business;
Ph.B., 1920, Executive Officer of the Department
M.A., 1924, Chicago of General Business
- DE VRIES, MARY AID, 1921 (1939) Associate Professor of Physical Education
B.A., 1920, Wisconsin
- DILLE, JAMES MADISON, 1936 (1946) Professor of Pharmacology; Executive
B.S., 1930, M.S., 1933, Nebraska; Officer of the Department
Ph.D., 1935, Georgetown; M.D., 1946, Illinois of Pharmacology
- DOBIE, EDITH, 1926 (1952) Professor of History
A.B., 1914, Syracuse; A.M., 1922, Chicago; Ph.D., 1925, Stanford
- DODD, STUART CARTER, 1947 Professor of Sociology; Director of the
B.S., 1922, M.A., 1924, Washington Public Opinion Laboratory
Ph.D., 1926, Princeton
- DONALDSON, LAUREN RUSSELL, 1935 (1948) Professor of Fisheries; Director
A.B., 1926, Intermountain Union College; of the Applied Fisheries
M.S., 1931, Ph.D., 1939, Washington Laboratory
- DOUGLAS, HOWARD CLARK, 1941 (1950) Associate Professor of Microbiology
A.B., 1936, Ph.D., 1949, California
- DOWD, LAURENCE PHILLIPS, 1950 (1955) Associate Professor of Foreign Trade
B.A., 1938, Washington; M.A., 1940, Hawaii; Ph.D., 1954, Michigan
- DRAPER, EDGAR MARIAN, 1925 (1936) Professor of Curriculum; Director of
A.B., 1916, M.A., 1925, In-Service Teacher Training
Ph.D., 1926, Washington
- DU PEN, EVERETT GEORGE, 1945 (1954) Associate Professor of Art
B.F.A., 1937, Yale
- DVORAK, AUGUST, 1923 (1937) Professor of Education; Director of the
A.B., 1920, Ph.D., 1923, Minnesota Bureau of Admissions Research
- 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;
B.S., in E.E., 1922, M.S. in Executive Officer of the Department of
E.E., 1929, Washington Electrical Engineering
- EBY, E. HAROLD, 1927 (1947) Professor of English
Ph.B., 1923, Chicago; Ph.D., 1927, Washington
- EDMONDSON, W. THOMAS, 1949 (1951) Associate Professor of Zoology
B.S., 1938, Ph.D., 1942, Yale
- EDWARDS, ALLEN L., 1944 (1948) Professor of Psychology
B.A., 1937, Central College, Chicago; M.A., 1938, Ohio State;
Ph.D., 1940, Northwestern
- EGGERS, DAVID FRANK, JR., 1950 (1952) Assistant Professor of Chemistry
B.S., 1943, Illinois; Ph.D., 1950, Minnesota
- ELMENDORF, WILLIAM WELCOME, 1946 (1950) Assistant Professor of
B.A., 1934, M.A., 1935, Washington; Ph.D., 1949, California Anthropology

- ELY, BETTY JANE, 1952 (1954).....*Acting Assistant Professor of Nursing*
R.N., 1945, Presbyterian Hospital School of Nursing, Pennsylvania;
B.S., 1951, Virginia; M.N., 1953, Washington
- EMERSON, DONALD EUGENE, 1946 (1953).....*Associate Professor of History*
A.B., 1937, Johns Hopkins; A.M., 1938, Columbia; Ph.D., 1942, Johns Hopkins
- ENGLE, NATHANAEAL HOWARD, 1941.....*Professor of Business Research; Director*
A.B., 1925, A.M., 1928, Washington; *of the Bureau of Business Research*
Ph.D., 1929, Michigan
- ERICKSON, HARVEY D., 1947.....*Associate Professor of Forestry*
B.S., 1933, B.S., 1934, M.S., 1936, Ph.D., 1937, Minnesota
- ERLICH, VICTOR, 1948 (1955).....*Associate Professor of Far Eastern and Slavic*
M.A., 1937, Free Polish University *Languages and Literature*
(Warsaw, Poland); Ph.D., 1951, Columbia
- ESPER, ERWIN ALLEN, 1927 (1934).....*Professor of Psychology*
B.A., 1917, M.A., 1920, Ph.D., 1923, Ohio State
- EVANS, CHARLES ALBERT, 1946.....*Professor of Microbiology; Executive*
B.S., 1935, B.M., 1936, M.D., 1937, *Officer of the Department of*
Ph.D., 1942, Minnesota *Microbiology*
- EVERETT, NEWTON BENNIE, 1946 (1948).....*Associate Professor of Anatomy*
B.S., 1937, M.S., 1938, North Texas State College; Ph.D., 1942, Michigan
- EYRE, JOHN DOUGLAS, 1951.....*Assistant Professor of Geography*
A.B., 1945, M.A., 1947, Ph.D., 1951 Michigan
- FAIRHALL, ARTHUR WILLIAM, 1954.....*Assistant Professor of Physics and Chemistry*
B.Sc., 1946, Queens (Kingston, Ontario); Ph.D., 1952, Massachusetts
Institute of Technology
- FARIS, ROBERT E. LEE, 1948.....*Professor of Sociology; Executive Officer of*
Ph.B., 1928, M.A., 1930, Ph.D., 1931, Chicago *the Department of Sociology*
- FARQUHARSON, FREDERICK BURT, 1925 (1945).....*Professor of Civil Engineering;*
B.S. in M.E., 1923, *Director of the Engineering*
M.E., 1927, Washington *Experiment Station*
- FARWELL, GEORGE WELLS, 1948 (1955).....*Associate Professor of Physics*
S.B., 1941, Harvard; Ph.D., 1948, Chicago
- FEA, HENRY R., 1954 (1955).....*Assistant Professor of Education*
B.A., 1942, B.Ed., 1947, M.Ed., 1948, Saskatchewan; Ph.D., 1950, California
- FERGUSON, GRACE BEALS, 1941 (1945).....*Professor of Social Work*
B.A., 1917, Minnesota; M.A., 1930, Indiana
- FERNALD, ROBERT LESLIE, 1946 (1947).....*Assistant Professor of Zoology*
A.B., 1937, Monmouth College; Ph.D., 1941, California
- FISCHER, EDMOND H., 1953.....*Assistant Professor of Biochemistry*
Ph.D., 1947, Geneva
- FISCHER, LOUIS, 1935 (1945).....*Professor of Pharmaceutical Chemistry*
B.S., Ph.C., 1926, M.S., 1928, Ph.D., 1933, Washington
- FISHER, JAMES HAYDEN, 1945 (1952).....*Assistant Professor of Electrical*
B.S. in M.E., 1944, B.S. in E.E., 1947, Washington; *Engineering*
M.S. in M.E., 1950, Ph.D., 1953, Purdue
- FLEAGLE, ROBERT GUTHRIE, 1948 (1951).....*Associate Professor of Meteorology*
A.B., 1940, Johns Hopkins; M.S., 1944, *and Climatology*
Ph.D., 1949, New York
- FLEMING, RICHARD HOWELL, 1951.....*Professor of Oceanography; Executive*
B.A., 1929, M.A., 1931, British Columbia; *Officer of the Department*
Ph.D., 1935, California *of Oceanography*
- FOLTZ, ELDON LEROY, 1950 (1953).....*Assistant Professor of Neurosurgery*
B.S., 1941, Michigan State; M.D., 1943, Michigan
- FOOTE, HOPE LUCILE, 1923 (1948).....*Professor of Art*
A.B., 1920, Iowa State Teachers College; M.A., 1923, Columbia
- FORRESTER, HERBERT AMASA, 1954.....*Instructor in Mathematics*
B.S., 1950, California Institute of Technology;
M.A., 1951, Ph.D., 1954, Princeton

- FOWLER, DAVID COVINGTON, 1952 (1953) *Assistant Professor of English*
 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
- FRANZKE, ALBERT LEONARD, 1936 (1939) *Associate Professor of Speech*
 B.A., 1916, M.A., 1923, Lawrence College, Wisconsin
- FROLANDER, HERBERT FARLEY, 1952 *Instructor in Oceanography*
 Ed.B., 1946, Rhode Island College of Education; Sc.M., 1950, Brown
- FULLER, STEVEN D., 1946 (1955) *Assistant Professor of Art*
 B.A., 1939, M.F.A., 1948, Washington
- GALLAGHER, MARIAN GOULD, 1944 (1953) *Professor of Law; Law Librarian*
 B.A., 1935, LL.B., 1937, B.A. in L.S., 1939, Washington
- GANZER, VICTOR MARTIN, 1947 (1953) *Professor of Aeronautical Engineering;*
 B.A., 1933, Augustana College, Illinois; *Executive Officer of the*
 B.S. in A.E., 1941, Washington *Department of Aeronautical Engineering*
- GARCIA-PRADA, CARLOS, 1925 (1939) *Professor of Spanish*
 Ph.B., 1918, Colegio Del Rosario (Bogotá, Colombia); M.A., 1924, Michigan;
 Ph.D., 1929, Universidad Nacional (Bogotá, Colombia)
- GARFIELD, VIOLA EDMUNDSON, 1937 (1955) *Associate Professor of*
 B.A., 1928, M.A., 1931, Washington; *Anthropology*
 Ph.D., 1939, Columbia
- GARRISON, WILLIAM LOUIS, 1950 *Assistant Professor of Geography*
 B.S., 1946, M.A., 1947, George Peabody College; Ph.D., 1950, Northwestern
- GATES, CHARLES MARVIN, 1936 (1951) *Professor of History*
 B.A., 1926, Yale; M.A., 1928, Harvard; Ph.D., 1934, Minnesota
- GEBALLE, RONALD, 1943 (1954) *Associate Professor of Physics*
 B.S., 1938, M.A., 1940, Ph.D., 1943, California
- GESSEL, STANLEY PAUL, 1948 (1951) *Assistant Professor of Forestry*
 B.S., 1939, Utah State Agricultural College; Ph.D., 1950, California
- GILLAM, CORNELIUS W., 1954 *Assistant Professor of Business Law*
 B.A., 1945, Carleton College; M.A., 1946, Minnesota; J.D., 1950, Chicago
- GILLINGHAM, JOHN BENTON, 1947 *Assistant Professor of Economics;*
 A.B., 1939, Washington State College; *Assistant Director of the Institute*
 M.A., 1941, Wisconsin *of Labor Economics*
- GLEASON, DAVID SOLBERG, 1954 *Acting Assistant Professor of Metallurgical*
 B.S., 1949, M.S., 1951, Montana School of Mines *Engineering*
- GOGGIO, CHARLES, 1920 (1936) *Professor of Romance Languages*
 A.B., 1910, Harvard; A.M., 1914, Ph.D., 1919, Wisconsin
- GOLDBERG, LEONARD D., 1947 *Assistant Professor of General Business*
 A.B., 1943, J.D., 1945, Chicago
- GONZALES, BOYER, 1954 *Professor of Art; Director of the School of Art*
 B.F.A., B.S., 1931, Virginia
- GOODRICH, FOREST JACKSON, 1914 (1939) *Professor of Pharmacognosy;*
 Ph.C., 1913, B.S., 1914, M.S., 1917, *Dean of the College of Pharmacy*
 Ph.D., 1927, Washington
- GOODSPEED, GEORGE EDWARD, 1919 (1934) *Professor of Geology*
 S.B., 1910, Massachusetts Institute of Technology
- GORDON, DONALD FLEMING, 1950 *Assistant Professor of Economics*
 B.A., 1944, Saskatchewan; M.A., 1946, Toronto; Ph.D., 1949, Cornell
- GORE, WILLIAM JAY, 1951 *Instructor in Political Science*
 B.A., 1948, Washington; M.S., 1950, D.P.A., 1952, Southern California
- GOTTFRIED, ALEX, 1950 *Assistant Professor of Political Science*
 B.Ed., 1941, Chicago Teachers College; A.M., 1948, Ph.D., 1952, Chicago
- GOULD, HOWARD ROSS, 1953 *Assistant Professor of Oceanography*
 B.A., 1943, Minnesota; Ph.D., 1953, Southern California
- GRAY, FLORENCE IRENE, 1945 (1952) *Assistant Professor of Nursing;*
 R.N., B.S., 1945, M.S., 1950, *Educational Director of the*
 Washington *Harborview Division*

- GRAY, ROBERT SIMPSON, 1939 (1951)..... *Assistant Professor of Drama*
B.A., 1936, M.A., 1938, Washington
- GREGORY, NORMAN WAYNE, 1946 (1953)..... *Associate Professor of Chemistry*
B.S., 1940, M.S., 1941, Washington; Ph.D., 1943, Ohio State
- GRIMES, WILMA H., 1953 (1955)..... *Assistant Professor of Speech*
B.A., 1928, Wisconsin; M.A., 1947, Northwestern; Ph.D., 1953, Illinois
- GRIMSHAW, AUSTIN, 1949..... *Professor of Business Administration;*
S.D. in C.E., 1927, M.B.A., 1934, *Dean of the College of Business*
D.C.S., 1938, Harvard *Administration*
- GROMAN, NEAL BENJAMIN, 1950 (1953)..... *Assistant Professor of Microbiology*
S.B., 1947, Ph.D., 1950, Chicago
- GRONDAL, BROR LEONARD, 1913 (1929)..... *Professor of Forest Products*
A.B., 1910, Bethany College, Kansas; M.S.F., 1913, Washington;
D.Sc. (Hon.), 1943, Bethany College
- GRONEWOLD, DAVID H., 1954..... *Assistant 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 (1951)..... *Assistant Professor of Mechanical*
B.S. in M.E., 1942, Lehigh *Engineering*
- GUNTHER, ERNA, 1923 (1941)..... *Professor of Anthropology; Director of the*
B.A., 1919, Barnard College; *Washington State Museum*
M.A., 1920, Ph.D., 1928, Columbia
- GUTHRIE, EDWIN RAY, 1914 (1928)..... *Professor of Psychology; Dean Emeritus*
B.A., 1907, M.A., 1910, Nebraska; *of the Graduate School*
Ph.D., 1912, Pennsylvania; LL.D. (Hon.), 1946, Nebraska
- HAAGA, AGNES MARIE, 1947 (1955)..... *Assistant Professor of Drama*
B.A., 1936, Siena College, Tennessee; M.A., 1952, Northwestern
- HALD, EARL CARLSEN, 1946 (1947)..... *Associate Professor of Economics*
B.S., 1931, A.M., 1932, Nebraska; Ph.D., 1939, California
- HALL, JAMES KENDALL, 1930 (1934)..... *Professor of Economics*
A.B., 1925, A.M., 1926, Oregon; Ph.D., 1929, Stanford
- HALL, JAMES WINFORD, 1949 (1955)..... *Associate Professor of English*
A.B., 1937, Kansas City; M.A., 1938, Wisconsin; Ph.D., 1949, Cornell
- HALL, NATHAN ALBERT, 1952..... *Assistant 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..... *Assistant Professor of Physics*
B.S., 1943, City College of New York; Ph.D., 1948,
Massachusetts Institute of Technology
- HALSEY, GEORGE DAWSON, JR., 1951 (1954)..... *Associate Professor of Chemistry*
B.S. in Ch.E., 1943, South Carolina; Ph.D., 1948, Princeton
- HAMACK, FRANK HARTMOND, 1921 (1942)..... *Lecturer in Accounting, Finance,*
LL.B., 1916, Georgetown *and Statistics*
- HAMILTON, ALBERT CHARLES, 1952..... *Assistant Professor of English*
B.A., 1945, Manitoba; M.A., 1948, Ph.D., 1952, Toronto
- HANAHAN, DONALD JAMES, 1948 (1953)..... *Associate Professor of Biochemistry*
B.S., 1941, Ph.D., 1944, Illinois
- HANLEY, CLAIR NORTON, 1952..... *Assistant Professor of Speech*
B.A., 1947, M.A., 1950, Ph.D., 1952, Iowa
- HANSON, KERMIT OSMOND, 1948 (1954)..... *Professor of Accounting,*
A.B., 1938, Luther College; M.S., 1940, *Finance, and Statistics*
Ph.D., 1950, Iowa State College
- HARBOLD, WILLIAM HENRY, 1949 (1955)..... *Assistant Professor of Political Science*
B.A., 1947, Pennsylvania State; M.A., 1949, Ph.D., 1953, Harvard

- HARKINS, HENRY NELSON, 1947 *Professor of Surgery; Executive Officer of*
 B.S., 1925, M.S., 1926, Ph.D., 1928,
 M.D., 1931, Chicago
the Department of Surgery
- HARRINGTON, DONAL FRANCIS, 1938 (1952) *Professor of Drama*
 B.A., 1928, Montana State; M.A., 1933, Columbia
- HARRIS, EDISON D., 1947 *Associate Professor of Music*
 B.S., 1942, New York
- HARRIS, MARKHAM, 1946 (1947) *Assistant Professor of English*
 A.B., 1929, M.A., 1931, Williams College
- 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
- HARRISON, JOSEPH BARLOW, 1913 (1933) *Professor of English*
 A.B., 1910, Washington; B.A., 1913, Oxford (England)
- HASSON, JOSEPH A., 1954 *Assistant Professor of Finance*
 B.A., 1943, Washington; M.B.A., 1947, M.A., Ph.D., 1951, Chicago
- HASTINGS, DELBERT C., 1951 (1954) *Assistant Professor of Statistics; Industrial*
 B.S., 1947, M.A., 1949,
 Ph.D., 1954, Minnesota
Analyst in the Bureau of
Business Research
- HATCH, MELVILLE HARRISON, 1927 (1941) *Professor of Zoology*
 A.B., 1919, M.A., 1921, Ph.D., 1925, Michigan
- HAYDEN, ALICE HAZEL, 1942 (1952) *Professor and Director of Educational*
 Ph.C., 1928, B.S., M.S., 1929, Oregon State College;
 Ph.D., 1932, Purdue
Research
- HAYNE, DONALD FRANCIS, 1950 (1955) *Associate Professor of General Business*
 B.B.A., 1949, M.B.A., 1950, Wisconsin
- HAYNER, NORMAN SYLVESTER, 1925 (1937) *Professor of Sociology*
 A.B., 1920, Washington; A.M., 1921, Ph.D., 1923, Chicago
- HEATHERS, LOUISE BUSSARD, 1945 *Assistant Professor of Psychology; Senior*
 B.A., 1933, Washington;
 Ph.D., 1940, Yale
Clinical Psychologist in the
Counseling Center
- HEILMAN, ROBERT BECHTOLD, 1948 *Professor of English; Executive Officer*
 A.B., 1927, Lafayette College; M.A.,
 1930, Ohio; M.A., 1931, Ph.D., 1935, Harvard
of the Department of English
- HEINITZ, EVA, 1948 (1949) *Assistant Professor of Music*
- HEITMAN, SALLY, 1950 (1951) *Acting Assistant Professor of Nursing*
 R.N., 1926, Illinois Training School for Nurses; B.S., 1934, Washington;
 M.A., 1949, Columbia
- HELD, GEDALIAHU, 1954 *Assistant Professor of Electrical Engineering*
 M.S., 1950, Hebrew University; Ph.D., 1954, California
- HENDERSON, JOSEPH EDMONDS, 1929 (1947) *Professor of Physics; Director of*
 B.S., 1922, College of Wooster;
 Ph.D., 1928, Yale
the Applied Physics Laboratory
- HENDRICKSON, HAROLD MARTIN, 1949 (1955) *Professor of Mechanical Engineering*
 B.S. in M.E., 1927, M.E., 1935, M.S. in M.E., 1954, Washington
- HENLEY, ERNEST M., 1954 *Assistant Professor of Physics*
 B.E.E., 1944, City College of New York; Ph.D., 1952, 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 Accounting,*
 A.B., 1938, M.A., 1940, Ph.D., 1952, California,
 Los Angeles
Finance, and Statistics
- 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

- HEWITT, EDWIN, 1948 (1954) *Professor of Mathematics*
A.B., 1940, M.A., 1941, Ph.D., 1942, Harvard
- HIGGS, PAUL McCLELLAN, 1926 (1939) *Assistant Professor of Physics*
B.S., 1919, Washington
- HILEN, ANDREW REUBEN, JR., 1945 (1954) *Associate Professor of English*
B.A., 1937, Washington; Ph.D., 1943, Yale
- HILL, RAYMOND LEROY, 1927 (1948) *Professor of Art*
Graduate, 1913, Rhode Island School of Design
- HILL, W. RYLAND, 1941 (1953) *Professor of Electrical 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*
A.B., 1927, Pomona College; A.M., 1929, *the Department of Botany*
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
- HIKSON, WILLIAM JOHN, 1950 (1955) *Assistant Professor of Art*
B.A., 1948, M.F.A., 1950, Oregon
- HOFFMAN, KATHERINE JANET, 1942 (1951) *Associate Professor of Nursing;*
B.A., 1929, College of Puget Sound; *Assistant Dean of the School*
M.N., 1941, Washington *of Nursing*
- HOLT, W. STULL, 1940 *Professor of History*
A.B., 1920, Cornell; Ph.D., 1926, Johns Hopkins
- HOLZMAN, FRANKLYN DUNN, 1952 (1954) *Associate Professor of Economics*
A.B., 1940, North Carolina; M.A., 1948, Ph.D., 1952, Harvard
- HOOVER, BENJAMIN BEARD, 1952 (1954) *Assistant Professor of English*
A.B., 1947, M.A., 1948, Ph.D., 1952, California
- HOPKINS, WILLIAM STEPHEN, 1946 *Professor of Economics; Director of the*
B.S., 1925, M.A., 1928, Oregon; *Institute of Labor Economics*
Ph.D., 1932, Stanford
- HORST, A. PAUL, 1947 (1951) *Professor of Psychology; Director of the Division*
B.A., 1927, California; Ph.D., 1931, Chicago *of Counseling and Testing*
- HORTON, GEORGE PLANT, 1934 (1946) *Associate Professor of Psychology;*
B.S., 1926, M.A., 1930, *Executive Officer of the Department of*
Ph.D., 1932, Princeton *Correspondence Study*
- HOSMER, MARGARET GEORGE, 1948 (1954) *Lecturer in Home Economics*
B.S., 1918, North Carolina
- HOWERY, VICTOR I., 1952 (1953) *Professor of Social Work; Director of the*
B.S., 1936, Wisconsin State College, Platteville; *Graduate School of*
Ph.M., 1946, M.S.W., 1948, Ph.D., 1949, Wisconsin *Social Work*
- HSIAO, KUNG-CHUAN, 1951 *Visiting Professor of Far Eastern and Slavic*
B.A., 1922, M.A., 1923, Missouri; *Languages and Literature*
Ph.D., 1926, Cornell
- HSU, WELLINGTON SIANG, 1944 (1950) *Associate Professor of Zoology*
B.S., 1922, Illinois; M.S., 1924, D.Sc., 1928, Harvard
- HUBER, J. RICHARD, 1939 (1949) *Professor of Economics; Executive Officer*
B.A., 1931, College of Wooster; *of the Department of Economics*
M.A., 1933, Ph.D., 1937, Princeton
- HUDSON, C. DONALD, 1951 *Professor of Geography; Executive Officer of*
Ph.B., 1925, A.M., 1926, Ph.D., 1934, Chicago *the Department of Geography*
- HUENNEKENS, FRANK MATTHEW, JR., 1951 (1954) *Associate Professor*
B.S., 1943, Ph.D., 1948, California *of Biochemistry*
- HUGHES, GLENN ARTHUR, 1919 (1942) *Professor of English; Director*
B.A., 1916, Stanford; M.A., 1920, Washington *of the School of Drama*
- HULSE, FREDERICK SEYMOUR, 1948 (1949) *Associate Professor of Anthropology*
A.B., 1927, M.A., 1928, Ph.D., 1934, Harvard
- HUNT, MARGUERITE, 1949 (1950) *Associate Professor of Social Work*
A.B., 1929, Brown; M.S., 1936, Western Reserve

- ILLG, PAUL LOUIS, 1952 (1954) Associate Professor of Zoology
A.B., 1936, M.A., 1941, California; Ph.D., 1952, George Washington
- INGLE, JOHN IDE, 1948 (1951) Associate Professor of Periodontology and
D.D.S., 1942, Northwestern; Endodontia; Acting Executive Officer of
M.S.D., 1948, Michigan the Department of Periodontology
- IRVINE, DEMAR BUEL, 1937 (1947) Associate Professor of Music
A.B., 1929, M.A., 1931, California; Ph.D., 1937, Harvard
- ISAACS, WALTER F., 1922 (1935) Professor of Art
B.S.F.A., 1909, James Millikin
- JACOBS, MELVILLE, 1928 (1952) Professor of Anthropology
A.B., 1922, City College of New York; A.M., 1923, Ph.D., 1931, Columbia
- JACOBSON, BORIS ABBOTT, 1948 (1955) Associate 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)
- JANSEN, MARIUS BERTHUS, 1950 (1955) Associate Professor of Japanese History
A.B., 1943, Princeton; M.A., 1948, Ph.D., 1950, Harvard
- JENSEN, LYLE HOWARD, 1949 (1952) Assistant Professor of Anatomy
B.A., 1939, Walla Walla College; Ph.D., 1944, Washington
- JESSUP, JOHN HUNNICUTT, 1926 (1927) Associate Professor of Educational
A.B., 1920, Earlham College; M.A., 1924, Iowa Sociology
- JOHANSON, LENNART NOBLE, 1951 Assistant Professor of Chemical Engineering
B.S., 1942, Utah; M.S., 1943, Ph.D., 1948, Wisconsin
- JOHNSON, BESSIE PAULINE, 1941 (1945) Associate Professor of Art
B.A., 1929, Washington; M.A., 1936, Columbia
- JOHNSON, FLETCHER ORMOND, 1950 Lecturer in Accounting
B.B.A., 1924, Washington; C.P.A., 1925, state of Washington,
Pennsylvania, California, Illinois
- JOHNSON, MARY LOUISE, 1945 (1955) Associate Professor of Home Economics
B.A., 1940, Hardin-Simmons, Texas; M.S., 1942, Wisconsin
- JOHNSON, ROBERT JOSEPH, 1946 (1951) Associate Professor of Anatomy
B.S., 1937, Iowa State Teachers College; M.D., 1943, Iowa
- JOHNSON, WALTER GILBERT, 1948 (1949) Associate Professor of Scandinavian
B.A., 1927, Augsburg College; M.A., 1929, Minnesota; Languages
Ph.D., 1935, Illinois
- KAHN, ROBERT LUDWIG, 1948 (1955) Assistant Professor of German
B.A., 1944, M.A., 1945, Dalhousie (Nova Scotia); Ph.D., 1950, Toronto
- KANAR, EDMUND ADOLPH, 1953 Instructor in Surgery
A.B., 1943, M.D., 1945, Wayne
- KATCHER, ALLAN, 1951 Assistant Professor of Psychology
B.S., 1946, Michigan; M.A., 1949, City College of New York;
Ph.D., 1951, California
- KATZ, SOLOMON, 1936 (1950) Professor of History; Executive Officer
A.B., 1930, Ph.D., 1933, Cornell of the Department of History
- KAUFMAN, HELEN ANDREWS, 1930 (1954) Associate Professor of English
A.B., 1909, Wilson College; M.A., 1911, Indiana; Ph.D., 1934, Washington
- KELLER, ABRAHAM CHARLES, 1948 (1953) Associate Professor of Romance
B.S., A.B., 1936, M.A., 1937, Languages and Literature
Ohio State; Ph.D., 1946, California
- KENWORTHY, RAY W., 1929 (1950) Associate Professor of Physics
B.A., 1924, M.S., 1925, Iowa; Ph.D., 1938, Washington
- KESTER, HENRY IRA, 1950 (1954) Assistant Professor of Accounting, Finance,
B.Ed., 1944, State Teachers College, Whitewater, Wisconsin; and Statistics
Ph.D., 1954, Northwestern
- KINGSTON, JOHN MAURICE, 1940 (1946) Assistant Professor of Mathematics
B.A., 1935, Western Ontario; M.A., 1936, Ph.D., 1939, Toronto

- KINNEY, CAROLYN ELIZABETH, 1950 (1951)..... *Acting Assistant Professor of Nursing*
B.S., 1939, California; M.A., 1949, Columbia
- KINSCHELLA, HAZEL GERTRUDE, 1942 (1947)..... *Professor of Music*
B.Mus., 1916, B.F.A., 1928, A.B., 1931, Nebraska; M.A., 1934, Columbia; Ph.D., 1941, Washington
- KLEE, VICTOR L., JR., 1953 (1954)..... *Associate Professor of Mathematics*
B.A., 1945, Pomona College; Ph.D., 1949, Virginia
- KOLDE, ENDEL JAKOB, 1951 (1954)..... *Assistant Professor of Marketing and Foreign Trade; Assistant Director of the Bureau of Business Research*
B.S., 1940, Estonia State Military Academy (Estonia); D.H.S., 1947, Stockholm (Sweden); M.A., 1951, D.B.A., 1954, Washington
- KRAUT, JOSEPH, 1953..... *Instructor in Biochemistry*
B.S., 1950, Bucknell; Ph.D., 1953, California Institute of Technology
- KREBS, EDWIN GERHARD, 1948 (1952)..... *Associate Professor of Biochemistry*
B.S., 1940, Illinois; M.D., 1943, Washington University, St. Louis
- KRUCKEBERG, ARTHUR RICE, 1950 (1954)..... *Assistant Professor of Botany*
B.A., 1941, Occidental College; Ph.D., 1950, California
- KRUPSKI, EDWARD, 1944 (1955)..... *Associate Professor of Pharmacy*
B.S., 1939, M.S., 1941, Washington
- KUNDE, NORMAN FREDERICK, 1931 (1949)..... *Associate Professor of Physical Education*
B.S., 1928, M.S., 1932, Washington; D.Ed., 1946, New York
- LAMPMAN, ROBERT JAMES, 1948 (1953)..... *Associate Professor of Economics*
B.A., 1942, Ph.D., 1950, Wisconsin
- 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
- LEAHY, KATHLEEN MABEL, 1935 (1949)..... *Professor of Public Health Nursing*
R.N., 1921, Stanford; A.B., 1926, C.P.H.N., 1927, Oregon; M.S., 1931, Washington
- LEIFNIK, ROY BERGH, 1950..... *Assistant Professor of Mathematics*
S.B., 1945, S.M., 1948, Chicago; Ph.D., 1950, California
- 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*
A.B., 1926, Michigan; A.M., 1927, Ph.D., 1928, Chicago
- LINGAFELTER, EDWARD CLAY, JR., 1939 (1952)..... *Professor of Chemistry*
B.S., 1935, Ph.D., 1939, California
- LITTLE, WALLACE I., 1954..... *Assistant Professor of Transportation*
B.S., 1943, M.S., 1947, Illinois; Ph.D., 1953, Wisconsin
- LIVINGSTON, ARTHUR EUGENE, 1953 (1955)..... *Assistant Professor of Mathematics*
B.A., 1949, Fresno State College; M.A., 1950, Ph.D., 1952, Oregon
- LORD, JERE JOHNS, 1952 (1954)..... *Assistant Professor of Physics*
A.B., 1943, Reed College; M.A., 1948, Ph.D., 1950, Chicago
- LORIC, 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; Executive Officer of the Department of Psychology*
B.S. in C.E., 1927, Ph.D., 1930, Minnesota
- LOUNSBURY, WARREN CARSON, 1948 (1954)..... *Acting Assistant Professor of Drama*
A.B., 1946, Western Reserve; M.A., 1953, Washington
- LUCAS, HENRY STEPHEN, 1921 (1934)..... *Professor of History*
A.B., 1913, Olivet College; A.M., 1915, Indiana; Ph.D., 1921, Michigan
- LUCAS, PAULINE, 1953 (1954)..... *Acting Assistant Professor of Nursing*
R.N., 1937, Newark Beth Israel Hospital School of Nursing; B.S., 1952, Washington

- LUNDBERG, GEORGE ANDREW, 1945 *Professor of Sociology*
 B.A., 1920, North Dakota; M.A., 1923, Wisconsin; Ph.D., 1925, Minnesota
- LYNCH, JAMES ERIC, 1931 (1943) *Professor of Fisheries*
 A.B., 1917, A.M., 1921, Nebraska; Ph.D., 1929, California
- LYTLE, SCOTT HARRISON, 1949 *Assistant Professor of History*
 A.B., 1940, Princeton; Ph.D., 1948, Cornell
- MACDONALD, CATHERINE JOAN, 1945 *Assistant Professor of Social Work*
 B.A., 1936, Washington
- MACDONALD, CECILIA, 1949 (1950) *Assistant Professor of Elementary Education*
 B.A., 1946, Central Washington College of Education;
 M.Ed., 1952, Washington
- MACKENZIE, DONALD HECTOR, 1929 (1948) *Professor of Accounting;*
 B.B.A., M.B.A., 1925, Washington; *Executive Officer of the Department of*
 C.P.A., 1933, state of Washington *Accounting, Finance, and Statistics*
- MACKIN, JOSEPH HOOVER, 1934 (1947) *Professor of Geology*
 B.S., 1930, New York; M.A., 1932, Ph.D., 1936, Columbia
- MAGEE, DONALD FRANCIS, 1951 *Assistant Professor of Pharmacology*
 B.S., 1944, M.A., B.Med., 1948, Oxford (England)
- MAKI, JOHN MCGILVREY, 1939 (1950) *Associate Professor of Japanese*
 B.A., 1932, M.A., 1936, Washington; *Government and Politics*
 Ph.D., 1948, Harvard
- MALLORY, VIRGIL STANDISH, 1952 *Assistant Professor of Geology*
 A.B., 1946, Oberlin College; M.A., 1948, Ph.D., 1952, California
- MANDER, LINDEN ALFRED, 1928 (1937) *Professor of Political Science*
 B.A., 1917, M.A., 1920, Adelaide (Australia)
- MANLEY, JOHN HENRY, 1951 *Professor of Physics; Executive Officer of the*
 B.S., 1929, Illinois; Ph.D., 1934, Michigan *Department of Physics*
- MARCKWORTH, GORDON DOTTER, 1939 (1945) *Professor of Forestry; Dean of the*
 B.S.F., 1916, Ohio; M.F., 1917, Yale *College of Forestry*
- MARTIN, ARTHUR WESLEY, JR., 1937 (1950) *Professor of Physiology;*
 B.S., 1931, College of Puget Sound; *Executive Officer of the*
 Ph.D., 1936, Stanford *Department of Zoology*
- MARTIN, CHARLES EMANUEL, 1924 *Professor of Political Science;*
 B.Litt., 1914, M.A., 1915, California; *Director of the Institute of*
 Ph.D., 1918, Columbia; LL.D. (Hon.), 1942, *International Affairs*
 Southern California
- 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 (1955) *Associate Professor of Geography*
 B.A., 1937, M.A., 1944, Washington; Ph.D., 1950, Northwestern
- MASON, ALDEN C., 1946 (1952) *Assistant Professor of Art*
 B.A., 1942, M.F.A., 1947, Washington
- MCADAMS, LAURA ELIZABETH, 1941 (1951) *Associate Professor of Home*
 B.S., 1923, M.S., 1932, Kansas State College *Economics*
- MCCAFFREE, KENNETH MAURICE, 1949 (1950) *Assistant 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*
 B.S. in Ch.E., 1934, Washington; M.S., 1936, Idaho; Ph.D., 1938, McGill
- MCCARTHY, WALTER CHARLES, 1949 *Assistant Professor of Pharmaceutical*
 B.S., 1943, Massachusetts Institute of Technology; *Chemistry*
 Ph.D., 1949, Indiana

- McCLELLAN, CATHERINE, 1952..... *Assistant Professor of Anthropology*
A.B., 1942, Bryn Mawr; Ph.D., 1950, California
- McDIARMID, JOHN BRODIE, 1949..... *Associate Professor of Classics; Executive*
B.A., 1936, Toronto; *Officer of the Department of Classics*
Ph.D., 1940, Johns Hopkins
- McDONALD, DONALD FIEDLER, 1949 (1954)..... *Associate Professor of Surgery;*
M.D., 1942, Chicago *Head of the Division of Urology*
- McFARLAN, LEE HORACE, 1927 (1946)..... *Professor of Mathematics*
B.S., 1917, Kansas State Teachers College; M.A., 1921, Ph.D., 1924, Missouri
- McGUIRE, JOSEPH WILLIAM, 1950 (1953)..... *Acting Assistant Professor*
Ph.B., 1948, Marquette; M.B.A., 1950, Columbia *of General Business*
- McKAY, GEORGE FREDERICK, 1927 (1943)..... *Professor of Music*
B.Mus., 1923, Rochester
- McKEEVER, BENJAMIN BUTLER, 1949..... *Associate Professor of Psychology*
A.B., 1930, M.A., 1931, Harvard; Ph.D., 1940, Iowa
- McKINNON, RICHARD NICHOLS, 1951 (1952)..... *Assistant Professor of Far*
A.B., 1947, A.M., 1949, *Eastern and Slavic Languages*
Ph.D., 1951, Harvard *and Literature*
- McMINN, BRYAN TOWNE, 1920 (1946)..... *Professor of Mechanical Engineering;*
B.S. in M.E., 1918, Oregon State; *Executive Officer of the Department*
M.S. in M.E., 1926, M.E., 1931, Washington *of Mechanical Engineering*
- MEEUSE, BASTIAAN JACOB DIRK, 1952 (1955)..... *Associate Professor of Botany*
B.Sc., 1936, Leiden (Holland); Dr., 1943, Delft, (Holland)
- MELDEN, ABRAHAM IRVING, 1946 (1950)..... *Associate Professor of Philosophy*
A.B., 1931, California, Los Angeles; M.A., 1932, Brown;
Ph.D., 1938, California
- MERENDINO, K. ALVIN AURELIUS, 1948 (1955)..... *Professor of Surgery*
B.A., 1936, Ohio; M.D., 1940, Yale; Ph.D., 1946, Minnesota
- MEYER, HERMAN CARL HENRY, 1934 (1942)..... *Associate Professor of*
B.A., 1924, Capital, Ohio; Ph.D., 1936, Chicago *Germanic Languages*
- MICHAEL, ERNEST A., 1953..... *Assistant Professor of Mathematics*
B.A., 1947, Cornell; M.A., 1948, Harvard; Ph.D., 1951, Chicago
- MICHAEL, FRANZ H., 1942 (1948)..... *Professor of Far Eastern History and*
Dr.Jur., 1933, *Government; Assistant Director of the Far*
Freiburg (Germany) *Eastern and Russian Institute*
- MICKLESEN, LEW R., 1953..... *Assistant Professor of Far Eastern and*
B.S., 1942, Minnesota; Ph.D., 1951, Harvard *Slavic Languages and Literature*
- MILLER, ALFRED LAWRENCE, 1923 (1937)..... *Professor of Civil Engineering*
B.S. in C.E., 1920, C.E., 1926, Washington
- MILLER, CHARLES JOHN, 1927 (1945)..... *Professor of Marketing*
B.B.A., 1922, M.B.A., 1927, Washington
- MILLER, DELBERT CHARLES, 1947..... *Associate Professor of Sociology*
B.S., 1934, M.A., 1937, Miami, Ohio; Ph.D., 1940, Minnesota
- MILLER, LEONARD GORDON, 1954..... *Assistant Professor of Philosophy*
B.A., 1948, British Columbia; M.A., 1950, Washington; Ph.D., 1954, Cornell
- MILLS, BLAKE DAVID, JR., 1946 (1947)..... *Professor of Mechanical Engineering*
B.S. in M.E., B.S. in E.E., 1934, Washington; S.M. in M.E., 1935,
Massachusetts Institute of Technology; M.E., 1947, Washington
- MILLS, CASWELL A., 1942 (1950)..... *Assistant Professor of Physical Education*
B.A., 1935, North Dakota State Teachers College; M.A., 1943, Washington
- MISCH, PETER H., 1947 (1950)..... *Professor of Geology*
D.Sc., 1932, Göttingen (Germany)
- MIYAMOTO, SHOTARO FRANK, 1941 (1945)..... *Assistant Professor of Sociology*
B.A., 1936, M.A., 1938, Washington; Ph.D., 1950, Chicago
- MOORE, ALTON WALLACE, 1948 (1951)..... *Professor of Orthodontics; Acting*
D.D.S., 1941, California; *Assistant Dean of the School of Dentistry; Director*
M.S., 1948, Illinois *of Graduate Dental Education; Executive Officer of*
the Department of Orthodontics

- MORITZ, HAROLD KENNEDY, 1928 (1949).....*Professor of Civil Engineering*
B.S. in M.E., 1921, Massachusetts Institute of Technology
- MORRIS, MORRIS DAVID, 1949 (1950).....*Assistant Professor of Economics*
A.B., 1941, California, Ph.D., 1954, California
- MORRIS, LUCIEN ELLIS, 1954.....*Professor of Surgery; Head of the*
A.B., 1936, Oberlin College; *Division of Anesthesiology*
M.D., 1943, Western Reserve
- MORRISON, MARY ALICE, 1952.....*Acting Assistant Professor*
B.S., 1949, Alberta; *of Home Economics*
M.S., 1951, Washington State College
- MOSELEY, SPENCER ALTEMTONT, 1948 (1954).....*Assistant Professor of Art*
B.A., 1948, Washington
- MOULTON, RALPH WELLS, 1941 (1953).....*Professor of Chemical Engineering;*
B.S. in Ch.E., 1932, M.S., 1934, *Executive Officer of the Department of*
Ph.D., 1938, Washington *Chemical Engineering*
- MUELLER, EDWARD E., 1953.....*Assistant Professor of Mineral Engineering*
B.S., Cer.E., 1948, Missouri School of Mines
- MUELLER, JAMES IRVING, 1949 (1955).....*Professor of Ceramic*
B.Cer.E., 1939, Ohio State; Ph.D., 1949, Missouri *Engineering*
- 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
- MURASE, KENNETH K., 1953.....*Assistant Professor of Social Work*
B.A., 1944, Temple; M.S.W., 1947, Columbia
- MURPHEY, WILLIAM RHOADS, 1952.....*Assistant Professor of Geography*
A.B., 1941, A.M., 1943, A.M., 1948, Ph.D., 1950, Harvard
- MURPHY, ARTHUR EDWARD, 1953.....*Professor of Philosophy; Executive Officer*
A.B., 1923, Ph.D., 1925, California *of the Department of Philosophy*
- 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
- NEURATH, HANS, 1950.....*Professor of Biochemistry; Executive Officer*
Ph.D., 1933, Vienna *of the Department of Biochemistry*
- NORDQUIST, WILLIAM BERTIL, 1947 (1955).....*Associate Professor of*
B.M.E., 1941, Rensselaer Polytechnic Institute; *Mechanical Engineering*
S.M., 1946, Massachusetts Institute of Technology
- NORMANN, THEODORE FREDERICK, 1940.....*Associate Professor of Music*
B.A., 1925, Macalester College; M.A., 1928, Columbia
- NORTH, DOUGLASS CECIL, 1950 (1951).....*Assistant Professor of Economics*
B.A., 1942, Ph.D., 1952, California
- NOSTRAND, HOWARD LEE, 1939.....*Professor of Romance Languages*
B.A., 1932, Amherst College; A.M., *and Literature; Executive Officer*
1933, Harvard; Docteur, 1934, *of the Department of Romance*
Université de Paris (France) *Languages and Literature*
- ODOR, D. LOUISE, 1950.....*Instructor in Anatomy*
B.A., 1945, American University; M.S., 1948, Ph.D., 1950, Rochester
- OGLIVIE, ALFRED LIVINGSTON, 1951.....*Assistant Professor of Periodontology*
D.D.S., 1944, Toronto; M.S., 1948, California
- OLCOTT, VIRGINIA, 1931 (1945).....*Associate Professor of Nursing*
R.N., 1926, Peter Bent Brigham; B.S., 1927, M.S., 1931, Washington
- OLSON, HILDING H., 1950 (1953).....*Instructor in Surgery*
B.A., 1939, Washington; M.D., 1943, Oregon
- ORDAL, ERLING JOSEF, 1937 (1943).....*Associate Professor of Microbiology*
B.A., 1927, Luther College; Ph.D., 1936, Minnesota

- OSBORNE, H. DOUGLAS, 1950 (1952)..... *Assistant Professor and Curator*
 B.A., 1938, M.A., 1941, New Mexico; *in Anthropology*
 Ph.D., 1951, California
- OSTERUD, KENNETH LELAND, 1949..... *Assistant Professor of Zoology*
 B.A., 1935, Randolph-Macon College; Ph.D., 1941, New York
- PALMER, JOHN MILTON, 1952 (1954)..... *Assistant Professor of Speech*
 B.A., 1946, M.A., 1950, Washington; Ph.D., 1952, Michigan
- PARKS, DORIS HAZEL, 1947..... *Instructor in Home Economics*
 B.S., 1940, Illinois; M.B.A., 1948, Northwestern;
 C.P.A., 1947, state of Illinois
- PASCAL, PAUL, 1953..... *Instructor in Classics*
 B.A., 1948, Vermont; Ph.D., 1953, North Carolina
- PATTERSON, VIOLA HANSEN, 1947 (1955)..... *Assistant Professor of Art*
 B.A., B.S., 1921, B.F.A., 1925, M.F.A., 1947, Washington
- PATTON, HARRY DICKSON, 1947 (1950)..... *Associate Professor of Physiology*
 B.A., 1939, Arkansas; Ph.D., 1943, M.D., 1946, Yale *and Biophysics*
- PAYNE, BLANCHE, 1927 (1942)..... *Professor of Home Economics*
 B.S., 1916, Kansas State Teachers College; M.A., 1924, Columbia
- PEARCE, J. KENNETH, 1934 (1943)..... *Professor of Logging Engineering*
 B.S.F., 1921, Washington
- PECK, CHARLES ELWIN, 1951 (1955)..... *Associate Professor of Marketing,*
 B.A., 1935, Wichita; M.A., 1947, *Transportation, and Foreign Trade*
 Ph.D., 1950, Iowa
- PEEK, 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 College; A.M., 1921, Maine; Ph.D., 1936, Chicago
- PERSON, HENRY AXEL, 1937 (1947)..... *Assistant Professor of English*
 A.B., 1927, Ph.D., 1942, Washington
- PETERSON, MARION ELIZABETH, 1951 (1953)..... *Assistant Professor of Librarianship*
 B.A., 1930, B.A. in Librarianship, 1941, Washington
- PHILLIPS, WILLIAM LOUIS, 1949 (1952)..... *Assistant Professor of English*
 B.A., 1942, Iowa State Teachers College; M.A., 1947, Ph.D., 1949, Chicago
- PIFER, DRURY AUGUSTUS, 1945 (1948)..... *Professor of Mineral Engineering;*
 B.S. in Min. Engr., 1930, *Director of the School of Mineral*
 M.S. in Min. Engr., 1931, Washington *Engineering*
- PLEIN, ELMER MICHAEL, 1938 (1951)..... *Professor of Pharmacy*
 Ph.C., B.S., 1929, M.S., 1931, Ph.D., 1936, Colorado
- POPPE, NICHOLAS NIKOLAEVICH, 1949..... *Professor of Far Eastern and Slavic*
 Master, 1923, Petrograd (Russia); *Languages and Literature*
 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, *Dean of the College of Education*
 Oregon; Ph.D., 1928, Washington
- PRESSLY, THOMAS JAMES, 1949 (1954)..... *Associate Professor of History*
 A.B., 1940, A.M., 1941, Ph.D., 1949, Harvard
- PROCTOR, WARREN GEORGE, 1952 (1954)..... *Assistant Professor of Physics*
 B.S., 1942, California Institute of Technology; Ph.D., 1950, Stanford
- RABINOVITCH, BENTON SEYMOUR, 1948 (1953)..... *Associate 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 (1947)..... *Professor of Speech; Executive*
A.B., 1920, Willamette; M.A., 1927, *Officer of the Department*
Ph.D., 1935, Iowa *of Speech*
- RATTRAY, MAURICE, JR., 1950..... *Assistant Professor of Oceanography*
B.S., 1944, M.S., 1947, Ph.D., 1951, California Institute of Technology
- RAY, DIXY LEE, 1945 (1947)..... *Assistant Professor of Zoology*
B.A., 1937, M.A., 1938, Mills College; Ph.D., 1945, Stanford
- RAY, ROBERT DURANT, 1948 (1952)..... *Assistant Professor of Surgery;*
A.B., 1936, M.A., 1938, California; *Head of the Division of Orthopedics*
M.D., 1943, Harvard
- RAY, VERNE, 1933 (1947)..... *Professor of Anthropology*
B.A., 1931, M.A., 1933, Washington; Ph.D., 1937, Yale
- READ, WILLIAM MERRITT, 1927 (1945)..... *Professor of Classics; University Editor*
A.B., 1923, DePauw; M.A., 1924, Ph.D., 1927, Michigan
- REDFORD, GRANT H., 1945..... *Assistant Professor of English*
B.S., 1937, Utah State Agricultural College; M.A., 1940, Iowa
- REED, CARROLL EDWARD, 1946 (1952)..... *Associate Professor of Germanic*
B.A., 1936, M.A., 1937, Washington; Ph.D., 1941, Brown *Languages*
- REED, RICHARD J., 1954..... *Assistant Professor of Meteorology and Climatology*
B.S., 1945, California Institute of Technology; D.S., 1949,
Massachusetts Institute of Technology
- REEVES, G. SPENCER, 1935 (1948)..... *Associate Professor of Physical Education*
B.S., 1933, Oregon State College; *and Public Health and Preventive*
M.S., 1938, Oregon *Medicine*
- REIFLER, ERWIN, 1947 (1955)..... *Professor of Far Eastern and Slavic*
Dr.Rer.Pol., 1931, Vienna (Austria) *Languages and Literature*
- REISS, GRACE DEWEY, 1947 (1954)..... *Assistant Professor of Social Work*
B.A., 1932, Iowa; M.A., 1940, Minnesota
- REY, WILLIAM HENRY, 1950 (1955)..... *Associate Professor of Germanic Literature*
Ph.D., 1937, Frankfurt (Germany)
- RICHARDS, GALE LEE, 1952..... *Assistant Professor of Speech*
B.A., 1940, Akron; M.A., 1942, Ph.D., 1950, Iowa
- RIEDEL, RICHARD ANTHONY, 1949 (1950)..... *Assistant Professor of Orthodontics*
D.D.S., 1945, Marquette; M.D.S., 1948, Northwestern
- RISING, L. WAIT, 1934 (1936)..... *Professor of Pharmacy*
Ph.C., B.S., 1924, Oregon State College; M.S., 1926, Ph.C., 1928,
Ph.D., 1929, Washington
- RITTER, DAVID MOORE, 1947 (1948)..... *Acting Associate Professor of Chemistry*
S.B., 1933, Ph.D., 1937, Chicago
- ROBERTS, EARL CHAMPION, 1954..... *Acting Associate Professor of Metallurgical*
B.S., 1943, Montana School of Mines; M.S., 1950, D.S., 1952, *Engineering*
Massachusetts Institute of Technology
- ROBERTSON, JAMES CAMPBELL H., 1945..... *Associate Professor*
B.S.F., 1927, Washington; M.S.F., 1933, *of Forest*
California; D.F., 1947, Duke *Management*
- ROBINSON, DWIGHT E., 1950 (1951)..... *Associate Professor of General Business*
B.A., 1936, Yale; M.A., 1946, Oxford (England); Ph.D., 1948, Columbia
- ROBINSON, REX JULIAN, 1929 (1945)..... *Professor of Chemistry*
A.B., 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, MILLARD BUXTON, 1952..... *Lecturer in Art*
B.F.A., 1937, M.F.A., 1940, School of the Art Institute of Chicago;
A.M., 1940, Ph.D., 1952, Chicago
- ROGERS, WALTER EDWIN, 1946 (1952)..... *Associate Professor of Electrical*
B.S. in E.E., 1934, California; M.S. in E.E., 1948, Washington *Engineering*

- ROLLER, JULIUS ABRAHAM, 1945 (1950) *Associate Professor of Accounting, Finance, and Statistics*
B.B.A., 1934, Washington
- ROMAN, HERSCHEL LEWIS, 1942 (1952) *Professor of Botany*
A.B., 1936, Ph.D., 1942, Missouri
- ROOSEN-RUNGE, EDWARD RUDOLF C., 1952 (1955) *Associate Professor of Anatomy*
M.D., 1936, Hamburg (Germany)
- ROSINBUM, RALPH RAMBO, 1948 (1953) *Assistant Professor of Music*
B.A., 1947, M.A., 1948, Washington
- ROWNTREE, JENNIE IRENE, 1925 (1946) *Professor of Home Economics;*
B.S., 1918, Wisconsin; M.S., 1925, *Director of the School of Home Economics*
Chicago; Ph.D., 1929, Iowa
- RUCH, THEODORE CEDRIC, 1946 *Professor of Physiology; Executive Officer of*
B.A., 1927, Oregon; M.A., 1928, Stanford; *the Department of Physiology and*
B.A., 1930, B.Sc., 1932, Oxford (England); Ph.D., 1933, Yale *Biophysics*
- RUSHMER, ROBERT FRAZER, 1947 (1950) *Associate Professor of Physiology and Biophysics*
B.S., 1936, M.D., 1939, Chicago
- SANDERMAN, LLEWELLYN ARTHUR, 1928 (1952) *Associate Professor of Physics*
B.S., 1923, Linfield College; M.S., 1931, Ph.D., 1943, Washington
- SAUERLANDER, ANNEMARIE, 1949 *Associate Professor of Germanic Literature*
B.A., 1928, M.A., 1930, Buffalo; Ph.D., 1936, Cornell
- SAVELLE, MAX H., 1947 *Professor of History*
A.B., 1925, M.A., 1926, Ph.D., 1932, Columbia
- SCHAEFFER, WALTER HOWARD, 1952 *Associate Professor of Forestry*
B.S.F., 1936, Washington; M.F., 1937, Yale
- 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 (1954) *Assistant Professor of Physiology and Biophysics*
B.A., 1942, Ph.D., 1951, Yale
- 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 (1952) *Associate Professor of Physics*
B.S.E., 1937, Michigan; M.A., 1940, Buffalo; Ph.D., 1945, California
- SCHRAG, CLARENCE CLYDE, 1944 (1949) *Assistant Professor of Sociology*
B.A., 1939, Washington State College; M.A., 1945, Ph.D., 1950, Washington
- SCHUBERT, WOLFGANG MANFRED, 1947 (1954) *Associate Professor of Chemistry*
B.S., 1941, Illinois; Ph.D., 1947, Minnesota
- SERGEV, SERGIUS IVAN, 1923 (1946) *Professor of Civil Engineering*
B.S. in M.E., 1923, M.E., 1931, Washington
- SHELDON, CHARLES STUART, II, 1940 (1946) *Assistant Professor of Economics*
B.A., 1936, M.A., 1938, Washington; A.M., 1939, Ph.D., 1942, Harvard
- SHEPHERD, JOHN R., 1954 *Assistant Professor of Speech*
B.A., 1946, M.A., 1947, Stanford; Ph.D., 1952, Southern California
- SHERMAN, JOHN CLINTON, 1942 (1954) *Associate Professor of Geography*
A.B., 1937, Michigan; M.A., 1943, Clark; Ph.D., 1947, Washington
- SHIH, VINCENT YU-CHUNG, 1945 (1951) *Associate Professor of Far Eastern and*
B.A., 1925, Fukien Christian (China); *Slavic Languages and Literature*
M.A., 1930, Yenching (China); Ph.D., 1939, Southern California
- SHIPMAN, GEORGE ANDERSON, 1946 *Professor of Political Science;*
B.A., 1925, M.A., 1926, Wesleyan, *Director of the Institute of Public Affairs*
Connecticut; Ph.D., 1931, Cornell
- SIXS, GERALDINE BRAIN, 1950 (1951) *Acting Instructor in 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*
A.B., 1920, M.A., 1924, Ph.D., 1928, Washington
- SIMPSON, WILLIAM TRACY, 1948 (1954) *Associate Professor of Chemistry*
A.B., 1943, Ph.D., 1948, California

- SIVERTZ, VICTORIAN, 1926 (1949)..... *Associate Professor of Chemistry*
B.S., 1922, Washington; M.S., 1924, West Virginia; Ph.D., 1926, McGill
- SKAHEN, JULIA GOODSSELL, 1945..... *Assistant Professor of Anatomy and Physiology*
B.S., 1926, M.S., 1928, Washington; Ph.D., 1941, Chicago
- SMITH, GEORGE SHERMAN, 1921 (1941)..... *Professor of Electrical Engineering*
B.S. in E.E., 1916, E.E., 1924, Washington
- SMITH, MONCRIEFF HYNSON, JR., 1949 (1953)..... *Associate Professor of Psychology*
A.B., 1940, M.A., 1941, Missouri; Ph.D., 1947, Stanford
- SMULLYAN, ARTHUR FRANCIS, 1946 (1950)..... *Associate Professor of Philosophy*
B.A., 1936, City College of New York; M.A., 1940, Ph.D., 1941, Harvard
- SNYDER, RICHARD CRAINE, 1949 (1950)..... *Assistant Professor of Zoology*
A.B., 1940, Bucknell; A.M., 1941, Ph.D., 1948, Cornell
- SOMMERFELD, FRANZ RENE, 1947 (1952)..... *Acting Assistant Professor of Germanic Literature*
A.B., 1944, California; A.M., 1946, Columbia
- SORENSEN, ALICE J., 1949 (1952)..... *Associate Professor of Music*
B.S., 1926, Emporia State Teachers College, Kansas; M.A., 1930, Columbia
- SPECTOR, IVAR, 1931 (1943)..... *Associate Professor of Far Eastern and Slavic Languages and Literature*
M.A., 1926, Northwestern; Ph.D., 1928, Chicago
- STEIN, ARNOLD SIDNEY, 1948 (1953)..... *Professor of English*
A.B., 1936, Yale; A.M., 1938, Ph.D., 1942, Harvard
- STENZEL, GEORGE, 1949 (1951)..... *Assistant Professor of Forestry*
B.S., 1938, New Hampshire; M.F., 1939, Yale
- STERN, JOSEPH A., 1953..... *Assistant Professor of Fisheries*
S.B., 1949, S.M., 1950, Ph.D., 1953, Massachusetts Institute of Technology
- STIBBS, GERALD DENIKE, 1948..... *Professor of Operative Dentistry; Executive Officer of the Departments of Operative Dentistry and Oregon Fixed Partial Dentures; Director of the Dental Operatory*
- STIRLING, BRENTS, 1932 (1949)..... *Professor of English*
LL.B., 1926, Ph.D., 1934, Washington
- 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 FREDRICK, JR., 1949..... *Assistant Professor of Physics*
B.S., 1936, Ph.D., 1941, California Institute of Technology
- STROTHER, CHARLES RIDDELL, 1947..... *Professor of Psychology and Psychiatry*
B.A., 1929, M.A., 1932, Washington; Ph.D., 1935, Iowa
- STUNTZ, DANIEL ELLIOT, 1940 (1950)..... *Associate Professor of Botany*
B.S., 1935, Washington; Ph.D., 1940, Yale
- SUTERMEISTER, ROBERT A., 1949 (1952)..... *Professor of Personnel*
A.B., 1934, Harvard; M.A., 1942, Washington
- SVIHLA, ARTHUR, 1938 (1943)..... *Professor of Zoology*
A.B., 1925, Illinois; M.S., 1928, Ph.D., 1931, Michigan
- SWARM, H. MYRON, 1947 (1955)..... *Associate Professor of Electrical Engineering*
B.S. in E.E., 1940, M.S. in E.E., 1950, Washington
- TAKANO, WILLIAM SHIGERU, 1950..... *Instructor in Orthodontics*
D.D.S., 1949, Marquette; M.S., 1950, Washington
- TANG, PEI CHIN, 1953..... *Instructor in Pharmacology*
B.S., 1942, National Tsing Hua (Peiping, China);
M.S., 1950, Ph.D., 1953, Washington
- TATE, ROBERT F., 1953 (1955)..... *Assistant Professor of Mathematics*
A.B., 1944, California; M.A., 1949, North Carolina; Ph.D., 1952, California
- TATSUMI, HENRY SABURO, 1935 (1946)..... *Associate Professor of Japanese Language*
B.A., 1932, M.A., 1935, Washington
- TAYLOR, GEORGE EDWARD, 1939 (1946)..... *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,
Birmingham (England)

- TERRELL, MARGARET ELMA, 1928 (1944)..... *Professor of Home Economics; A.B., 1923, Penn College, Iowa; Director of the University Food Service*
M.A., 1927, Chicago
- TERRY, MIRIAM, 1930 (1950)..... *Associate Professor of Music*
B.Mus., 1926, M.A., 1948, Washington
- THOMAS, BERNARD OWEN A., 1946 (1947)..... *Professor of Periodontology; D.D.S., 1935, B.A., 1936, M.S., 1939, Executive Officer of the Department*
Minnesota; D.D.S., 1940, Ph.D., 1946, Columbia *of Periodontology*
- THOMAS, DAVID PHILLIP, 1950..... *Assistant Professor of Forest Products*
B.S.F., 1941, M.F., 1948, Washington
- THOMPSON, THOMAS GORDON, 1919 (1929)..... *Professor of Oceanography*
A.B., 1914, Clark; M.S., 1915, Ph.D., 1918, Washington
- THOMPSON, WILLIAM FRANCIS, 1930..... *Professor of Fisheries; Director of the Fisheries Research Institute*
B.A., 1911, Ph.D., 1930, Stanford
- THORNBURG, WAYNE, 1951..... *Instructor in Anatomy*
A.B., 1940, Yankton College; M.S., 1948, Ph.D., 1952, Illinois
- TIFFANY, WILLIAM ROBERT, 1951..... *Assistant 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
- TREADGOLD, DONALD WARREN, 1949 (1955)..... *Associate Professor of Russian History; Associate 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*
R.N., B.S., 1935, M.S., 1939, Washington
- TSUTAKAWA, GEORGE, 1946 (1952)..... *Assistant Professor of Art*
B.A., 1937, M.F.A., 1950, Washington
- TURNBULL, FLORENCE LOUISA, 1952..... *Assistant Professor of Home Economics*
B.Sc., 1943, Manitoba; M.S., 1945, Minnesota
- TURNER, MABEL ALEXANDRA, 1941 (1946)..... *Assistant Professor of Librarianship*
A.B., 1926, Oregon; B.S. in L.S., 1931, Columbia
- 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*
B.S., 1934, Chicago; A.M., 1935, Harvard; Ph.D., 1942, Chicago
- VAIL, CURTIS C. D., 1939..... *Professor of Germanic Languages and Literature; Executive Officer of the Department of Germanic Languages and Literature*
A.B., 1924, Hamilton College; M.A., 1929, Ph.D., 1936, Columbia
- VAN CLEVE, RICHARD, 1948..... *Professor of Fisheries; Director of the School of Fisheries*
B.S., 1927, Ph.D., 1936, Washington
- VAN HORN, ROBERT BOWMAN, 1925 (1938)..... *Professor of Civil Engineering; Executive Officer of the Department of Civil 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, DEZSOE, 1949 (1953)..... *Assistant Professor of Civil Engineering*
B.A., 1928, Ref. Collegium Kolozsvár (Romania); Dipl.Ingr., 1932, Dr.Ingr., 1944, Technical University (Budapest, Hungary)
- VAUGHT, ROBERT L., 1954..... *Instructor in Mathematics*
A.B., 1945, Ph.D., 1954, California
- VERRALL, JOHN WEEDON, 1948 (1950)..... *Associate Professor of Music*
B.Mus., 1929, Minneapolis College of Music; Certificate, 1932, Liszt Conservatory (Budapest); B.A., 1934, Minnesota
- WAGNER, LOUIS CHARLES, 1947 (1955)..... *Professor of Marketing, Transportation, and Foreign Trade*
B.A., 1938, Washington; M.A., 1940, Minnesota
- WAIBLER, PAUL JOHN, 1954..... *Assistant Professor of Mechanical Engineering*
B.S. in M.E., 1943, Kansas State; M.S. in M.E., 1944, Yale

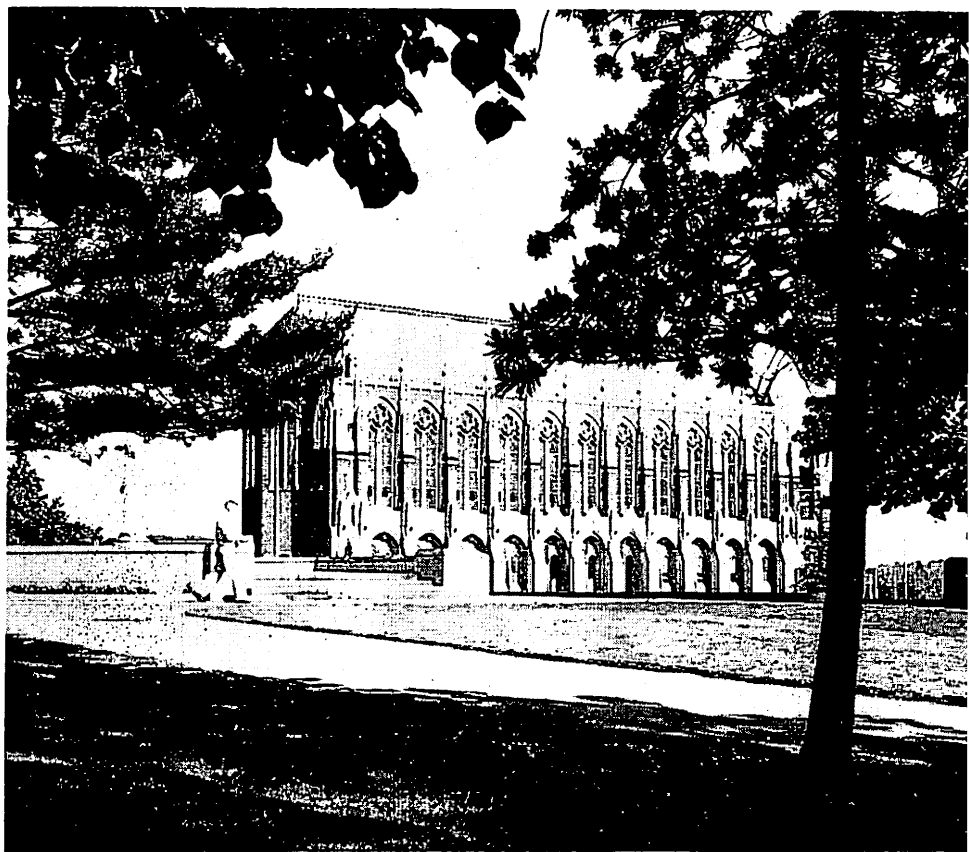
- WALKER, LAUREN MCNEAL, 1946 (1953)..... *Associate Professor of Accounting, Finance, and Statistics*
B.A., 1939, M.B.A., 1943, Washington;
C.P.A., 1943, state of Washington
- WALKER, RICHARD BATTSON, 1948 (1950)..... *Assistant Professor of Botany*
B.S., 1938, Illinois; Ph.D., 1948, California
- WALTER, EDWARD D., 1953 *Assistant Professor of Social Work*
B.A., 1940, Carleton College; M.S.W., 1951, Southern California
- WALTER, JOHN HARRIS, 1954 *Instructor in Mathematics*
B.S., 1948, California Institute of Technology;
M.S., 1953, Ph.D., 1954, Michigan
- WARD, ARTHUR ALLEN, JR., 1948 (1955) *Professor of Surgery;*
B.A., 1938, M.D., 1942, Yale *Head of the Division of Neurosurgery*
- WASSON, LOUISE, 1951 (1952) *Assistant Professor of Nursing*
R.N., 1937, Samaritan Hospital School of Nursing, Idaho;
B.S., 1947, Ohio State; M.A., 1951, Columbia
- WATERS, ELLEN HARRIET, 1946 *Assistant Professor of Physical Education*
B.S., 1927, Washington; M.A., 1940, Columbia
- WATSON, JAMES BENNETT, 1955 *Professor of Anthropology; Executive Officer*
A.B., 1941, A.M., 1945, Ph.D., 1948, *of the Department of Anthropology*
Chicago
- WEBSTER, DONALD HOPKINS, 1939 (1948) *Professor of Political Science;*
B.A., 1929, LL.B., 1931, *Director of the Bureau of Governmental Research*
Ph.D., 1933, Washington *and Services*
- WEIKEL, RAYMOND CHESTER, 1948 (1954) .. *Associate Professor of Aeronautical*
A.B., 1932, Wabash College; A.M., 1939, Illinois *Engineering*
- WEINER, SEYMOUR S., 1953 (1954) *Assistant Professor of Romance Languages*
B.A., 1940, City College of New York; M.A., 1941, *and Literature*
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 College; Ph.D., 1934, Washington
- WELANDER, ARTHUR DONOVAN, 1937 (1954) *Associate Professor of Fisheries*
B.S., 1934, M.S., 1940, Ph.D., 1946, Washington
- WEST, THEODORE CLINTON, 1949 (1955) *Assistant Professor of Pharmacology*
B.S., 1948, M.S., 1949, Washington
- WHEELER, BAYARD O., 1948 (1953) *Professor of General Business*
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
- WHITELEY, ARTHUR HENRY, 1947 (1952) *Associate Professor of Zoology*
B.A., 1938, Kalamazoo College; M.A., 1939, Wisconsin; Ph.D., 1945, Princeton
- WIBERG, KENNETH BERLE, 1950 (1952) *Assistant Professor of Chemistry*
B.S., 1948, Massachusetts Institute of Technology; Ph.D., 1950, Columbia
- WILCOX, PHILIP E., 1952 *Assistant Professor of Biochemistry*
B.S., 1943, California Institute of Technology; Ph.D., 1949, Wisconsin
- WILHELM, HELLMUT, 1948 (1953) *Professor of Far Eastern and Slavic*
Ph.D., 1932, Berlin (Germany) *Languages and Literature*
- WILKIE, RICHARD FRANCIS, JR., 1937 (1948) *Assistant Professor of Germanic*
B.A., 1934, M.A., 1936, Washington; Ph.D., 1953, California *Literature*
- WILLIAMS, CURTIS TALMADGE, 1920 (1936) ... *Professor of Methods and Philosophy*
A.B., 1913, Kansas State Normal School; *of Education*
A.M., 1914, Ph.D., 1917, Clark
- WILLISTON, FRANK GOODMAN, 1943 (1949) *Professor of Far Eastern and Slavic*
A.B., 1922, Ohio Wesleyan; *Languages and Literature*
M.A., 1926, Ph.D., 1935, Chicago
- WILSON, CLOTILDE MARCONNIER, 1929 (1937) *Assistant Professor of Romance*
B.A., 1926, M.A., 1927, Ph.D., 1931, Washington *Languages*
- WILSON, FLORENCE BERGH, 1929 (1947) *Associate Professor of Music*
B.Mus., 1917, B.A., 1924, Washington; A.M., 1925, Columbia

- WILSON, RUTH MARIAN, 1936 (1945)..... *Associate Professor of Physical Education; B.S., 1931, Utah; Executive Officer of the Department of Physical Education for Women*
M.S., 1936, Wisconsin
- WILSON, WILLIAM CHARLES EADE, 1926 (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
- WINGER, ROY MARTIN, 1918 (1925)..... *Professor of Mathematics*
A.B., 1906, Baker; Ph.D., 1912, Johns Hopkins
- WINTHER, SOPHUS KEITH, 1925 (1940)..... *Professor of English*
B.A., 1918, M.A., 1919, Oregon; Ph.D., 1926, Washington
- WOLF, WILLIAM B., 1954..... *Assistant Professor of Production*
A.B., 1942, California; M.B.A., 1945, Northwestern; Ph.D., 1954, Chicago
- WOODBURNE, LLOYD STUART, 1950..... *Professor of Psychology; Dean of the College of Arts and Sciences*
A.B., 1929, M.A., 1930, Ph.D., 1932, Michigan
- WOODBURY, J. WALTER, 1950 (1953)..... *Assistant 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
- WORCESTER, DEAN AMORY, JR., 1946 (1951)..... *Associate Professor of Economics*
B.A., 1939, M.A., 1940, Nebraska; Ph.D., 1943, Minnesota
- WYBOURN, MARJORIE ADA, 1948 (1952)..... *Assistant Professor of Home Economics*
B.S., 1944, Washington; M.A., 1948, Columbia
- YOUNG, ALLAN CHARLES, 1949 (1955) *Associate 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
- YOUNGKEN, HEBER WILKINSON, JR., 1942 (1952)..... *Professor of Pharmacognosy*
A.B., 1935, Bucknell; B.S., 1938, Massachusetts College of Pharmacy;
M.S., 1940, Ph.D., 1942, Minnesota
- ZAHLER, STANLEY A., 1954..... *Instructor in Microbiology*
A.B., 1948, New York; S.M., 1949, Ph.D., 1952, Chicago
- ZETLIN, EMMANUEL ROMAN, 1947..... *Professor of Music*
B.A., 1916, Imperial Conservatory (Petrograd, Russia); D.Mus. (Hon.),
1936, Washington College of Music, Washington, D.C.
- ZILLMAN, LAWRENCE JOHN, 1930 (1953)..... *Professor of English*
B.A., 1928, Ph.D., 1936, Washington

CHANGES IN UNIVERSITY REGULATIONS

The University and its colleges and schools reserve the right to change the rules regulating admission to, instruction in, and graduation from the University and its various divisions, and to change any other regulations affecting the student body. 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 and change fees 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 GRADUATE SCHOOL of the University of Washington is administratively in charge of graduate study in whatever division of the University such study is undertaken. This involves the supervision of student programs which go beyond formal undergraduate work or work of the professional schools into areas of advanced training, research, and scholarship.

Programs for the master's and doctor's degrees are offered in fifty-five departments within twelve schools and colleges in the University. The graduate faculty is composed of faculty members in these divisions who are engaged in graduate instruction or in directing the research of graduate students.

The Graduate School is administered through the Office of the Dean, the Graduate Faculty Council, and the Executive Committee of the Graduate School. The Graduate Faculty Council is composed of representatives elected by the departments and colleges that offer graduate work and serves as the legislative and policy-making body of the graduate faculty. The Executive Committee consists of persons elected by the Graduate Faculty Council and appointed by the Dean; it acts as an advisory group to the Dean and as an administrative committee for the Graduate Faculty Council.

Research is of particular concern to the Graduate School, and instruction at the graduate level is largely guidance in research. Almost every phase of the graduate student's career is dominated by the research ideal: his thesis is an exercise in research; he acquires languages as research tools; his seminars are for training in research methods; and he obtains the doctor's degree for demonstrated proficiency in research.

The volume of research activity at the University is impressive and adds to the richness of graduate instruction and study. Through contract research, for both private sources and government agencies, the work of the University has been greatly expanded. This work not only brings greater research results but also provides more opportunities for the training and support of future scholars.

The administration of research interests in the Graduate School is carried out through the assistance of a special research committee, appointed by the Dean, which reviews proposals for research support, formulates regulations concerning personnel and the use of funds, and stimulates interest in investigative activities.

It advises on expenditures from the Initiative 171 Fund, which helps to support research in medicine and biology, and from the Research Fund of the Graduate School, which supports research in all fields.

SPECIAL FEATURES

WALKER-AMES VISITING PROFESSORSHIPS

A bequest from the estates of Maud Walker Ames and her husband, Edwin Gardner Ames, established in 1936 the Walker-Ames Fund of the University. The income from this fund enables the University to invite a number of distinguished scholars to the faculty each year. Such appointments may be made in any department of the University. Up to the present time, there have been over one hundred of these visiting scholars.

AGNES H. ANDERSON RESEARCH FUND

The Agnes H. Anderson Research Fund for the support of creative 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 committee of the University Research Society.

UNIVERSITY PRESS

The University of Washington Press, the division of scholarly publication, is interested in all contributions to knowledge and in manuscripts of scholarly specialization, criticism, 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.

ADMISSION

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 in one of the following classifications:

FULL STANDING. The requirement for full standing is a grade-point average of 2.75 during the senior year, with the necessary prerequisites for work in the chosen graduate field.

PROVISIONAL STANDING. A grade-point average of less than 2.75, but above 2.50, during the senior year will, if the student is admitted, result in provisional standing. No student with a grade-point average of less than 2.50 for the senior year may be admitted to the Graduate School except upon the written recommendation of the major department and the approval of the Dean of the Graduate School. Graduation from a nonaccredited college, or undergraduate deficiency in preparation for advanced work, will also result in provisional standing. Provisional standing may be changed to full standing upon the successful completion of two quarters of acceptable graduate work, and such work is fully applicable toward advanced degrees. Students may not, however, become candidates for advanced degrees while on provisional standing.

University of Washington graduates must be officially admitted to the Graduate School. Admission application forms may be obtained in the Registrar's Office.

Graduates of other schools may obtain admission application forms by writing to the Registrar's Office.

Foreign students must apply for admission to the Graduate School in the same manner and satisfy the same requirements as those from American schools. They must demonstrate a satisfactory command of the English language.

Applications for admission must be submitted by prescribed deadlines and 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 important that the student's application be submitted by the proper time, for the University can accept no responsibility for applicants who come to the campus before their credentials have been forwarded or before they have been notified of acceptance.

It is the student's responsibility to make sure 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 applying for fellowships and assistantships should make certain that complete transcripts and applications are on file. Usually departments award fellowships about March 15. Students wishing preliminary information regarding acceptance into graduate study, without reference to fellowships, may also submit credentials in the spring term preceding their graduation. Subject to satisfactory completion of their work, they will be notified of the possibility of acceptance or nonacceptance in accordance with their own past performance and the limitations of the department in which they expect to study.

For admission in Autumn Quarter, complete credentials should be on file by July 15. *The last day for new students to submit applications with complete credentials for admission in Autumn Quarter is August 31, 1956, August 30, 1957, or September 1, 1958.* For admission in the other quarters, applications and credentials should be submitted at least thirty days before the opening of the quarter. This applies to all new students seeking admission as graduates or undergraduates. *It is imperative that students observe this deadline in order to insure prompt attention to credentials and replies to correspondence.*

Before notice of admission is given, a medical questionnaire, on a form supplied by the Registrar, is issued to new out-of-state students. This should be completed by a doctor of medicine and returned by him to the Registrar's Office.

ADMISSION OF SENIORS

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 with full standing, may register for as much as 6 credits in graduate courses, in addition to the undergraduate work, but remain in the undergraduate classification until the bachelor's degree is granted. *Only under these circumstances may work taken as an undergraduate be counted toward a graduate degree.* Further registration in the Graduate School is contingent upon completion of the requirements for the bachelor's degree.

SECOND BACHELOR'S DEGREE

Students who wish to obtain a second bachelor's degree register in the college from which they expect to obtain the degree, not in the Graduate School.

WORLD WAR II AND KOREAN VETERANS

ADMISSION

The University welcomes veterans under the G.I. Bill, the Vocational Rehabilitation Act, and the Korean Bill, provided they can meet the University of Washington entrance requirements.

ENTITLEMENT TO EDUCATIONAL BENEFITS

Veterans who are accepted for entrance to the Graduate School and who expect to study under the provisions of Public Laws 16, 894, or 346 should apply to a Veterans Administration regional office for a Certificate of Eligibility at least one month prior to registration. This certificate should be presented at the Veterans

Division, 1B Administration Building, the day of registration. Those who do not have this certificate at the time they register must pay all charges; they will receive refunds when authorization from the Veterans Administration is established.

Korean veterans entering under the provisions of Public Law 550 should apply to a Veterans Administration regional office for a Certificate for Education and Training at least one month prior to registration. This certificate should be presented at the Veterans Division, 1B Administration Building, the day of registration or during the first week of instruction. Under this law, students receive an educational allowance and pay their own tuition and fees. Korean veterans should be prepared to meet all their own expenses as well as the cost of tuition fees, and supplies for at least two months. Educational allowances are not paid until a full month's attendance has been established.

REGISTRATION

After notification of admission and before registration, the student should confer with his departmental adviser, not only about the program for his current registration, which must be approved by the adviser before it is presented to the Graduate School Office, but also about plans for his entire graduate work. It is primarily to his major department that the student must look for individual counsel, guidance, and instruction in the scholarly study and research which characterize graduate work.

All students must have definite registration appointments each quarter. New students are given appointments when they are notified of admission and 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) may obtain registration appointments by writing or telephoning the Registrar's Office at the time specified in the Calendar (see page 4). Students in residence may obtain appointments at the time announced in the Calendar.

Fifteen credits per quarter are 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 5 credits.

Only courses numbered 400, 500, and 600 can be taken for graduate credit in the major field. Courses numbered 300 are not applicable to credit toward advanced degrees except when applied by permission toward the graduate minor.

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 Dean's consent.

MEDICAL EXAMINATIONS

All new students, and all former students who have not attended the University within the preceding calendar year, must take a medical examination, including a chest X ray. For out-of-state students, this examination is in addition to the medical questionnaire required of them as part of the application for admission. An annual chest X ray is required of all students.

ASSISTANTSHIPS, FELLOWSHIPS, AND SCHOLARSHIPS

The Graduate School provides for the employment of many graduate students as research and teaching assistants. 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 students of high intellectual competence and attainment whose educational objectives are clearly defined. An appointment is

made only when it is reasonably certain to help the student toward the attainment of his goal. Appointments are ordinarily for one academic year. A second-year appointment may be made if the student's progress toward the degree is satisfactory and if he is maintaining high scholarship.

Requests for application forms for teaching and research assistantships should be sent to the Registrar's Office and the completed applications should be returned, on or before March 15, direct to the executive officer of the department to which the student is applying.

Registration during the period of appointments should ordinarily be for 9 credits of research, course, or thesis work.

PREDOCTORAL ASSOCIATES. Persons appointed as predoctoral associates must hold a master's degree and give evidence of teaching ability. They must be actively studying toward a doctor's degree. Such appointments are on a nine-month basis and may be renewed for not more than three years. Predoctoral associates do not have faculty status.

Compensation is \$1,602 for a nine-month period. Predoctoral associates are exempt from tuition and incidental fees during each full quarter they hold an appointment. The ASUW fee is optional.

TEACHING ASSISTANTS. The services of teaching assistants are limited to the supervision of laboratory sections, supervision and leadership of quiz or discussion sections, work as class assistants, and other comparable services. Teaching assistants are not permitted to do independent teaching but are given some responsibility in the supervision of laboratory or classroom work so that they may be introduced to teaching activities gradually and effectively.

It is expected that teaching assistants will give not less, and departments will require not more, than twenty hours a week for their work. Compensation is \$150 a month. Exemption from tuition and incidental fees is provided during each full quarter of these appointments. The ASUW fee is optional.

RESEARCH ASSISTANTS. Recipients of research appointments engage in systematic research either in projects of their own or as assistants in research projects for which the department is responsible. Research assistants may not at the same time serve as teaching assistants.

Research assistants are expected to give service to the department not to exceed twenty hours a week. Compensation is \$150 a month. Exemption from tuition and incidental fees is provided during each full quarter of these appointments. The ASUW fee is optional.

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.

Such students may not be employed more than twenty hours a week, and the hourly rate may not exceed \$1.25 an hour. Hourly employment does not provide exemption from tuition, incidental fees, or the ASUW fee.

RESEARCH FELLOWSHIPS. In many departments special fellowships are available from private, industrial, foundation, government, and other sources. Examples of these are the Engineering Experiment Station Fellowships, the Standard Oil Company of California Fellowship in chemical engineering, the RCA Scholarship in electrical engineering, and the Family Society Fellowships in social work. Application must be made directly to the appropriate academic department.

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, Music, and Law have such funds. Most University scholarships, such as the Memorial Scholarships, may be awarded to students in any department.

Others are limited to students in specific departments. Inquiries and applications should be sent to the Scholarship Secretary in the Office of the Dean of Students.

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. Each year the University offers a number of tuition scholarships to students from other countries. These awards are made on the basis of the student's academic record, his need for assistance, and the number of openings in the department in which he expects to study. Application for such a scholarship should be made to the University of Washington Exchange Scholarships Committee by April 1 for the following academic year. At present the committee funds are the only ones available to students from abroad.

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 Announcement*.

Tuition

Resident students, per quarter \$25.00

A resident student is one who has been domiciled in Washington or Alaska for at least a year immediately before registration. The domicile of a minor is that of his parents.

Nonresident students, per quarter 75.00

Prospective students are classified as nonresidents when their credentials come from schools outside Washington and Alaska. If they believe they are residents, they may petition the Nonresident Tuition Office for a change of classification.

Auditors, per quarter 12.00

Veterans of World Wars I and 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, University Comptroller's Office. Nonresident students who meet one of these requirements pay one-half the nonresident tuition. This exemption is not granted to Summer Quarter students.

Advanced Degree Fees, dentistry and surgery

Resident students, per quarter 100.00

Nonresident students, per quarter 165.00

Students working toward advanced degrees in dentistry and surgery (but not in other medical departments) pay the regular tuition of the Schools of Dentistry and Medicine and miscellaneous fees.

Incidental Fee, per quarter

Full-time resident students 27.50

Part-time resident students (registered for 6 credits or less) 10.00

Full-time nonresident students 52.50

Part-time nonresident students (registered for 6 credits or less) 35.00

Auditors do not pay an incidental fee; there are no other exemptions.

Thesis Only Fee 27.50

Students who register for thesis only, with the permission of the Dean of the Graduate School, pay this fee. ASUW fee is optional.

ASUW Fees

Membership, per quarter 8.50

Optional for auditors, part-time students, and persons registered for thesis only.

Athletic admission ticket (optional for ASUW members) 3.00-5.00

Autumn, Winter, and Spring Quarters, \$5.00; Winter and Spring Quarters, \$3.00; Spring Quarter, \$3.00.

GENERAL INFORMATION

41

Language Examination Fee 1.00

This fee is charged for a foreign language reading examination.

Breakage Ticket Deposit 3.00

Required in some laboratory courses; ticket is returnable for full or partial refund.

Grade Sheet Fee .25

One grade sheet is furnished each quarter without charge; the fee is charged for each additional copy.

Transcript Fee .50

One transcript is furnished without charge; the fee is charged for each additional copy. Supplementary transcripts are 25 cents each.

Thesis Binding and Publication Fee

Master's degree candidates 2.00

The fee covers the cost of binding one copy for the University Library.

Doctor's degree candidates 25.00

The fee covers the cost of binding manuscript copies for the University Library and the cost of microfilm publication.

Diploma Fee 5.00

SPECIAL FEES

From \$2.00 to \$5.00 is charged for late registration; \$2.00 for each change of registration; \$5.00 for a late medical examination; and \$1.00 for a late X ray. The fee for a special examination is \$1.00; and for removal of an Incomplete, \$2.00.

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 \$183.00

Full-time nonresident student 408.00

Athletic Admission Ticket (optional) 3.00-5.00

Accident Insurance (optional) 4.95

Books and Supplies 75.00

Board and Room

Room and meals in Men's Residence Hall 570.00

Room and meals in Women's Residence Halls 525.00 to 600.00

Room and meals in student cooperative house 445.00 to 460.00

Personal Expenses 200.00

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.

GRADUATE STUDENT ASSOCIATION

The Graduate Student Association provides an opportunity for graduate students to participate in social and service activities on the campus. Composed of all graduate students, the Association is concerned with their particular interests and problems. Individual and group ideas and suggestions should be referred for action to the Association's Executive Committee.

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 Dean of Students Office also provides current information on Selective Service regulations.

The Counselor for International Services, a member of the Dean of Students staff, offers guidance on all nonacademic problems to students from other countries. Questions about immigration regulations, housing, social relationships, personal problems, finances, employment, and home hospitality should be referred to this Counselor. 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 offers vocational and personal counseling to students who need help in their adjustments to college living. The staff of the Center, which includes vocational counselors, psychiatric social workers, and clinical psychologists, works closely with other student services and supplements the academic advisory program.

HOUSING

Men students may obtain rooms in the Men's Residence Hall through the Office of Student Residences. Housing for women is available in the Women's Residence Halls on the campus. Interested students should write to the Director of Student Residences or the Business Manager of the Women's Residence Halls. The Student Cooperative Association, 1114 East Forty-fifth Street, Seattle 5, provides housing for men and women students.

The Office of Student Residences keeps listings of rooms, rooms with board, housekeeping rooms, and a few apartments and houses. These listings must be consulted in person. Married students who are veterans of World War II or Korea may apply to this office for accommodations in Union Bay Village, the University's family housing project. Since there is a long waiting list, new students should not rely on the possibility of immediate housing there.

HEALTH CENTER

The University maintains a health center and infirmary which help to 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 two dollars a day is made. At their own expense, infirmary patients may consult any licensed physician in good standing.

PLACEMENT

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 and Women'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 Nonacademic Personnel Department.

Working students must be sure to correlate their employment with Graduate School regulations governing study loads (see Registration, page 38).



THE GRADUATE PROGRAMS

THE GRADUATE PROGRAMS

THE GRADUATE SCHOOL offers programs leading to the master's degree through the following schools and colleges: *Arts and Sciences*: anthropology, art, botany, chemistry, classics, drama, economics, English (including general and comparative literature), Far Eastern and Slavic languages and literature, fisheries, geography, geology, Germanic languages and literature, history, home economics, mathematics, meteorology and climatology, music, oceanography, philosophy, physical education, physics, political science (including public administration), 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; *Forestry*; *Librarianship*; *Medicine*: anatomy, biochemistry, microbiology, pharmacology, physiology and biophysics, and surgery; *Nursing*; *Pharmacy*; and *Social Work*. Interdepartmental programs in *Linguistics* and *Urban Planning* are administered by special committees.

Programs leading to the Doctor of Philosophy degree are offered through the following schools and colleges: *Arts and Sciences*: anthropology, botany, chemistry, economics, English (including general and comparative literature), Far Eastern and Slavic languages and literature, fisheries, 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*: chemical, civil, and electrical engineering; *Forestry*; *Medicine*: anatomy, biochemistry, microbiology, pharmacology, and physiology and biophysics; and *Pharmacy*. An interdepartmental program in *Linguistics* is administered by a special committee.

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, 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 graduate course credit.

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 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 for 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. Grades as such are not matters of emphasis in graduate work; the student should see his grades merely as an indication of whether his general progress is satisfactory or unsatisfactory. For this reason, there is no calculation of the grade-point average in graduate study. However, in the major field no grade of less than B is acceptable, and in related fields a lower grade may occasionally be accepted only if the student's record is of generally high quality. Students whose work is not of approved quality may be asked to withdraw from the Graduate School.

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 quarters of residence credit.
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 department (unless specifically excepted in a particular program). Credit for the thesis ordinarily should be one

fourth of the total credit 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 imposes.

While every candidate is expected to take some work outside his major department, the department itself determines whether minors or supporting courses are required.

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

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 and his department promptly as to whether he will have satisfied the requirements for the degree at the end of the quarter. The previous work taken by the 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 credits taken while a graduate student at 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 this University. 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

When the student's application for the degree has been approved, his major department appoints a committee consisting of not less than three members, including a member from the minor department, if any. The chairman of this committee arranges 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 library 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 University Library.

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 the major department or college, 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.
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 which is a significant contribution to knowledge and which clearly indicates training in research. Credit for the thesis ordinarily should be one third of the total credit 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 thesis and the field with which it is concerned.

While every candidate is expected to take some work outside his major department, the department itself 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

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 full years of graduate study as approved by the major department, and after a successful demonstration of proficiency in two foreign languages, the chairman of the supervisory committee may present to the Graduate School for approval a warrant permitting the student to take the general examination for admission to candidacy. 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. 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 as embodied in the thesis and to preparation for his final examination.

THESIS AND FINAL EXAMINATION

The candidate must present a thesis representing original and independent investigation; it should reflect not only his mastery of research techniques but his ability to select an important problem for investigation and to deal with it competently. Instructions for the preparation of theses in acceptable form may be obtained from the University Library.

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 work of the thesis, 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 examining 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 examining 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 University Library. 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 fee 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 University Library, and if he wishes he may apply for a copyright. Publication in microfilm does not preclude other forms of publication.

COURSES

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 major department 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 quarterly *Time Schedule and Room Assignments*.

COLLEGE OF ARTS AND SCIENCES

Dean: LLOYD S. WOODBURN, 122 Thomson Hall

ANTHROPOLOGY

Executive Officer: JAMES B. WATSON, 211 Museum

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

When graduate students are completing their first year's study, they are given a preliminary written examination to determine whether they may apply for candidacy for one or both advanced degrees. It is recommended that part of the graduate work be devoted to a minor in a related field, such as psychology, sociology, geography, history, or Far Eastern studies.

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

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

COURSES

311 Indian Cultures of the Pacific Northwest (3)

Garfield

315 Peoples of the Far North (3)

Garfield

320 Primitive Technology (5)

Osborne

350 Basis of Civilization (3)

Staff

370 Methods and Problems of Archaeology (5)

Staff

371 Analysis of Archaeological Data (5)

Staff

(Offered alternate years; offered 1956-57.)

- 380 Primate and Human Evolution (3) Hulse
- 390 Introduction to Anthropology (5) Gunthor
- 417 Middle American Civilization (2) Massey
- 431 Primitive Literature (3) Garfield
- 432 Magic, Religion, and Philosophy (3) Ray
- 433 Primitive Art (3) Gunthor
- 435, 436 Early Economic Systems (3,3) Massey
(Offered alternate years; 435 offered 1956-57.)
- 437 Primitive Social and Political Institutions (3) Ray
- 441 Culture and Personality (5) Jacobs
- 442 Socialization of the Child in Primitive Cultures (3) Hulse
(Offered 1956-57.)
- 450J Introduction to General Linguistics (5) Jacobs, Reed
Offered jointly with the Department of Germanic Languages and Literature.
- 451 American Indian Languages (3) Jacobs
- 460 History of Anthropological Theory (3) Jacobs
- 480, 481, 482 Physical Anthropology (3,3,3) Hulse
- 500, 501, 502 Preceptorial Reading (3,3,3) Staff
Guided, selected reading from the prepared departmental list with weekly discussion and papers.
- 505 Field Techniques in Ethnography (3) Gunthor, Ray
- 511 Cultural Problems of the Northwest Coast (3, maximum 6) Garfield
- 519J Seminar on Asia (3) Wilhelm, Staff
The large cultural regions of the continent are studied in succession with special reference to anthropological problems. Offered jointly with the Far Eastern and Russian Institute.
- N520 Departmental Seminar (0) Staff
Departmental seminar required of all candidates for advanced degrees.
- 521 Native American Culture History (4) Ray
A historical interpretation of the geographical distribution of critical aspects of North and South American Indian cultures.
- 522 Cultural Problems of Western America (3) Elmendorf
(Offered 1955-56.)
- 523 Colloquium on Arid America (5) Ray
(Offered 1956-57.)
- 524 Seminar in Cultural Problems of Arctic and Sub-Arctic (3, maximum 6) Garfield, McClellan
Problems of cultural relationships across the North Pacific, from Asia to the New World and vice versa. (Offered 1956-57.)
- 525 Seminar in Culture Processes (3) Staff
- 531 Analysis of Oral Literature (3, maximum 6) Garfield
(Offered 1956-57.)
- 541 Seminar in Psychological Aspects of Culture (3) Jacobs
- 542 Personality Patterns in Japanese Culture (3) Hulse
(Offered 1955-56.)
- 551 Field Techniques in Linguistics (3) Jacobs
- 553J Analysis of Linguistic Structures (3) Jacobs, Li
Offered jointly with the Far Eastern and Russian Institute.
- 560 Seminar in the History of Anthropology (3) Staff
- 561 Seminar in Methods and Theories (3) Ray
- 570 Seminar in Archaeology (3) Osborne
(Offered 1955-56.)
- 571 Field Course in Archaeology and Historic Anthropology (5) Staff
- 580 Anthropology in Contemporary Problems (3) Gunthor
- 581 Anthropological Migration and Population Study (3) Hulse
(Offered 1956-57.)
- 582 Race and Genetics (3) Hulse
(Offered 1955-56.)
- 600 Research (*) Staff
- Thesis (*) Staff

ART

Director: BOYER GONZALES, 102 Art Building

The School of Art offers courses leading to the degree of Master of Fine Arts. Applicants for admission to graduate study must have a grade average of B in the undergraduate art major.

In lieu of a thesis, candidates may undertake a problem in painting, sculpture, or design.

COURSES

303, 304	Ceramic Art (2 or 3, 2 or 3)	Bonifas
306	Advanced Lettering (3)	Anderson
307, 308, 309	Portrait Painting (3,3,3)	Isaacs
310, 311, 312	Interior Design (5,5,5)	Foote
316, 317, 318	Design for Industry (3,3,3)	Del Giudice
322, 323, 324	Sculpture (3,3,3)	Du Pen
330	Advanced Ceramic Art (3)	Bonifas
332, 333, 334	Advanced Sculpture (3,3,3)	Du Pen
340	Design for Printed Fabrics (3)	Penington
357, 358, 359	Design in Metal (3,3,3)	Penington
360, 361, 362	Life (3,3,3)	Staff
369, 370, 371	Costume Design and Illustration (2,2,2)	Rand
375, 376, 377	Advanced Painting (3,3,3)	Staff
382, 383, 384	Eastern Art (3,3,3) (Offered alternate years; offered 1956-57.)	Rogers
386	The Art of the Ancient Near East (2) (Offered alternate years; offered 1955-56.)	Rogers
387	Islamic Art (2) (Offered alternate years; offered 1955-56.)	Rogers
388	Medieval Art (2) (Offered alternate years; offered 1955-56.)	Rogers
413	Oriental Ceramic Art (2) (Offered alternate years; offered 1955-56.)	Rogers
423, 424, 425	Art History and Criticism (1,1,1)	Rogers
426	The Origins of Modern Art (2) (Offered alternate years; offered 1955-56.)	Rogers
427	Art since Cezanne (2) (Offered alternate years; offered 1955-56.)	Rogers
436, 437, 438	Sculpture Composition (5,5,5)	Du Pen
445, 446, 447	Advanced Industrial Design (5,5,5)	Del Giudice
450	Illustration (5)	Staff
451, 452	Printmaking (5,5)	Alps
453, 454, 455	Advanced Ceramic Art (3,3,3)	Bonifas
463, 464, 465	Composition (3,3,3)	Brazeau, Isaacs
466, 467	Commercial Design (5,5)	Staff
472, 473, 474	Advanced Interior Design (5,5,5)	Foote
479, 480, 481	Advanced Costume Design and Illustration (2,2,2)	Rand
485, 486, 487	Advanced Ceramic Art (5,5,5)	Bonifas
490	Art Education in the Schools (3)	Staff
498	Individual Projects (3-5, maximum 15)	Staff
507, 508, 509	Advanced Portrait Painting (3,3,3)	Staff
522, 523, 524	Advanced Sculpture (3 or 5, 3 or 5, 3 or 5)	Staff
550	Advanced Illustration (3 or 5)	Staff
551, 552	Advanced Printmaking (3 or 5, 3 or 5)	Staff
553, 554, 555	Advanced Ceramic Art (3 or 5, 3 or 5, 3 or 5)	Staff

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
Thesis (*)	Staff

BOTANY

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

The Department of Botany requires that all candidates for the degrees of Master of Science and Doctor of Philosophy have organic chemistry.

COURSES

BIOLOGY

401 Cytology (3)	Hsu
401L Cytology Laboratory (2) Must be accompanied by 401.	Hsu
451 Genetics (3 or 5)	Roman
452 Cytogenetics (3 or 5) (Offered alternate years; offered 1955-56.)	Roman
453 Topics in Genetics (2, maximum 6)	Roman
454 Evolutionary Mechanisms (3) (Offered alternate years; offered 1955-56.)	Kruckeberg
472 Principles of Ecology (3)	Edmondson
472L Ecology Laboratory (2) Must be accompanied by 472.	Edmondson
473 Limnology (5)	Edmondson
501 Advanced Cytology (5) (Offered alternate years; offered 1955-56.)	Hsu
508 Cellular Physiology (3) Functional aspects of protoplasmic structures. Prerequisite, Zoology 400 or permission.	Whiteley
508L Cellular Physiology Laboratory (2) Must be accompanied by 508. Prerequisite, permission.	Whiteley
551 Genetics of Microorganisms (3) (Offered alternate years; offered 1956-57.) Prerequisite, 451 or permission.	Roman
573 Topics in Limnology (2) May be repeated for credit.	Edmondson

BOTANY

331 Ornamental Plants (3)	Kruckeberg
332 Taxonomy Field Trip (*, maximum 27) (Offered alternate Summer Quarters; offered 1956.)	Staff
361 Forest Pathology (5)	Stuntz
371 Elementary Plant Physiology (5) Open for only 3 credits to those who have had 116.	Meeuse, Walker
431, 432 Taxonomy (5,5) (Offered alternate years; offered 1955-56.)	Hitchcock
441, 442, 443 Morphology (5,5,5) (Offered alternate years; offered 1956-57.)	Blaser
444 Plant Anatomy (5) (Offered alternate years; offered 1955-56.)	Blaser
445 Algology (6) (Offered at Friday Harbor Summer Quarter only.)	Staff
461 Yeasts and Molds (5)	Stuntz
462, 463 Mycology (5,5)	Stuntz
471 Mineral Nutrition (5)	Walker
472 Plant Physiology (5)	Meeuse, Walker
473 Plant Physiology (5) (Offered alternate years; offered 1956-57.)	Meeuse

474 Plant Physiology (5) (Offered alternate years; offered 1955-56.)	Walker
475 Problems in Algal Physiology (6) (Offered at Friday Harbor Summer Quarter only.)	Moeuse
498 Special Problems in Botany (1-15)	Staff
520 Seminar (1)	Staff
521 Seminar in Plant Physiology (1, maximum 5) Modern methods and trends in plant physiology. Prerequisite, 371 or 472.	Moeuse, Walker
600 Research (*) Original investigations of special problems in genetics, morphology, mycology, taxonomy, or plant physiology.	Staff
Thesis (*)	Staff

CHEMISTRY

Executive Officer: PAUL C. CROSS, 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 Thursday and Friday 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 have been passed. The language requirement may be satisfied by passing examinations in German and in either Russian or French.

COURSES

321 Advanced Qualitative Analysis (3)	Staff
325 Quantitative Analysis (5)	Staff
333 Intermediate Organic Chemistry (3)	Staff
335, 336, 337 Organic Chemistry (3,3,3)	Staff
345, 346 Organic Chemistry Laboratory (2,2)	Staff
351, 352 Elementary Physical Chemistry (3,3)	Staff
353 Chemical Thermodynamics (4)	Staff
354 Elementary Physical Chemistry Laboratory (2)	Staff
355, 356, 357 Physical Chemistry (3,4,3)	Staff
358, 359 Physical Chemistry Laboratory (3,3)	Staff
415, 416, 417 Advanced Inorganic Chemistry (3,3,3)	Cady, Eggers, Ritter
418 Radiochemistry (3)	Fairhall
419 Radiochemistry Laboratory (2)	Fairhall
425 Quantitative Analysis (3)	Crittenden
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)** Wiberg
- 446 **Advanced Organic Preparations (3)** Staff
- 451 **Advanced Physical Chemistry Laboratory (2 or 3)** Staff
- 515 **Topics in Inorganic Chemistry (3, maximum 18)** Staff
Open only to students accepted for doctoral work in chemistry.
- 520 **Seminar (1-3, maximum 9)** Staff
- 526 **Advanced Instrumental Analysis (3)** Crittenden
Absorption and emission spectroscopy, polarography, potentiometry, and dielectric properties as applied to problems in analytical chemistry. Prerequisite, 359 or permission.
- 527 **Topics in Analytical Chemistry (3, maximum 18)** Staff
Open only to students accepted for doctoral work in chemistry.
- 528 **Microqualitative Analysis (3)** Robinson
Identification of ions by means of optical properties of their crystals. Prerequisite, 428 or permission.
- 530, 531, 532, 533, 534 **Advanced Organic Chemistry (3,3,3,3,3)** Staff
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.
- 537 **Physical Organic Chemistry (3)** Schubert
Interpretation and application of data obtained by combined methods of organic and physical chemistry to the problems of structure of organic compounds and mechanisms of organic reactions. Prerequisites, 532 and 552, or permission.
- 538 **Topics in Organic Chemistry (3, maximum 18)** Staff
Open only to students accepted for doctoral work in chemistry.
- 550, 551, 552 **Advanced Physical Chemistry (3,3,3)** Staff
Elementary concepts of quantum chemistry, statistical mechanics, thermodynamics, kinetic theory, and chemical kinetics. Prerequisite, 357 or permission.
- 553 **Solutions and Colloids (3)** Gregory
Thermodynamic considerations of solubility and theories of electrolytic solutions, electrochemical methods, electrokinetic phenomena, and surface chemistry. Prerequisite, 552 or permission.
- 554 **Molecular Structure (3)** Eggers
Measurement and interpretation of molecular spectra (ultraviolet, visible, infrared, Raman), X-ray and electron diffraction, dipole moments, and magnetic susceptibilities. Prerequisite, 357 or permission.
- 555, 556, 557 **Quantum Chemistry (3,3,3)** Halsey, Simpson
Quantum theory of valence, unsaturation, quantum statistics, molecular dynamics, and related topics. Prerequisite, permission.
- 558 **Chemical Crystallography (3)** Lingafelter
Crystal structure of diffraction of X rays, electrons, neutrons; crystal chemistry; spectra of crystals; theory of metals. Prerequisite, 357 or permission.
- 559 **Topics in Physical Chemistry (3, maximum 18)** Staff
Open only to students accepted for doctoral work in chemistry.
- 560 **Chemical Kinetics (3)** Rabinovitch
Consideration of reaction rate theory and applications including specialized aspects of topical interest. Prerequisite, 552 or permission.
- 591 **Seminar in Inorganic Chemistry (1-5, maximum 18)** Staff
- 592 **Seminar in Analytical Chemistry (1-5, maximum 18)** Staff
- 593 **Seminar in Organic Chemistry (1-5, maximum 18)** Staff
- 595 **Seminar in Physical Chemistry (1-5, maximum 18)** Staff
- 600 **Research (*)** Staff
- Thesis (*) Staff

Chemistry courses offered through the University of Washington at the Graduate School of Nuclear Engineering, Richland, Washington.

- R411 **Inorganic Chemistry (4)**
- R412 **Chemistry of Less Familiar Elements (4)**
- R413 **Elements of Radiochemistry (4)**
- R423 **Indicators and Potentiometric Titrations (4)**
- R424 **Advanced Quantitative Analysis (5)**
- R426 **Instrumental Analysis (4)**
- R447 **Organic Reactions (4)**

- R452 Theoretical Chemistry (4)
 R453 Electrochemistry (4)
 R454 Physical Chemistry II (4)
 R455 Colloid Chemistry (4)

CLASSICS

Executive Officer: JOHN B. McDIARMID, 203 Denny Hall

The Department of Classics offers courses leading to the degree of Master of Arts. Applicants for candidacy must have a reading knowledge of French or German. Latin and Greek courses to be applied toward this degree must be numbered 400 and above.

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

COURSES

GREEK

- | | |
|---|-----------|
| 309 Advanced Grammar and Composition (1, maximum 4) | McDiarmid |
| N391 Sight Reading (0) | Staff |
| 413 The Pre-Socratic Philosophers (3)
(Offered alternate years; offered 1956-57.) | McDiarmid |
| 414 Plato (3)
(Offered alternate years; offered 1956-57.) | McDiarmid |
| 415 Aristotle (3)
(Offered alternate years; offered 1956-57.) | McDiarmid |
| 422 Herodotus and the Persian Wars (3)
(Offered alternate years; offered 1955-56.) | Staff |
| 424 Thucydides and the Peloponnesian War (3)
(Offered alternate years; offered 1955-56.) | Staff |
| 430 Attic Orators (3)
(Offered alternate years; offered 1955-56.) | Staff |
| 442 Introduction to Greek Drama: Euripides (3)
(Offered alternate years; offered 1955-56.) | McDiarmid |
| 443 Sophocles (3)
(Offered alternate years; offered 1955-56.) | McDiarmid |
| 444 Aeschylus (3)
(Offered alternate years; offered 1955-56.) | McDiarmid |
| 451 Lyric Poetry (3)
(Offered alternate years; offered 1956-57.) | Staff |
| 453 Pindar: The Epinician Odes (3)
(Offered alternate years; offered 1956-57.) | Staff |
| 455 Hellenistic Poetry (3)
(Offered alternate years; offered 1956-57.) | Staff |
| 490 Supervised Study (3-5, maximum 15) | Staff |
| 520 Seminar (3-5, maximum 15) | Staff |
| 600 Research (3-5, maximum 15) | Staff |
| Thesis (*) | Staff |

LATIN

- | | |
|---|---------|
| 309 Advanced Grammar and Composition (1, maximum 4) | Grummel |
| N391 Sight Reading (0) | Staff |
| 401 Medieval Latin (3) | Pascal |
| 404 Comparative Grammar of Latin and Greek (3) | Grummel |
| 412 Lucretius (3)
(Offered alternate years; offered 1956-57.) | Grummel |
| 413 Cicero's Philosophical Works (3)
(Offered alternate years; offered 1956-57.) | Grummel |
| 414 Seneca (3)
(Offered alternate years; offered 1956-57.) | Grummel |

DRAMA

59

422	Livy (3) (Offered alternate years; offered 1955-56.)	Pascal
424	Tacitus (3) (Offered alternate years; offered 1955-56.)	Pascal
426	Roman Biography (3) (Offered alternate years; offered 1955-56.)	Pascal
430	Latin Novel (3) (Offered alternate years; offered 1955-56.)	Grummel
442	Roman Drama (3) (Offered alternate years; offered 1956-57.)	Pascal
451	Roman Satire (3) (Offered alternate years; offered 1955-56.)	Grummel
455	Catullus (3) (Offered alternate years; offered 1956-57.)	Pascal
456	Horace (3) (Offered alternate years; offered 1956-57.)	Pascal
458	Roman Epic (3) (Offered alternate years; offered 1955-56.)	Grummel
475LJ	Improvement of Teaching: Latin (5) Offered jointly with the College of Education. (Offered Summer Quarter only.)	Grummel
490	Supervised Study (3-5, maximum 15)	Staff
520	Seminar (3-5, maximum 15)	Staff
600	Research (3-5, maximum 15)	Staff
	Thesis (*)	Staff

CLASSICAL COURSES IN ENGLISH

322	Greek Historians and Philosophers in English (2)	Staff
326	Greek and Roman Epic in English (3)	Grummel
327	Greek and Roman Drama in English (3)	McDiarmid
330	Greek and Roman Mythology (3)	Grummel
340	Greek and Roman Critics in English (3)	Grummel

DRAMA**Director: GLENN HUGHES, 410 Denny Hall**

The School of Drama offers courses leading to the degree of Master of Arts. Normally a major in drama is supported by a minor in English.

COURSES

307, 308, 309	Puppetry (2,2,2)	Valentinetti
403	Scene Construction (3)	Lounsbury
404	Scene Design (3)	Conway
405	Historic Costume for the Stage (3)	Crider
406	Make-up (3)	Davis
407	History of Theatrical Costume (2)	Crider
408	Stage Costume Construction (2)	Hedges
410	History of Wigs and Wig Making (2)	Crider
411, 412, 413	Playwriting (3,3,3)	Hughes
414	Stage Lighting (3)	Conway, Lounsbury
415	Advanced Stage Lighting (3)	Staff
417, 418, 419	Advanced Theatre Workshop (2,2,2)	Staff
420	History of Masks and Mask Making (2)	Davis
421, 422, 423	Advanced Acting (3,3,3)	Harrington
426	High School Play Production (3)	Gray, Harrington
427, 428, 429	History of the Theatre (2,2,2)	Conway
434, 435, 436	Children's Theatre (3,3,3)	Carr

437, 438, 439 Creative Dramatics with Children (3,3,3)	Haaga, Staff
451, 452, 453 Representative Plays (3,3,3)	Hughes
481, 482, 483 Directing (3,3,3)	Harrington
497 Theatre Organization and Management (2)	Hughes
509 Advanced Stage Costume Construction and Design (2) Prerequisites, 405 and 408.	Cridder
515 Scenic Projection (3) Theories and experiments with various methods of scenic projection. Prerequisites, 414, 415, or permission.	Conway
517 Advanced Stage Design (3) Prerequisites, 404, 417, 418, 419, or permission.	Conway
518 Technical Direction (3, maximum 9)	Lounsbury
519 Lighting Research and Development (3, maximum 9)	Lounsbury
551-552-553 Teaching of Acting (2-2-2) Prerequisites, 422 and permission.	Harrington
581 Advanced Directing (3) Prerequisites, 483 and permission.	Harrington
601, 602, 603 Research (5,5,5) Prerequisite, permission.	Hughes
Thesis (*)	Staff

ECONOMICS

Executive Officer: J. RICHARD HUBER, 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 some of these fields of specialization: economic theory; history of economic thought; money, banking, and cycles; government regulation, public utilities, and transportation (students may be permitted to concentrate their work in two of these three sub-fields); labor economics; public finance and taxation; economic history; international trade; and national economies.

MASTER OF ARTS. Candidates must complete a program in economic theory and two other fields, one of which must be in economics. Those who choose three fields in economics will be expected to complete a minimum of 15 credits in courses for graduate students only (9 in economic theory). Those who take a field in a related subject will be expected to take a minimum of 12 credits in economics in courses for graduate students only (9 in economic theory). All candidates must meet the Graduate School's general requirement of 27 credits in graduate-course work in addition to the thesis and language requirements.

The requirement for a minor in economics for a master's degree is 9 credits in advanced economics courses.

DOCTOR OF PHILOSOPHY. Candidates must complete a program in five fields, four of which must be in economics including the field of economic theory. A candidate may offer a minor in another department related to his fields of major interest, or, with permission of his committee, he may offer a program of selected courses outside of economics as the fifth 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 fields offered will include three in economics (one of which must be economic theory), one joint economics and Far Eastern, and the Far Eastern minor. When this option is allowed, the candidate normally chooses a thesis subject related to his Far Eastern specialty, and the thesis is jointly supervised by the Institute and the Department.

Doctoral candidates offering a minor in economics must demonstrate competence in two fields, including economic theory. While normally 25 credits in courses approved for graduate credit will be required, candidates with an adequate background may offer less. In any case, a minimum of 12 credits in graduate courses

must be offered. Normally 9 of these credits must be in economic theory; in special cases a minimum of 6 credits in theory may be offered.

COURSES

ECONOMIC THEORY

- 301 National Income Analysis (5)** Cartwright, Crutchfield, Gordon
- 302 Intermediate Economics (5)** Mund, Worcester
- 304 Economics of Consumption (5)** Staff
(Not offered 1955-57.)
- 306 Development of Economic Thought (5)** Gordon
- 404 Advanced Price Analysis (5)** Crutchfield
- 503 Economics of the Firm (3)** Worcester
Analysis of the operation of the economy as affected by the decisions of individual firms and consumers under conditions of pure competition, imperfect competition, oligopoly, and monopoly.
- 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.
- 506 Income and Employment Theory (3)** Cartwright
Theories of employment, output, and income of the Keynesian and neo-Keynesian groups. Prerequisite, 301 or permission.
- 507 Neo-Classical Economics and Its Critics (3)** Gordon
Prerequisite, permission.
- 510 Contemporary Developments in Income and Employment Theory (3)** Cartwright
Review of current literature on income theory with primary emphasis on dynamic income theory. Prerequisite, 506.
- 511 Introduction to the Use of Mathematics in Economic Theory (3)** Gordon
Elementary mathematical analysis used in economics. The course is 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.
- 512 Advanced Theory of the Firm (3)** Worcester
Current literature and research in market structure and business motivation. Prerequisite, 503.
- 513 Capital and Distribution Theory (3)** Mund
(Offered alternate years; offered 1955-56.)
- 515 History of Economic Thought (3)** Gordon, North
Marxian, classical, and earlier economic thought.

MONEY, BANKING, AND CYCLES

- 320 Money and Banking (5)** Crutchfield, Hald
- 421 Money, Credit, and the Economy (5)** Crutchfield
- 422 Economic Cycles (5)** Hald
- 521 Monetary Theory (3)** Crutchfield
Recent developments in monetary theory. Prerequisite, permission.
- 522 Cycle Theory (3)** Hald
Leading theories of economic cycles, with emphasis upon recent developments. Prerequisite, permission.

GOVERNMENT REGULATION, PUBLIC UTILITIES, AND TRANSPORTATION

- 330 Government and Business (5)** Mund
- 336 Economics of Transportation I (5)** Sheldon
- 432, 433 Economics of Public Utilities (5,5)** Hall
- 437 Economics of Transportation II (5)** Sheldon
- 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.
- 536 Transportation (3)** Sheldon
Economic aspects of current transportation problems. Prerequisite, permission.

LABOR ECONOMICS

- 340 Labor in the Economy (5) Buechel, Gillingham, Lampman, McCaffree
 345 Social Security (5) Lampman
 441 Union-Management Relations (5) Gillingham, Hopkins
 442 American Labor History (5) Gillingham
 443 Advanced Labor Economics (5) McCaffree
 446 Labor Problems Abroad (5) Morris
 541 Theory of Trade-Unionism (3) Gillingham
 Prerequisite, permission.
 542 Labor Economics (3) Hopkins
 Prerequisite, permission.
 543 Labor Law (3) Lampman
 Selected problems of governmental regulation of the labor-management relationship. Prerequisite, permission.

PUBLIC FINANCE AND TAXATION

- 350 Public Finance and Taxation I (5) Hall, Lampman
 451 Public Finance and Taxation II (5) Hall, Lampman
 550 Public Finance (3) Hall
 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

- 461 Economic History of Europe (5) Morris
 462 Development of American Commercial Capitalism (5) North
 463 Development of American Industrial Capitalism (5) North
 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) Sheldon
 373 Foreign Trade of Latin America (5) Staff
 (Not offered 1955-57.)
 471 International Economics (5) Holzman
 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 Policies (3) Huber
 Problems of foreign trade and exchange controls, and international monetary policies. Prerequisite, permission.

NATIONAL ECONOMIES

- 390 Comparative Economic Systems (5) Worcester
 492 Economic Problems of the Far East (5) Sheldon
 493 Economic Problems of China (5) Staff
 495 The Economy of Soviet Russia (5) Holzman
 595 Soviet Economics (3) Holzman
 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.

Thesis (*)

Staff

ENGLISH

Executive Officer: ROBERT B. HEILMAN, 115 Parrington Hall

The Department of English offers courses leading to the degrees of Master of Arts and Doctor of Philosophy. Candidates for advanced degrees must have the equivalent of an undergraduate major in English.

MASTER OF ARTS. Candidates must complete a program of 45 credits, including 10 credits in one period or type of literature and a maximum of 10 credits for thesis. Not more than 10 credits may be in English literature 400 courses. Those who wish to take a minor may include in the total credit requirements a maximum of 10 credits in a related field, which, with the permission of the Department, may be in 300 courses. Courses required for a major in literary history are: English 505, 507, and either 509 or 547; in literary criticism: English 505, 507, 508, and 509; in rhetoric: English 505, 509, 547, and 530 or equivalent; in language: English 505, 530, and 10 credits in Old or Middle English; in advanced writing: English 505 or 507, 509, and 10 credits in advanced writing. Candidates majoring in advanced writing may present an original work in imaginative or factual writing in lieu of a thesis. An alternate program without thesis may also be elected in the fields of literary history and language and, with permission, in the field of rhetoric. Nonthesis programs must be indicated in the student's registration *not later than* the beginning of the *second quarter* of his work.

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.

DOCTOR OF PHILOSOPHY. Candidates must show a reading knowledge of two foreign languages (usually French and German, though upon approval of the Graduate Studies Committee and the Graduate School a substitute for either may be offered). One language requirement must be met before the completion of 45 credits; no student who has completed 60 credits may proceed faster than 5 credits per quarter if both language requirements have not been fulfilled.

A minimum of 90 credits must be completed before the general examination. Not more than 10 credits may be in English literature 400 courses. A maximum of 20 credits may be taken in courses given by other departments. Courses required for a major in literary history are: English 505, 507, either 508 or 509, 530, and 531; in literary criticism: English 505, 507, 508, 509, 530, and 531; in rhetoric: English 505, 507, 509, 530, 547, and 553; in language: English 505, 509, 531, 532, 10 credits in one field of language study, and 10 credits in linguistics in one language other than English. Advanced writing may not be used as a major subject, but candidates are allowed 10 credits in advanced writing and with permission may petition for 10 additional credits.

The general examination includes an oral examination and three days (six to eight hours each) of written examinations on (1) Chaucer, Shakespeare, and Milton; (2) one literary genre; and (3) twelve major figures from three of the following fields (four from each of three fields): (a) English literature to 1550, (b) 1550-1660, (c) 1660-1800, (d) 1800-present, (e) American literature.

The oral examination consists of questions based on (1) the written examination and related topics, and (2) a five-thousand-word critical essay in the candidate's field of specialization, which is to be written and submitted in the first three weeks of the quarter in which he takes the examination. The essay must be a study of an assigned literary work or problem in the candidate's field; any approach or technique, critical or scholarly, may be used, but a reasoned judgment

is required. It will be read before the oral examination by all members of the examining committee and will be evaluated for its style and organization as well as its content.

The candidate should not rely entirely on formal course work in preparation for this general examination but should do a considerable amount of preparation in private study. At least six months before the beginning of the quarter in which he will take the examination, the candidate must announce in writing to the Graduate Studies Committee his intention of taking the examination. Candidates are expected to present themselves for the examination within three regular quarters after the completion of their course work, unless they have been excused from so doing by the Graduate Studies Committee. The subject of the dissertation must be approved by the Graduate Studies Committee of the Department before the candidate begins work on it.

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 earned in residence.

Courses leading to the degrees of Master of Arts and Doctor of Philosophy with specialization in general and comparative literature are offered through the General and Comparative Literature program (see page 71).

COURSES

301	The Bible as Literature (5)	Fowler
320	Modern Poetry (5)	Zillman
328, 329	Dramatic Composition (3,3)	Redford
344, 345	Eighteenth-Century English (5,5)	Cornu, Hoover
350, 351, 352	Old and Middle English Literature (5,5,5)	Ethel, Fowler, Kaufman, Person
353, 354	English Literature: 1476-1642 (5,5) (Offered alternate years; offered 1956-57.)	Adams
361, 362, 363	American Literature (5,5,5)	Blankenship, H. Burns, Davis, Harrison Hilen, Phillips
367, 368, 369	Seventeenth-Century Literature (5,5,5)	Ethel, Leggett, Stein
370, 371, 372	Shakespeare (5,5,5)	Adams, Hamilton, Kaufman, Pellegrini, Stirling
374, 375, 376	Late Nineteenth-Century Literature (5,5,5)	Brown, W. Burns, Winther
377, 378, 379	Early Nineteenth-Century Literature (5,5,5)	Bostetter, Zillman
380, 381, 382	Old English Language (5,5,5)	Staff
387	English Grammar (3)	Emery
388	Current English Usage (3)	Perrin
401	The Popular Ballad (5)	Fowler
404	Modern European Literature (5)	Hall, Harrison
406	Modern English Literature (5)	Hall, Harrison
410, 411, 412	Advanced Verse Writing (5,5,5)	Roethke
413, 414, 415	Types of Contemporary Poetry (5,5,5)	Roethke
417	History of the English Language (5)	Person
424, 425	Types of Dramatic Literature (5,5) (Offered alternate years; offered 1955-56.)	Heilman
431, 432	Advanced Factual Writing (5,5)	Harris
437, 438	Advanced Short Story Writing (5,5)	Harris, Redford
440, 441	Social Ideals in Literature (5,5) (Offered alternate years; offered 1955-56.)	Adams
447, 448, 449	The English Novel (5,5,5)	W. Burns, Heilman, Winther
456, 457, 458	Novel Writing (5,5,5)	Staff
466	Modern American Literature (5)	Blankenship, Davis, Hall, Harrison, Phillips
484, 485	Advanced Writing Conference (3-5,3-5)	Harris, Redford
489	English Prose Style (5)	Perrin

505 Graduate English Studies (5)	Davis, Stirling
507, 508 Literary Criticism (5,5)	Brown, H. Burns, Winther
509 Methods of Contemporary Criticism (5)	Bostetter, Mathews, 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, Stirling
517: comedies; 518: tragedies; 519: histories.	
521, 522, 523 Seventeenth-Century Literature (5,5,5)	Stein
524, 525, 526 American Literature (5,5,5)	Blankenship, Davis, Eby, Harrison, Hilen
527, 528 Studies in Medieval Literature (5,5)	Fowler
527: poetry; 528: Arthurian romance.	
530 The English Language (5)	Reed
A 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 (5,5,5)	Brown, W. Burns, Winther
544, 545, 546 Eighteenth-Century Literature (5,5,5)	Cornu, Hoover
547 Rhetoric (5)	Perrin
548 Twentieth-Century Literature (5)	Hall
553 Current Rhetorical Theory (5)	Perrin
586 Graduate Writing Conference (5)	Harris, Redford
599 Special Studies in Literature (5)	Staff
600 Research (*)	Staff
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 Asiatic 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 studies in the humanities are organized (see page 67). The Institute is responsible to the University, through the Dean of the Graduate School, for its research and graduate programs and is assisted by an advisory board consisting of the Deans of the Graduate School, the College of Arts and Sciences, the College of Business Administration, and the School of Law; the Director of the Library; and the executive officers of the cooperating departments.

The Institute itself does not grant degrees. It arranges the programs in Far Eastern 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 in the fields of Chinese languages and literature and Slavic languages and literature leading to the Doctor of Philosophy degree. 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, 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. These joint programs are described in the curricular announcements of the respective departments.

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

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

COURSES

310 Problems of the Pacific (5)	Maki, Michael, Taylor, Williston
323 Survey of the Soviet Union (5)	Treadgold
329 Russia and the Moslem World (5)	Spector
335J Japanese Foreign Policy in Asia (3) Offered jointly with the Department of Political Science.	Maki
345J Japanese Government (3) Offered jointly with the Department of Political Science.	Maki
422J Early Russian History (5) Offered jointly with the Department of History.	Treadgold
423J Recent Russian History (5) Offered jointly with the Department of History.	Treadgold
424J Russian Revolutionary Movement (3) Offered jointly with the Department of History.	Treadgold
430 Survey of Mongol Culture (3)	Poppe
443 Chinese Social Institutions (5)	Hsiao
444 Chinese History: Earliest Times to 221 B.C. (5) (Offered alternate years; offered 1956-57.)	Wilhelm
445 Chinese History: 221 B.C. to 906 A.D. (5) (Offered alternate years; offered 1956-57.)	Wilhelm
446 Chinese History: 906 A.D. to 1840 A.D. (5) (Offered alternate years; offered 1956-57.)	Wilhelm
447 Modern Chinese History (5)	Taylor
451J History of Chinese-Japanese Relations (3) Offered jointly with the Department of History.	Jansen
452J Early Japanese History (5) Offered jointly with the Department of History.	Jansen
453J Tokugawa Period (5) Offered jointly with the Department of History.	Jansen
454J Modern Japanese History (5) Offered jointly with the Department of History.	Jansen
478 Russia in Asia (3)	Ballis

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

- Art 382, 383, 384 Eastern Art (3,3,3)
- Art 413 Oriental Ceramic Art (2)
- Economics 492 Economic Problems of the Far East (5)
- Economics 493 Economic Problems of China (5)
- Economics 495 The Economy of Soviet Russia (5)
- Foreign Trade 450 Far East Foreign Trade Problems (5)
- Geography 303 Asia (5)
- Geography 433 The Soviet Union (3)
- Geography 435 Southeast Asia (5)
- Geography 436 China (3)

- Geography 437 Japan (3)**
- Philosophy 428 Chinese Philosophy (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)**
- 510 Methodology in Far Eastern Studies (3)** Maki
Required of all graduate students taking degrees or writing theses in Far Eastern subjects other than languages.
- 519J Seminar on Asia (3)** Wilhelm
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 1955-56.)
- 521, 522, 523 Seminar on Eastern Asia (4,4,4)** Maki, Taylor
- 525, 526 Seminar on Far Eastern Diplomacy (3,3)** Williston
- 530, 531, 532 Seminar on China (3,3,3)** Wilhelm
- 533 Seminar on Chinese Society (4)** Wittfogel, Staff
Comparative institutional analysis of representative periods and key aspects of Chinese society. (Offered when demand is sufficient.)
- 534J Modern European History: Russia (5)** Treadgold
Offered jointly with the Department of History.
- 535J-536J-537J Russian History (5-5-5)** 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.
- 540J Seminar on the Soviet Union: Government and Diplomacy (4, maximum 8)** Ballis
Offered jointly with the Department of Political Science. Prerequisite, permission.
- 543 Seminar on Russia in Asia (3)** Ballis
Selected topics on relations of Russia and the Soviet Union with Asia. Prerequisite, permission.
- 545J Seminar on Japanese Government and Diplomacy (3, maximum 6)** Maki
Offered jointly with the Department of Political Science.
- 549J Japanese History (5)** Janson
Field course in Japanese history. Offered jointly with the Department of History. (Not offered 1955-56.)
- 550J-551J-552J Seminar in Japanese History (5-5-5)** Janson
Offered jointly with the Department of History. Prerequisite, reading knowledge of Japanese.
- 553J Analysis of Linguistic Structures (3)** Jacobs, Li
Offered jointly with the Department of Anthropology.
- 580, 581, 582 Colloquium on Russia in Asia (5,5,5)** Ballis, Erlich, Treadgold
Research problems in the impact of tsarist Russia and the Soviet Union on Asia.
- 598 Inner Asia Research Colloquium (5, maximum 15)** Carrasco, K. Chang, Li, Poppe, Staff
- 599 Colloquium on Chinese History Research (5, maximum 15)** C. L. Chang, Hsiao, Michael, Shih, Wilhelm
Research seminar on the Modern Chinese History project dealing with various aspects of Chinese society of the nineteenth and twentieth centuries. Prerequisite, permission.
- 600 Research (*)** Staff
Prerequisite, permission.
- Thesis (*)** Staff

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.

MASTER OF ARTS. The Department offers a degree of Master of Arts in language and literature, with specialization in Chinese or Russian and in Far Eastern and

Russian studies. For both majors, 45 credits are required. For the language and literature major, 20 credits must be in advanced language courses. For the major in Far Eastern and Russian studies, requirements include Far Eastern 510 and a minimum of 11 credits in seminars. A working knowledge of the Russian language is required for the Russian field. For the Far Eastern field, knowledge of a Far Eastern language is desirable but not required if the candidate presents strong specialization in a discipline. In both fields the thesis must be in addition to the 45 credits.

DOCTOR OF PHILOSOPHY. The Department offers courses leading to a Doctor of Philosophy degree in the following fields:

CHINESE LANGUAGES AND LITERATURE. Candidates for this degree must be able to read and translate literary Chinese and must know the history, phonology, and structural features of the written and spoken language. Familiarity with the history and types of Chinese literature is required; candidates must specialize in two of the following: a period of Chinese literature; a school; an author; the phonology of any period or text; the grammatical features of any period or text; historical or comparative studies; and epigraphy. All candidates must acquire a knowledge of general Chinese history and philosophy. Adequate knowledge of another Far Eastern language and at least one European language is required.

SLAVIC LANGUAGES AND LITERATURE. Candidates for this degree must be familiar with Russian literature, history, and political and social institutions, in addition to having a thorough knowledge of the Russian language. The candidate may emphasize linguistics or literature. In either case, he will be requested to do advanced work in the following: Russian literature; Russian linguistics, descriptive and historical; and comparative Slavic philology (phonetic and morphological structure of Slavic languages). All candidates must acquire a basic knowledge of a Slavic language and literature other than Russian, preferably Polish. Adequate knowledge of at least one other European language is required.

A candidate for the Ph.D. degree in the field of Slavic studies also will be expected to satisfy certain minimum requirements in one of the following cognate areas: comparative literature, general linguistics, and Russian area studies.

COURSES

CHINESE

301 Chinese Language, Intensive C (10)	K. Chang, Li
402, 403, 404 Advanced Modern Chinese (5,5,5)	Yang
405, 406, 407 Classical and Documentary Chinese (5,5,5)	Reifler
408 Chinese Reference Works and Bibliography (3) (Offered alternate years; offered 1956-57.)	Wilhelm
430 Readings in Chinese Philosophical Texts (5) Prerequisite, permission.	Shih
455, 456, 457 Chinese Literature (5,5,5) (Offered alternate years; offered 1955-56.)	Wilhelm
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 1955-56.)	Shih
529 Chinese Phonology (3)	Li
531 Studies in Chinese Poetry (5) (Offered alternate years; offered 1956-57.)	Shih, Wilhelm
532 Studies in Chinese Drama and Novel (5) (Offered alternate years; offered 1956-57.)	Shih
535 Chinese Epigraphy (3, maximum 6) Introduction to texts in ancient character forms; selected readings of inscriptions on bronzes and oracle bones.	Reifler
550 Seminar on Chinese Literature (4, maximum 8) (Not offered 1955-56.)	Shih, Wilhelm

- 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.

Thesis (*) Staff

JAPANESE

- 351, 352, 353 Reading in Japanese (5,5,5)** McKinnon
510 Morphology and Syntax of the Japanese Language (5) Tatsumi
521 Japanese Reference Works and Bibliography (3) Staff
522, 523, 524 Readings in Documentary Japanese (5,5,5) McKinnon
(Offered when demand is sufficient.) Prerequisite, permission.
525, 526 Advanced Composition in Documentary Japanese (5,5) Tatsumi
Thesis (*) Staff

KOREAN

- 302-303 Elementary Spoken Korean Language (5-5)** Lee
304 Intermediate Korean (5) Lee
402, 403, 404 Advanced Korean (5,5,5) Lee
(Offered when demand is sufficient.)
405 Korean Grammar (5) Lee
406, 407 Advanced Korean Reading (5,5) Lee

MONGOLIAN

- 302 Introduction to Mongolian (5)** Poppe
303 Classical Mongolian (5) Poppe
304 Colloquial Mongolian (5) Poppe
406 Comparative Grammar of Mongolian Languages (5) Poppe
521 Ancient Mongol: hPhagspa Script (3) Poppe
Script and grammar of hPhagspa texts; reading and translation. Prerequisite, 304.
522 Mongol: Ancient Texts (3) Poppe
Grammar and reading of Mongol texts of the fourteenth to seventeenth centuries. Historical texts are emphasized.
580 Comparative Mongol and Turkic Languages (3) Poppe
Comparative phonology and morphology of Mongol and Turkic and other related languages.

POLISH

- 401, 402 Phonetics, Grammar, and Vocabulary (5,5)** Mickleson
411 Readings in Polish (5) Mickleson

RUSSIAN

- 301 Russian Language, Intensive C (10)** Pahn
302 Russian Grammar and Composition (5) Mickleson
303 Advanced Conversation and Composition (5) Gershevsky
304 Advanced Russian Language (5, maximum 10) Gershevsky
407, 408, 409 Advanced Russian Reading (5,5,5) Shaw
410, 411 Advanced Russian Grammar and Composition (5,5) Erlich, Mickleson
455 Modern Russian Poetry (3) Erlich
(Offered alternate years; offered 1955-56.)
458 Contemporary Russian Literary Criticism (3) Erlich
(Offered alternate years; offered 1955-56.)
475 Soviet Press Translations (5) Staff
485 History of Russian Standard Language (5) Mickleson
521 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 1955-56.)
525 Russian Eighteenth-Century Literature (5) Erlich
A discussion of representative works of Russian poetry, prose, fiction, and criticism in the formative period in the history of Russian letters. (Offered alternate years; offered 1956-57.) Prerequisites, 320 and 409 or permission.

- 526 Pushkin (4)** Erlich
Analysis of the works of Alexander Pushkin. (Offered alternate years; offered 1956-57.)
- 527 Studies in Russian Prose (4)** Erlich
Close analysis of representative works of the nineteenth-century Russian prose fiction in original texts. (Offered alternate years; offered 1955-56.)
- 557 Seminar in Russian Language (3)** Erlich, Gershevsky
Examination and discussion of Russian masterpieces.
- 559 Russian Oral Epic Tradition (3)** Erlich
Introduction to Russian folklore. (Offered every three years; offered 1956-57.)
- 560 Studies in Early Russian Literature (3)** Staff
(Not offered 1955-56.)
- 590 Seminar in Russian Literary History (4)** Erlich
Close examination of selected periods or figures in Russian literature. (Offered alternate years; offered 1956-57.) Prerequisite, 10 graduate credits in Russian literature.
- Thesis (*)** Staff

SLAVIC

- 491 Introduction to Slavic Philology (3)** Mickelsen
- 522 Phonetic Structure of Slavic Languages (3)** Poppe
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 1955-56.)
- 523 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 1955-56.)
- 531 Old Church Slavonic (3)** Micklesen
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 1956-57.)
- 532 Readings in Old Church Slavonic (3)** Micklesen
Reading and grammatical interpretation of a selected group of Old Church Slavonic texts. (Offered alternate years; offered 1956-57.)

TIBETAN

- 402 Introduction to Literary Tibetan (5)** K. Chang
- 403 Reading in Tibetan Literature (5)** K. Chang
- 404 Tibetan Historical Works (5)** K. Chang, Li
- 502, 503, 504 Comparative Study of Chinese, Mongolian, Tibetan, and Sanskrit Texts (5,5,5)** K. Chang, Li, Poppe

LITERATURE COURSES IN ENGLISH

- Chinese 320 Chinese Literature in English (5)** Shih
- Japanese 320 Japanese Literature in English (5)** McKinnon
- Mongolian 320 Mongolian Literature in English (5)** Poppe
(Offered alternate years; offered 1956-57.)
- Russian 320 Russian Literature in English (5)** Spector
- Russian 321 Contemporary Russian Literature in English (5)** Spector
- Russian 322 Russian Plays in English (5)** Spector
- Russian 323 The Russian Novel in English (5)** Erlich
- Russian 424 The Russian Symbolists in English (3)** Erlich
(Offered alternate years; offered 1956-57.)
- Russian 425 Dostoevski in English (4)** Spector
Open only to majors in a language or literature.
- Slavic 320 Polish Literature in English (5)** Erlich

FISHERIES

Director: RICHARD VAN CLEVE, Fisheries Center

The School of Fisheries offers courses leading to the degrees of Master of Science and Doctor of Philosophy. All candidates for advanced degrees in fisheries must have completed essentially the same academic work as outlined in one of the undergraduate options. Candidates must complete 6 credits (three quarters) in Fisheries 520.

COURSES

401 Comparative Anatomy and Physiology of Fishes (5)	Welander
402 Phylogeny of Fishes (5)	Welander
403 Identification of Fishes (5)	Welander
405 Economically Important Mollusca (5)	Lynch
406 Economically Important Crustacea (5)	Lynch
407 Aquatic Invertebrates of Minor Economic Importance (5)	Lynch
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)	Lynch
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 Fisheries Biology (6) (Offered at Friday Harbor Summer Quarter only.)	Staff
480, 481 Introduction to Commercial Fishing Industry (4,4)	F. H. Bell
482, 483 Analysis of Fisheries Products (2,2)	Stern
484 Processing of Edible Fisheries Products (5)	Stern
485 Fish By-Products and Spoilage (5)	Stern
486 Research Problems in Fisheries Technology (5)	Stern
495 Introduction to Fisheries Literature (2, maximum 6)	Staff
501 On-the-Job Training (3, maximum 9) Guided on-the-job training in governmental or industrial fisheries organizations. Prerequisite, permission.	Staff
520 Graduate Seminar (2, maximum 6) Training in methods of searching fisheries literature.	Van Cleve
556 Age and Growth of Fishes (5) Principles of growth; methods of determining age and rates of growth in fresh-water and marine fishes. Prerequisites, 402, and Mathematics 383 or permission.	Van Cleve
557 Population Enumeration (5) Methods of enumerating animal populations; availability; dominant age groups; gear selectivity. Prerequisite, 556 or permission.	Van Cleve
558 Population Dynamics (5) Influence of natural and artificial factors on variation in abundance and yield from animal populations. Prerequisite, 557 or permission.	Van Cleve
604 Research (*, maximum 3 for M.S., 10 for Ph.D.)	Staff
Thesis (*)	Staff

GENERAL AND COMPARATIVE LITERATURE

Chairman: 119A Parrington Hall

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

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

DOCTOR OF PHILOSOPHY. This degree is offered with a major in comparative

literature. Candidates are usually concerned with problems common to English or American literature and one or more foreign literatures. They must have a reading knowledge of at least two foreign languages, ancient or modern, and must take graduate courses in at least one of these. Other requirements are: General Literature 510, 511; 40 credits in English, including English 505, 507, and 509; and 40 credits in other fields. No more than 10 credits are allowed in English courses numbered below 500.

The general examination consists of three days of written examinations, each lasting six to eight hours, and an oral examination. The written examinations are: (1) on two of three major English writers, Chaucer, Shakespeare, and Milton, and one major figure of foreign literature; (2) on a comparative problem in the field of the candidate's concentration; (3) examination by the department of the candidate's major foreign language.

The oral examination is the same as for the doctorate in English (see page 63).

COURSES

300, 301, 302 Masterpieces of European Literature (5,5,5)	Staff
350, 351 Romanticism and the Nineteenth Century in Europe (5,5)	Staff
400 European Literary Criticism since 1900 (5)	Staff
450 The Art of Translation (5)	Staff
480, 481 The Symbolist Movement (5,5)	Staff
510, 511 Studies in General and Comparative Literature (5,5)	Staff
Thesis (*)	Staff

LITERATURE COURSES IN OTHER DEPARTMENTS

CLASSICS

- 326 Greek and Roman Epic in English (3)**
- 327 Greek and Roman Drama in English (3)**
- 340 Greek and Roman Critics in English (3)**

FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE

- Chinese 320 Chinese Literature in English (5)**
- Japanese 320 Japanese Literature in English (5)**
- Mongolian 320 Mongolian Literature in English (5)**
- Russian 320 Russian Literature in English (5)**
- Russian 321 Contemporary Russian Literature in English (5)**
- Russian 322 Russian Plays in English (5)**
- Russian 323 The Russian Novel in English (5)**
- Russian 424 The Russian Symbolists in English (3)**
- Russian 425 Dostoevski in English (4)**
- Slavic 320 Polish Literature in English (5)**

GERMANIC LANGUAGES AND LITERATURE

- 350 Masterpiece 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 318, 319, 320 French Literature in English (2,2,2)**
- Italian 384 Renaissance Literature of Italy in English (2)**
- Italian 481, 482 Dante in English (2,2)**
- Romance 360 The Literature of the Renaissance in English (5)**
- Spanish 315 Spanish-American Authors in English (5)**

SCANDINAVIAN LANGUAGES AND LITERATURE

- 309, 310, 311 The Scandinavian Novel in English (2,2,2)
 380 Ibsen and His Major Plays in English (2)
 381 Strindberg and His Major Plays in English (2)
 382 Twentieth-Century Scandinavian Drama in English (2)

GEOGRAPHY

Executive Officer: G. DONALD HUDSON, 406 Smith Hall

The Department of Geography offers courses leading to the degrees of Master of Arts and Doctor of Philosophy. The Department requires all candidates for advanced degrees to enroll in Geography 499, unless essentially similar training has been previously acquired, and in Geography N500.

The Department cooperates with other departments and schools in a program leading to the degree of Master of Arts in Urban Planning (see page 157).

COURSES**SYSTEMATIC GEOGRAPHY**

- | | |
|--|----------|
| 325 Historical Geography of America (3) | Martin |
| 370 Conservation of Natural Resources (5) | Sherman |
| 374 The Extractive Industries (5) | Garrison |
| 441 Industrial Geography (3 or 5) | Marts |
| 442 Commercial Geography (3 or 5) | Garrison |
| 444 Water Resources in the Pacific Northwest (3 or 5) | Marts |
| 445, 446, 447 Problems in Physical Geography (5,5,5) | Staff |
| 448 Geography of Transportation (5) | Ullman |
| 475 Political Geography (3) | Jackson |
| 477 Urban Geography (3 or 5) | Ullman |
| 510 Seminar: Settlement and Urban Geography (3, maximum 9) | Ullman |
| 517 Seminar: Quantitative Measurement in Economic Geography (3, maximum 6) | Garrison |
| 538 Seminar: Geography of Transportation (3, maximum 6) | Ullman |
| 539 Seminar: Utilization of Water Resources (3, maximum 6) | Marts |

REGIONAL GEOGRAPHY

- | | |
|--|----------------------|
| 300 Advanced Regional Geography (5) | Hudson |
| 303 Asia (5) | Earle, Eyre, Murphey |
| 304 Europe (5) | Martin |
| 305 South America (5) | Massey |
| 309 Caribbean America (3) | Massey |
| 402 United States (5) | Martin |
| 404 Problems in the Geography of Europe (3 or 5) | Martin |
| 407 Australia and New Zealand (5) | Earle |
| 408 Canada and Alaska (3) | Staff |
| 432 Islands of the Pacific (3) | Earle |
| 433 The Soviet Union (3) | Jackson |
| 435 Southeast Asia (5) | Earle |
| 436 China (3) | Murphey |
| 437 Japan (3) | Eyre |
| 503 Seminar: Southeast Asia (3, maximum 6) | Earle |
| 504 Seminar: Japan and Northeast Asia (3, maximum 6) | Eyre |
| 505 Seminar: China and Northeast Asia (3, maximum 6) | Murphey |
| 506 Seminar: Anglo-America (3, maximum 6) | Hudson, Marts |
| 507 Seminar: Europe (3, maximum 6) | Jackson, Martin |

GEOGRAPHIC TECHNIQUES

358	Maps and Map Reading (2)	Heath, Sherman
360	Introductory Cartography (5)	Heath, Sherman
363	Aerial Photograph Interpretation (2)	Marts
425J	Graphic Techniques in the Social Sciences (5) Offered jointly with the Department of Sociology.	Schmid
426	Statistical Measurement and Inference (5)	Garrison
458	Map Intelligence (3)	Sherman
461	Intermediate Cartography (5)	Sherman
462	Advanced Cartography (5)	Sherman
464	Map Reproduction (3)	Sherman
499	Field Research (12)	Staff

GENERAL

N500	Geography as a Professional Field (0)	Staff
501	Seminar: Source Materials in Geographic Research (3)	Earle
502	Seminar: Writing and Critique (3)	Martin
551	Seminar: Recent Trends in Geographic Research (3, maximum 9)	Staff
555	Seminar: History and Theory of Geography (*, maximum 6)	Staff
600	Research (*)	Staff
	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 one of the undergraduate curricula. Examinations for both the master's and the doctor's degree will include subjects from the whole field of geology. All candidates must have an approved summer field course such as Geology 400 or other field experience which is approved by the Department. In addition, all candidates for advanced degrees must have Geology 481.

MASTER OF SCIENCE. The language requirement for this degree must be met with either French or German.

DOCTOR OF PHILOSOPHY. Candidates must present French and German for the language requirement. All Ph.D. candidates must have a M.S. or M.A. degree.

COURSES

308	Structural Geology (5)	Barksdale
310	Engineering Geology (5)	Staff
323	Optical Mineralogy (5)	Coombs, Staff
324	Petrography and Petrology (5)	Coombs
330	General Paleontology (5)	Mallory
344	Field Methods (5)	Barksdale
361	Stratigraphy (5)	Wheeler
400	Advanced or Field Work in General Geology (*) (Offered Summer Quarter only.)	Staff
412	Physiography of the United States (5)	Mackin
414	Map Interpretation (5)	Mackin
425	Petrography and Petrology (5)	Misch
426	Sedimentary Petrography (5)	Staff
427	Ore Deposits (5)	Goodspeed
429	Advanced Ore Deposits (3)	Goodspeed

432 Advanced Paleontology (5)	Mallory
436 Micropaleontology (5)	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
501 Advanced Petrography and Petrology of Igneous Rocks (*)	Goodspeed
503 Advanced Petrography and Petrology of Sedimentary Rocks (*)	Coombs
510 Advanced Work in Physiography (*, maximum 10)	Mackin
516 Glacial Geology (5)	Mackin
520 Seminar (*)	Staff
521 Metamorphic Minerals (5)	Misch
522 Regional Metamorphism and Granitization (5)	Misch
523 Static Granitization (5)	Goodspeed
530 Advanced Work in Paleontology (*)	Mallory, Wheeler
532 Stratigraphic Paleontology (3)	Wheeler
540 Advanced Studies in Structural Geology (*)	Barksdale, Misch
545 Structure of Eurasia (5)	Misch
546 Structure of the Pacific Rim (5)	Misch
550 Advanced Studies in Geophysics (*, maximum 9)	Neumann
560 Advanced Studies in Stratigraphy (*)	Mallory, Wheeler
565 Paleozoic Stratigraphy (3)	Wheeler
568 Mesozoic Stratigraphy (3)	Wheeler
570 Advanced Studies in Mineralogy, Petrography, and Petrology (*)	Coombs, Goodspeed, Misch
580 Advanced Studies in Economic Geology (*)	Coombs, Goodspeed
600 Research (*)	Staff
Thesis (*)	Staff

GERMANIC LANGUAGES AND LITERATURE

Executive Officer: CURTIS C. D. VAIL, 111 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. All candidates for advanced degrees must take German 410, 411, 412, 415, 416, 417, 500, 501, 502, 503, 552, 556, and 557 (or equivalents) as they are offered. German 518 and 519 must be taken if twentieth-century literature is used as a major field.

MASTER OF ARTS. Two programs leading to the Master of Arts degree with a major in Germanics are available.

THESIS PROGRAM. For the M.A. degree, the student must, in addition to fulfilling general requirements of the Graduate School, take a minimum of 30 credits in Germanics. If the student minors in some other department, he may elect the 30 credits in literary or in philological courses or a combination of the two. If his entire program lies within the field of Germanics, he must elect 30 credits in literary courses and 15 credits in philological courses or vice versa. In addition, the candidate 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.

NONTHESIS PROGRAM. Students who wish to proceed directly toward the doctorate may elect to take a nonthesis program for the M.A. degree. In this case, the M.A. will be awarded after a minimum of two years of graduate residence, of which one year must be at the University of Washington, and after the student has satis-

factorily passed his general examinations for the Ph.D. Students who elect this program should, on completion of the requirements stated above, notify the Department and the Graduate School of their intention.

A minor in Germanics for the M.A. degree must consist of a minimum of 15 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.

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 a contribution to the sum total of knowledge. 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 grasp of the entire field of which his subject constitutes a part. The main burden of the examination will, of course, concern itself with the fields of Germanic philology and literature. The student may, at his option, major in Germanic literature and minor in Germanic philology or vice versa; or he may major in either of these two fields or a combination of them and minor in a different field.

For a minor in Germanics, a minimum of 15 credits in the field of Germanic literature or Germanic philology or a combination of the two 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 under the thesis program.

COURSES

300	Phonetics (2) (Offered 1956-57.)	Reed
310, 311	Introduction to the Classical Period (3,3)	Sauerlander
312	Introduction to the German Novelle (3)	Sauerlander
401, 402, 403	Grammar and Composition (2,2,2)	Meyer, Rey, Vail
404	History of the German Language (5) (Offered 1955-56.)	Meyer
410, 411, 412	History of German Literature (3,3,3) (Offered 1956-57.)	Buck, Kahn, Wilkie
415, 416, 417	Nineteenth-Century Literature (3,3,3) (Offered 1955-56.)	Rey, Sauerlander, Sommerfeld
418, 419	Naturalism, Expressionism, and Twentieth-Century Realism (3,3) (Offered 1955-56.)	Rey
422	Analysis of German Poetry (3) (Offered 1956-57.)	Sommerfeld
431	Lessing's Life and Dramatic Works (3) (Offered 1956-57.)	Vail
433	Goethe: The Early Years (3) (Offered 1957-58.)	Vail
434	Goethe: Life and Works, 1775-88 (3) (Offered 1957-58.)	Buck
436	Goethe's Faust I (3) (Offered 1956-57.)	Sommerfeld
437	Goethe's Faust II (3) (Offered 1956-57.)	Vail
438	Schiller's Historical Dramas (3) (Offered 1955-56.)	Vail
450J	Introduction to General Linguistics (5) Offered jointly with the Department of Anthropology.	Jacobs, Reed
497	Studies in German Literature (1-5)	Staff
498	Studies in the German Language (1-5)	Staff
COURSES IN ENGLISH		
350	Masterpieces of German Literature in English (3)	Sommerfeld
351	Contemporary German Literature in English (3)	Rey

462	Goethe in English (3)	Sauerlander
464	Thomas Mann in English (3)	Rey
LITERATURE COURSES		
500	Bibliography and Methodology (2) (Offered 1955-56.)	Wilkie
510	Literature of the Middle Ages (5) (Offered 1956-57.)	Buck
511	Reformation and Renaissance (3) (Offered 1956-57.)	Wilkie
512	Baroque (3) (Offered 1956-57.)	Wilkie
513	Eighteenth-Century Movements (3) (Offered 1956-57.)	Kahn
515	The Romantic Movement (4) (Offered 1955-56.)	Sommerfeld
516	The Drama of the Nineteenth Century (4) (Offered 1955-56.)	Sauerlander
517	The Literature of the Later Nineteenth Century (4) (Offered 1955-56.)	Rey
518, 519	The Literature of the Twentieth Century (3,3) (Offered 1955-56.)	Rey
531	Lessing (3) (Offered 1956-57.)	Vail
534	Goethe: Life and Works, 1775-88 (4) (Offered 1957-58.)	Buck
535	Goethe: Life and Works, 1788-1832 (4) (Offered 1957-58.)	Sommerfeld
538	Schiller (4) (Offered 1955-56.)	Vail
590, 591, 592	Seminar in Literary History (1-5,1-5,1-5)	Staff
600	Research (*)	Staff
	Thesis (*)	Staff
PHILOLOGY COURSES		
501, 502, 503	Advanced Syntax and Synonymy (2,2,2)	Staff
505	Introduction to Linguistics (3) (Offered 1956-57.)	Reed
550	Gothic (5) (Offered 1955-56.)	Meyer
552	Old High German (5) (Offered 1955-56.)	Reed
555	Old Saxon (5) (Offered 1956-57.)	Reed
556	Middle High German (5) (Offered 1956-57.)	Meyer
557	Middle High German Literature in the Original (5) (Offered 1956-57.)	Reed
560	Modern Dialects (3) (Offered 1957-58.)	Reed
570	Sanskrit (3-5) (Offered 1955-56.)	Reed
595, 596, 597	Seminar in Germanic Philology (1-5,1-5,1-5)	Staff
600	Research (*)	Staff
	Thesis (*)	Staff

HISTORY

Executive Officer: SOLOMON KATZ, 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, English history, and British Empire history; the subject within the third division is American history; subjects within a fourth division, Far Eastern history, may be selected by arrangement with the Department of History.

MASTER OF ARTS. At least 40 credits in history courses numbered 500 or above are required. The candidate must complete History 501 and 502, one seminar, and graduate courses in three fields selected for special study. The candidate should select one field from a subject in each of three divisions of history.

Students majoring in Far Eastern history must meet the same requirements, except that they may take either 501 or 502, and are examined in only two fields of special study within the first three divisions named above. The rest of the program is arranged in cooperation with the Far Eastern and Russian Institute.

The prerequisite for a minor in history for the master's degree is an undergraduate program in history, or such preparation as the Department deems satisfactory. For this minor 15 credits in history are required, of which 10 must be in one historical subject and 5 in History 501 or 502.

DOCTOR OF PHILOSOPHY. Candidates must complete History 501, 502, and at least two years of seminar work, participate in the work of the advanced seminar, and take at least one graduate course in each of four fields selected for special study. In addition, they are expected to complete a minor in another department.

Students majoring in Far Eastern history are expected to take History 501 and 502, to complete one year of seminar work, and to prepare for examinations in two fields of special study within the first three divisions named above. A Far Eastern language or Russian may be substituted for either French or German. The remainder of the program is arranged in cooperation with the Far Eastern and Russian Institute.

A history minor for the doctor's degree requires History 501, 502, and either a seminar or three fields selected from subjects in at least two of the first three divisions of history named above.

COURSES

401	Greece in the Age of Pericles (3) (Not offered 1955-57.)	Katz
402	Alexander the Great and the Hellenistic Age (5) (Offered every four years; offered 1955-56.)	Katz
403	The Roman Republic (3) (Offered every four years; offered 1956-57.)	Katz
404	The Roman Empire (3) (Not offered 1955-57.)	Katz
410	The Byzantine Empire (3)	Katz
411	Medieval Civilization (5) (Offered every three years; offered 1956-57.)	Lucas
412	Medieval Civilization (5) (Offered every three years; offered 1957-58.)	Lucas
413	Medieval Civilization (5) (Offered every three years; offered 1955-56.)	Lucas
414	Culture of the Renaissance (5)	Lucas
415	The Reformation (5)	Lucas
422J	Early Russian History (5) Offered jointly with the Far Eastern and Russian Institute.	Treadgold
423J	Recent Russian History (5) Offered jointly with the Far Eastern and Russian Institute.	Treadgold

424J Russian Revolutionary Movement (3)	Treadgold
Offered jointly with the Far Eastern and Russian Institute.	
429 France from the Reformation to the French Revolution (5)	Lytle
(Offered alternate years; offered 1956-57.)	
430 The French Revolution and Napoleonic Era, 1789-1815 (5)	Lytle
431 Europe, 1814-70 (5)	Emerson, Lytle
432 Europe, 1870-1914 (5)	Emerson
433 Europe, 1914-45 (5)	Emerson
436 Germany, 1648-1914 (5)	Emerson
(Offered alternate years; offered 1956-57.)	
437 Germany, 1914-45 (5)	Emerson
(Offered alternate years; offered 1955-56.)	
441 American Revolution and Confederation (5)	Saville
(Offered every four years; offered 1956-57.)	
442 The Colonial Mind (5)	Saville
(Offered every four years; offered 1958-59.)	
443 The Intellectual History of the United States (5)	Saville
(Offered every four years; offered 1957-58.)	
447 History of the Civil War and Reconstruction (5)	Pressly
450 Twentieth-Century America (5)	Pressly
Not open to students who have taken 343.	
451J History of Chinese-Japanese Relations (3)	Jansen
Offered jointly with the Far Eastern and Russian Institute.	
452J Early Japanese History (5)	Jansen
Offered jointly with the Far Eastern and Russian Institute.	
453J Tokugawa Period (5)	Jansen
Offered jointly with the Far Eastern and Russian Institute.	
454J Modern Japanese History (5)	Jansen
Offered jointly with the Far Eastern and Russian Institute.	
457 The Diplomatic History of North America, 1492-1763 (5)	Saville
(Offered every four years; offered 1955-56.)	
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)	Pressly
463 The Westward Movement (5)	Gates
464 History of Washington and the Pacific Northwest (5)	Gates
470 England in the Seventeenth Century (5)	Roberts
(Offered 1955-56.)	
471 England in the Eighteenth Century (5)	Costigan
(Not offered 1955-56.)	
472 England in the Nineteenth Century (5)	Costigan
(Offered 1955-56.)	
473 England in the Twentieth Century (5)	Costigan
(Offered 1955-56.)	
474 Modern Irish History (5)	Costigan
(Offered 1955-56.)	
475 History of Canada (5)	Dobie
480 History of the British Empire since 1783 (5)	Dobie
(Offered alternate years; offered 1955-56.)	
481 History of the Commonwealth of Nations (5)	Dobie
(Offered alternate years; offered 1956-57.)	
501 Historiography: Ancient, Medieval, and Early Modern European (5)	Katz, Staff
502 Historiography: Modern European and American (5)	Holt, Staff
600 Research (*)	Staff
Thesis (*)	Staff

COURSES IN FIELDS OF SPECIALIZATION

These courses are introductions to advanced study. They are designed to show how important historical conclusions have been reached, to suggest further research, and particularly to give bibliographical guidance to students in their preparation for the examination in the fields selected.

510 Greek and Roman History (5)	Katz
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514 Medieval and Renaissance History (5)	Lucas
532 Modern European History: Germany (5)	Emerson
533 Modern European History: France (5)	Lytle
534J Modern European History: Russia (5) Offered jointly with the Far Eastern and Russian Institute.	Treadgold
541 American History (5)	Saville
542 American History (5)	Gates
543 American History (5)	Holt
544 American History (5)	Pressly
549J Japanese History (5) Offered jointly with the Far Eastern and Russian Institute. (Not offered 1955-56.)	Jansen
575 English History (5)	Costigan
576 British Empire History (5)	Dobie
SEMINARS	
503-504 Philosophy of History (5-5) (Offered alternate years; offered 1956-57.)	Costigan
517-518-519 Ancient or Medieval History (5-5-5)	Lucas
521-522-523 Modern European History (5-5-5)	Emerson, Lytle
535J-536J-537J Russian History (5-5-5) Offered jointly with the Far Eastern and Russian Institute. Prerequisites, reading knowledge of Russian and permission.	Treadgold
550J-551J-552J Seminar in Japanese History (5-5-5) Offered jointly with the Far Eastern and Russian Institute. Prerequisite, reading knowledge of Japanese.	Jansen
553-554-555 American History (5-5-5)	Gates, Saville
590-591-592 Seminar in History (5-5-5)	Staff
593-594-595 Advanced Seminar (5-5-5)	Holt

HOME ECONOMICS

Director: JENNIE I. ROWNTREE, 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.

MASTER OF ARTS OR MASTER OF SCIENCE. The Master of Arts is attained by work in textiles and clothing, the Master of Science, by work in foods and nutrition. Study in either area may be combined with home economics education or family economics. A minor in a field related to home economics is required.

MASTER OF ARTS IN HOME ECONOMICS OR MASTER OF SCIENCE IN HOME ECONOMICS. There is no foreign language requirement for these degrees. Candidates may take all their work in home economics or may take up to 12 credits in related fields, such as art, economics, education 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

307 Nutrition (3 or 5)	Johnson, Rowntree
315 Advanced Food Selection and Preparation (2 or 5)	Dresslar
316 Demonstration Cookery (3)	Dresslar

321 Needlecraft (2)	Payne
322 Needlecraft (2)	Payne
329 Hand Weaving (2)	Brockway
334 Costume Design and Construction (3)	Payne, Wybourn
338 Clothing for the Family (3)	Wybourn
354 Family Economics and Finances (5)	Turnbull
407 Advanced Nutrition (3)	Johnson
408 Diet Therapy (3)	Johnson
415 Experimental Cookery (3)	Dresslar
425 Advanced Textiles (3)	Brockway
426 Historic Textiles (3)	Brockway, Hosmer
433 History of Costume (5)	Payne
434 Costume Design and Construction (3)	Payne, Wybourn
435 Advanced Costume Design and Construction (5)	Payne
436 Advanced Costume Design and Construction (5)	Payne
447 Advanced Home Furnishing (3)	Hosmer
454 Advanced Family Economics and Finances (2)	Turnbull
457 Child Nutrition and Care (3)	Deisher, Rowntree
472 Institution Food Purchasing (3)	Terrell
473 Institution Management (3)	Terrell
474 Institution Management (5)	Parks
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, Rowntree
515 Readings in Food Selection and Preparation (*) Professional literature on recent developments. Prerequisite, 315 or equivalent.	Dresslar
554 Social and Economic Problems of the Consumer (3-5) Selected topics in the family economics field. Prerequisites, 454 or equivalent or permission.	Turnbull
562 Home Economics Education (*) Study of achievements, trends, functions, methods, and teaching materials.	McAdams
576, 577, 578, 579 Supervised Field Work (4,4,4,4) Twelve months 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).	Terrell
600 Research (*)	Staff
A. Costume design	Payne
B. Institution administration	Terrell
C. Nutrition	Johnson
D. Textiles	Brockway
E. Family economics	Turnbull
F. Foods	Dresslar
G. Home economics education	McAdams
Thesis (*)	Staff

LINGUISTICS

Committee: M. JACOBS, Anthropology; F.-K. LI, N. POPPE, Far Eastern;
C. E. REED, Germanics

Linguistics is an interdepartmental program for graduate students only. The usual prerequisites for admission to study in this program are formal approval by the Linguistics Committee, and the equivalent of 45 quarter credits in undergraduate language courses other than English.

MASTER OF ARTS. Requirements include Anthropology 450J, 451 or 551, 553J, and other approved language courses; and a reading knowledge of both German and French.

DOCTOR OF PHILOSOPHY. Requirements include those listed for the master's degree; a strong supporting minor and breadth of background beyond narrowly

linguistic matters; and independent, original research with a living informant or informants.

Further information about linguistics study may be obtained from the Graduate School or from a member of the Linguistics Committee.

MATHEMATICS

Executive Officer: C. B. ALLENDOERFER, 243 Physics Hall

The Department of Mathematics offers courses leading to the degrees of Master of Arts, 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.

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, with at least 9 credits in courses numbered 500 or above, is prescribed. These courses must include at least 6 credits in each of three of the four categories: algebra, analysis, geometry, and statistics. The thesis for this degree, while demonstrating ability and aptitude, may be largely expository.

MASTER OF SCIENCE. A minimum of 27 approved credits, with at least 18 credits in courses numbered 500 or above, is prescribed. These courses must include at least 6 credits in each of three of the four categories: algebra, analysis, geometry, and statistics. The thesis should demonstrate the student's ability to engage in independent research.

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 mathematical statistics through Chi-Tests or the equivalent. The candidate must present a minimum of 27 approved credits in mathematics. This work may include, on approval, some courses in mathematical statistics needed to make up deficiencies in undergraduate preparation and must include 15 credits in mathematical statistics courses numbered 500 or above.

DOCTOR OF PHILOSOPHY. The general examination of a candidate for this degree covers (1) the subject matter usually covered in first-year graduate courses in algebra, real and complex variable, set theory and set topology, and one other field 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

382, 383	Statistical Inference in Applied Research (5,5)	Staff
401	Linear Algebra (5)	Staff
402, 403	Introduction to Modern Algebra (3,3)	Staff
421, 422	Differential Equations (3,3)	Staff
423	Advanced Calculus and Vector Analysis (3)	Staff
424, 425, 426	Higher Calculus (3,3,3)	Staff
427, 428, 429	Topics in Applied Analysis (3,3,3)	Staff
431	Applications of Vector Analysis (2½)	Staff
(Offered Summer Quarter only.)		

441	Foundations of Geometry (3)	Staff
442	Advanced Analytic Geometry (3)	Staff
443	Differential Geometry (3)	Staff
444	Advanced Euclidean Geometry (5) (Offered Summer Quarter only.)	Staff
445	Non-Euclidean Geometry (2½) (Offered Summer Quarter only.)	Staff
451, 452	Elementary Topology (3,3)	Staff
462, 463	Interpolation and Approximation (3,3) (Offered alternate years; offered 1956-57.)	Staff
465, 466	Methods of Applied Mathematics (3,3) (Offered alternate years; offered 1955-56.)	Staff
481	Calculus of Probabilities (5)	Staff
482	Classical Methods of Statistical Inference (5)	Staff
483	Theory of Correlation (5)	Staff
484	Chi-Tests (5)	Staff
497	Seminar in Mathematics (2-5) (Offered when demand is sufficient.)	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. Prerequisite, 403 or equivalent.	Staff
510	Seminar in Algebra (*, maximum 5)	Staff
511, 512, 513	Special Topics in Algebra (3,3,3) Each may be repeated twice for credit.	Staff
521, 522, 523	Set Topology (3,3,3) Theory of sets; ordinal and cardinal numbers; real numbers; topological spaces; compact spaces; metric spaces; product spaces; extension theorems; convergence; other topics in set topology; selected topics in topological groups. Prerequisite, 426 or equivalent.	Staff
524, 525, 526	Real and Complex Variable (3,3,3) Lebesgue and Lebesgue-Stieltjes measure and integration on the line and in n-space; derivatives; functions of finite variation; absolutely continuous functions; Fourier series; examples of Banach spaces; analytic functions of a complex variable; Cauchy's theorem; power series expansions; contour integration; analytic continuation. Prerequisites or corequisites, 521 for 524, 522 and 524 for 525, 521 and 522 for 526.	Staff
527, 528, 529	Methods of Mathematical Physics (5,5,5) Real and complex functions. Fourier analysis, Fuchsian differential equations, linear algebra, and eigenvalue theory. Special functions, second-order linear partial differential equations, and approximate solutions of Schrödinger equation. Prerequisite, 426 or 429 or equivalent.	Staff
530	Seminar in Analysis (*, maximum 5)	Staff
531, 532, 533	Special Topics in Analysis (3,3,3) Each may be repeated twice for credit.	Staff
541, 542, 543	Algebraic Topology (3,3,3) 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. (Offered alternate years; offered 1956-57.)	Staff
544, 545, 546	Differential Geometry (3,3,3) Differential geometry and curves and surfaces in ordinary space and in n-space. Riemannian geometry. (Offered alternate years; offered 1955-56.)	Staff
547, 548, 549	Algebraic Geometry (3,3,3) Topics in theory of algebraic curves in the plane and in space; quadratic transformations. (Offered when demand is sufficient.)	Staff
550	Seminar in Geometry (*, maximum 5)	Staff
551, 552, 553	Special Topics in Geometry (3,3,3) Each may be repeated twice for credit.	Staff
581, 582, 583	General Theory of Statistical Estimation and Testing Hypotheses (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, 483 and 484.	Staff
590	Seminar in Probability and Statistics (*, maximum 5) Reports by students and staff on contemporary research.	Staff
591, 592, 593	Special Topics in Statistics (3,3,3) Topics may be selected from the following: multivariate analysis, advanced probability, modern theory of estimation, time series, stochastic processes, sequential analysis, decision theory, and discriminatory analysis. Each may be repeated twice for credit.	Staff

600 Research (*)
Prerequisite, permission.

Staff

Thesis (*)

Staff

Mathematics courses offered through the University of Washington at the Graduate School of Nuclear Engineering, Richland, Washington.

R437 Advanced Mathematics for Science and Engineering Students (5)

R438 Advanced Calculus (5)

R439 Functions of a Complex Variable (5)

R440 Differential Equations (5)

R460 Vector Analysis (5)

R481 Calculus of Probabilities (5)

R482 Classical Methods of Statistical Inference (5)

R491 Mathematical Statistics I (5)

R492 Mathematical Statistics II (5)

METEOROLOGY AND CLIMATOLOGY

Executive Officer: PHIL E. CHURCH, 201F Meteorology Building

The Department of Meteorology and Climatology offers courses leading to the degrees of Master of Science and Doctor of Philosophy. The candidate's minimum preparation before embarking on a program leading to an advanced degree must include the equivalent of an undergraduate major in a physical science.

MASTER OF SCIENCE. The minimum course requirements are: 15 credits in lecture or laboratory courses in this Department numbered above 500, including 541, 542, and 546; in addition, 2 credits in a seminar must be earned. Supporting courses must include Physics 320 (Introduction to Modern Physics for Engineers) or equivalent and Mathematics 421 (Differential Equations) (unless these courses were satisfactorily completed as an undergraduate). At least one course in applied mathematics must be taken.

Also required is a thesis which must be directed toward the solution of a problem of substantial importance and must demonstrate the candidate's ability to do independent research.

DOCTOR OF PHILOSOPHY. The minimum requirements are: 96 credits exclusive of research and thesis. Normally a student must complete a minimum of 12 credits in mathematics courses numbered 400 or above and 9 credits in physics courses numbered 400 or above beyond that required for entrance as a graduate student in the Department.

Admission to candidacy for the Ph.D. degree is granted on the basis of capability in general meteorology and climatology, theoretical meteorology and climatology, atmospheric analysis, and mathematical methods as demonstrated in written and oral examinations, and on comprehension of the fundamentals of physics and the important principles and concepts of meteorology.

COURSES

321 Physical Climatology (5)	Church
322 Regional Climatology (5)	Church
329 Microclimatology (3)	Church
340, 341 Physical Meteorology (5,5)	Fleagle
350 Meteorological Laboratory (5)	Reed
360 Meteorological Instruments and Observations (5)	Badgley
414, 415 Synoptic Meteorology (5,5)	Reed
442 Introduction to Atmospheric Motions (5)	Fleagle
445 Atmospheric Thermodynamics (3)	Badgley
451, 452 Meteorological Laboratory (5,5)	Reed

- 462 Oceanographic Meteorology (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**
- 520 Seminar (2-5)** **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.
- 523 Theoretical Climatology (3)** **Staff**
Theory of the general circulation of the atmosphere, energy transfer by the various processes, and variations of temperature with time and change of latitude. Prerequisite, 442 or permission.
- 528 Applied Meteorology and Climatology (3)** **Buotner**
Interrelationship of meteorology and climatology to: human heat balance, aviation medicine, air pollution, agriculture, forestry, transportation, etc. Prerequisites, 322 and 341 or permission.
- 531 The Upper Atmosphere (3)** **Staff**
Structure, composition, and dominant physical processes of the upper atmosphere; photochemical process. Upper atmospheric phenomena—sound propagation, auroral and night sky radiation, ionosphere, electrical currents, and magnetic variations. Role of the sun. Prerequisites, Physics 322 and Mathematics 422.
- 532 Atmospheric Electricity (3)** **Staff**
Separation of charge in precipitation; lightning and the electrostatic field; formation and recombination of ions; Maxwell's equations; paths followed by charged particles. Prerequisites, 531, Mathematics 422, or permission.
- 541, 542 Dynamic Meteorology (3,3)** **Fleagle**
541: basic equations of dynamic meteorology. Elements of complex variable; vector analysis; Eulerian equation in rotating coordinates; hydrodynamic equations; circulation and potential vorticity theorems; barotropic and baroclinic atmospheres. 542: applications of hydrodynamic equations. Unaccelerated flow and steady state; particle dynamics applied to large-scale air motion and to stability criteria; divergenceless waves in barotropic atmosphere, numerical forecasting equations. Prerequisites, 541 and Mathematics 421.
- 543, 544 Atmospheric Wave Theory (3,3)** **Fleagle**
543: perturbation equations of motion in Eulerian and Lagrangian form; wave motions in incompressible fluid; wave motions in compressible fluid; Norwegian theory of cyclone formation. Prerequisites, 442, Mathematics 422, or permission. 544: theory of long waves in compressible baroclinic atmosphere; dispersion of waves; instability of large-scale motions; Legendre polynomials; wave motion on sphere; atmospheric tides. Prerequisite, 543.
- 546, 547 Atmospheric Turbulence (3,3)** **Badgley**
546: distinction between laminar and turbulent flow; analogy between kinetic theory of gases and turbulence theory; Reynolds method of averaging; mean and eddy motion; mixing-length theory; wind profiles in the lower atmosphere. Prerequisite, 442 or permission. 547: recent "statistical" theories of turbulence applied to the atmosphere. Diffusion of heat and matter in the atmosphere. Prerequisite, 546.
- 551 Special Methods of Atmospheric Analysis (5, maximum 10)** **Reed**
Preparation of data and the techniques required for selected advanced nonroutine types of analysis. Analysis of special synoptic situations. Prerequisite, 452 or permission.
- 560 Theory of Meteorological Instruments (3)** **Staff**
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.
- 571 Seminar on Atmospheric Radiation (3)** **Staff**
Study and critical discussion of a selected reading list devoted to radiation theory, spectra of water vapor and carbon dioxide; actinometric observations and the effects of radiation on other phenomena. Critical review of each topic is required. Prerequisites, Physics 322 and Mathematics 422.
- 572 Seminar on Polar Meteorology (3)** **Staff**
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)** **Staff**
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 (*)
Thesis (*)

Staff
Staff

MUSIC

Director: STANLEY CHAPPLE, 104 Music Building

The School of Music offers courses leading to the degrees of Master of Arts in Music and Doctor of Philosophy.

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. Information leaflets, "Graduate Studies," may be obtained from the School of Music showing undergraduate prerequisites and sample graduate programs for each of the majors offered. Musicology is the only major which requires a reading knowledge of either French or German.

DOCTOR OF PHILOSOPHY. Candidates must have a broad knowledge of music literature and music theory and a reading knowledge of French and German. A minimum of 90 credits is required, of which 20 to 30 will normally represent a minor or supporting courses in other departments such as languages and literature, history, philosophy, psychology, or anthropology. The candidate may concentrate in musicology (18 credits required from Music 547, 568, 569, 577, 578, 579) or in theory and composition (18 credits required in Music 591). All candidates must complete 18 credits in Music 507, 508, 509 and such supplementary work in music history, theory, performance, conducting, or music education as may be determined by the supervisory committee in considering the individual program.

COURSES

301 Contemporary Idioms (3)	McKay
304 Choral Literature (1)	Hall, Terry
307, 308, 309 Music History and Literature (3,3,3)	Terry, Woodcock
317 Music Appreciation: Chamber Music (2)	Heinitz
321 Modal Counterpoint (3)	Staff
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 Accompanying (3,3)	Woodcock
337, 338, 339 Repertoire (2,2,2)	Staff
344, 345 Elementary, Junior High School Music (4,2)	Hall, Sorensen
346J Teachers' Course in Secondary School Music (3)	Normann, Sorensen
Two credits count as education and 1 as music. Offered jointly with the College of Education.	
347, 348 Music in the Americas (3,3)	Kinsella
350 Vocal or Instrumental Instruction (2-3, maximum 18)	Staff
352 Musical Form (3)	Woodcock
353 Orchestration (3)	Verrall
354 Band Arranging (2)	Welke
355 Music Calligraphy (1)	Verrall
357 Church Music (3)	Staff
360 University Symphony Orchestra (1, maximum 6)	Chapple
377, 378, 379 Score Reading (2,2,2)	Irvine

380	Advanced Chamber Music (1, maximum 6)	Staff
384, 385, 386	Conducting (1,2,1)	Kirchner, Munro, Welke
401	Contemporary Idioms (3)	McKay
407, 408, 409	Music History and Literature (3,3,3)	Irvine, McKay
417	Music of the Middle Ages (3)	Irvine
421	Modal Counterpoint (3)	Staff
422	Tonal Counterpoint (3)	Verrall
428	Beethoven (3)	Woodcock
430	Vocal or Instrumental Instruction (2-3, maximum 18)	Staff
434, 435, 436	Piano Teaching (2,2,2)	Woodcock
437	Rococo and Preclassic Music (3)	Terry
440	Wind Sinfonietta (1) (Offered Summer Quarter only.)	Welke
447	Schumann (3)	Woodcock
450	Vocal or Instrumental Instruction (2-3, maximum 18)	Staff
452	Musical Form (3)	Woodcock
453	Orchestration (3)	Verrall
460	Sinfonietta (1, maximum 9)	Chapple
464, 465	Opera Direction and Production (4,4)	Rosinbum
467	History of Keyboard Music (3)	Kinscella
474	The Curriculum in Music Education (3)	Sorensen
480	Opera Theatre (2, maximum 6)	Chapple, Rosinbum
481	Advanced Studies in Musical Analysis (3) (Offered Summer Quarter only.)	Boale
484, 485, 486	Orchestral Conducting (2,1,1)	Chapple, Munro
487, 488	History of Opera (3,3)	Irvine, Munro
490	Colloquium Musicum (1-2, maximum 6)	Heinitz
491	Composer's Laboratory (3, maximum 18)	McKay, Verrall
495	Choral Conducting (3)	Munro
497, 498	History of Choral Music (3,3)	Munro, Wilson
507	Seminar in Renaissance and Baroque Music (3, maximum 6) Prerequisite, one or more undergraduate courses in the same field.	Munro
508	Seminar in Classic and Romantic Music (3, maximum 6) Prerequisite, one or more undergraduate courses in the same field.	Woodcock
509	Seminar in Modern Music (3, maximum 6) Prerequisite, one or more undergraduate courses in the same field.	Irvine
514	Psychological Foundations of Music (3) The nature of musical effects, evaluation of attitudes and achievement, prognosis of musical talent, musical learning, and factors related to musical performance.	Normann
524, 525, 526	Seminar in Music Education (3,3,3) Special problems in the teaching and supervision of music in the elementary grades, junior and senior high school, and junior college. Prerequisite, one year of teaching experience.	Normann, Sorensen
547	Seminar in American Music (3, maximum 6) History and literature of music in the United States from 1600 to the present.	Kinscella
550	Vocal or Instrumental Instruction (3, maximum 12) Fee, \$37.50. Prerequisite, 30 credits in the same branch of performance.	Staff
561	Problems in Choral and Orchestral Scoring (2-5) Special techniques of choral, orchestral, and dramatic composition. Original composition and research with emphasis on the evolution of ensemble types and forms.	Verrall
566	Advanced Opera Direction and Production (4 or 6, maximum 12) Practical experience with problems of the opera theatre.	Rosinbum
568, 569	Historiography and Criticism (3,3) 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.	Irvine
577, 578	Seminar in Theory and Notation (3,3) Readings in theory and problems in notation. 577: middle ages to 1450; 578: renaissance through preclassic.	Irvine
579	Seminar in Musicology (3, maximum 6) Selected topics in music history, literature, and theory. Prerequisite, permission.	Irvine

584, 585, 586 Advanced Conducting (3,3,3)	Chapple
Rehearsal and preparation of musical groups for public performance.	
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, Vorrall
600 Research (*)	Staff
Prerequisite, permission.	
Thesis (*)	Staff

OCEANOGRAPHY

Executive Officer: RICHARD H. FLEMING, 202 Oceanographic Laboratories

The Department of Oceanography 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 oceanography or in one of the physical or biological sciences. For those without an undergraduate major in oceanography, a broad training in the exact and natural sciences is desirable. Students who have not majored in oceanography will be accepted only if their qualifications meet those of the department responsible for the field of their undergraduate major.

Specialization is in either physical, chemical, geological, or biological oceanography. Students will be expected to attain a general knowledge of oceanography in addition to their specialty.

German, Russian, and French are the most valuable foreign languages in the study of oceanography.

Instruction and training during the Autumn, Winter, and Spring Quarters are given in the Department of Oceanography on the campus. Summer Quarter instruction is conducted only at the Friday Harbor Laboratories in the San Juan Islands. In many courses, work at sea is performed on board the M.V. "Brown Bear" and other vessels which are attached to the Laboratories.

COURSES

390 General Oceanography (5)	Fleming
401 Physical Oceanography (5)	Barnes
403 Biological Oceanography (5)	Frolander
405 Geological Oceanography (5)	Gould
410 General Physical Oceanography (3)	Barnes
411 Ocean Tides and Waves (3)	Rattray
412 Ocean Currents (3)	Barnes
421-422 Chemical Oceanography (3-3)	Thompson
431 Biological Oceanography of the Plankton (4)	Frolander
433 Plankton Ecology (6)	Frolander
(Offered Summer Quarter only; offered alternate years starting 1955.)	
452 Sedimentary Processes (3)	Gould
453 Sedimentary Techniques (2)	Gould
511, 512, 513 Marine Hydrodynamics (3,3,3)	Rattray
Methods for solving problems in physical oceanography. Prerequisite, a major in a physical science or permission.	
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 or permission.	
515 Waves (2)	Rattray
Application of marine hydrodynamics principles to the wave motion in the oceans. Prerequisites, 511, 512, and 513, or equivalent.	
516 Underwater Sound (2)	Rattray
Application of marine hydrodynamics principles to sound transmission in the oceans. Prerequisites, 511, 512, and 513, or equivalent.	

- 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. Prerequisites, 411, 412, 440, 441, 442, 511, 512, and 513, or permission.
- 518 Seminar in Physical Oceanography (3, maximum 9)** Staff
Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisites, 410, 411, and 412.
- 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 (3, maximum 9)** Thompson
Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisite, 421-422.
- 531 Seminar in Biological Oceanography (3, maximum 9)** Frolander
Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisites, 403 and 431.
- 532 Marine Microbiology (1-4)** Ordal
Ecology and biochemistry of marine bacteria. Prerequisites, Microbiology 300 and permission.
- 551 Seminar in Geological Oceanography (3, maximum 9)** Gould
Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisites, 452 and 453.
- 561 Applications of Oceanography (3)** Fleming
Analysis of special cases involving the applications of oceanography to military, engineering, and industrial problems. Prerequisite, a physical or biological science major or permission.
- 600 Research (*)** Staff
Thesis (*) Staff

PHILOSOPHY

Executive Officer: ARTHUR MURPHY, 264 Savery Hall

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

COURSES

- 320 History of Ancient and Medieval Philosophy (5)** Ellington
- 321 History of Modern Philosophy (5)** Miller
- 322 History of Recent Philosophy (5)** Murphy
- 324 American Philosophy (5)** Murphy
(Offered 1956-57.)
- 347 Philosophy in Literature (5)** Staff
- 428 Chinese Philosophy (5)** Shih
- 431 Philosophy of Plato (3)** Ellington
(Offered alternate years; offered 1956-57.)
- 433 Philosophy of Aristotle (3)** Ellington
(Offered alternate years; offered 1955-56.)
- 436 British Empiricism (3)** Melden
(Not offered 1955-56.)
- 437 Philosophy of Hume (3)** Melden
(Not offered 1955-56.)
- 438 Philosophy of Kant (3)** Smullyan
(Offered alternate years; offered 1955-56.)
- 440 Advanced Ethics (3)** Melden
(Not offered 1955-56.)
- 445 Philosophy of Art (3)** Rader
- 448 Philosophy in Nineteenth-Century Literature (5)** Rader
(Not offered 1955-56.)
- 450 Epistemology (3)** Smullyan
- 453 Semantics (5)** Miller
(Not offered 1955-56.)

456	Metaphysics (5)	Murphy
460	Introduction to the Philosophy of Science (5) (Offered alternate years; offered 1955-56.)	Smullyan
463	Philosophy of Mind (5)	Melden
465	Philosophy of History (5)	Rader
467	Philosophy of Religion (5)	Dietrichson
470, 471	Advanced Logic (5,5) (Offered alternate years; offered 1956-57.)	Smullyan
484	Reading in Philosophy (1-4, maximum 12)	Staff
490	Philosophy of Leibniz (3) (Not offered 1955-57.)	Melden
520	Seminar in Ancient Philosophy (2)	Ellington
521	Seminar in Modern Philosophy (2) Topic for 1955: Locke.	Murphy
522	Seminar in Recent Philosophy (2) Topic for 1956: Whitehead.	Murphy
540	Seminar in Ethics (2) (Not offered 1955-56.)	Melden
545	Seminar in Philosophy of Art (2) (Offered 1956-57.)	Rader
550	Seminar in Epistemology (2)	Smullyan
556	Seminar in Metaphysics (2) (Offered 1955-56.)	Dietrichson
565	Seminar in Philosophy of History (2) Topic for 1956: Hegel and his influence.	Rader
567	Seminar in Philosophy of Religion (2) (Not offered 1955-56.)	Dietrichson
570	Seminar in Logic (2) (Offered alternate years; offered 1955-56.)	Smullyan
584	Reading in Philosophy (1-4) Intensive reading in the philosophical literature. Prerequisite, permission of Executive Officer.	Staff
587	Contemporary Analytic Philosophy (3) (Offered 1955-56.)	Melden
600	Research (1-6) Prerequisite, permission.	Staff
	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.

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.

A total of not less than 45 credits for women, 41 for men, including thesis, must be presented.

A minimum of 6 credits for women, 5 for men, shall 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 COURSES

- | | |
|--|----------------------------------|
| 318 Analysis of Rhythm (Women) (3) | de Vries, Wilson |
| 322 Kinesiology (Men and Women) (3) | Cutler |
| 340 Administration of Intramural Sports (Men and Women) (3) | Stevens, Staff |
| 344 Organization and Administration of Camp Programs (Men and Women) (3) | Kunde, Staff |
| 345 Principles of Physical Education (Men and Women) (3) | Torney |
| 355 Dance Composition (Women) (2) | de Vries |
| 426 Field Work in Recreation (Women) (5) | Kidwell |
| 435 Adapted Activities (Men and Women) (3) | Cutler, Waters |
| 447 Tests and Measurements (Men and Women) (3) | Cutler |
| 450 The School Physical Education Program (Men and Women) (men, 3; women, 2) | Peek, Wilson |
| 453 Methods and Materials in Health Teaching (Men and Women) (3) | Waters |
| 459-460 Dance Production (Women) (2-2) | de Vries |
| 465 The School Health Education Program (Men and Women) (3) | Mills, Reeves |
| N466 Coaching (Women) (0) | Fox, Staff |
| 480 Principles of Movement (Women) (3) | Broer |
| 493 Problems in Athletics (Men) (3) | Torney |
| 501 Seminar in Physical Education (Men and Women) (3)
Prerequisites, 345 and 450. | Broer, Torney, Wilson |
| 502 Problems in Physical Education (Men and Women) (2½)
(Offered Summer Quarter only.) Prerequisites, 345 and 450, or permission. | Waters |
| 503 Seminar in Health Education (Men and Women) (3)
Prerequisites, 345, 453, and 465. | Waters |
| 504 Administration of Recreation (Men and Women) (5)
Prerequisites, 324, 345, or permission. | Kunde |
| 506 The Curriculum (Men and Women) (3)
Selection and organization of program content in relation to characteristics and needs of pupils and local conditions. Prerequisite, 345 or permission. | Kunde |
| 524 Seminar in Community Resources and Organization for Recreation (Men and Women) (3)
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. | Kunde |
| 547 Seminar in Research Procedures (Men and Women) (3)
Prerequisites, 447 and Mathematics 281 or equivalent. | Broer |
| 600 Research (Men and Women) (2-5)
A. Physical education
B. Tests and measurements
C. Physiology of exercise
D. Health education
E. Recreation | Broer, Fox, Kunde, Torney, Staff |
| Thesis (Men and Women) (*) | Staff |

PHYSICS

Executive Officer: JOHN H. MANLEY, 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, physical optics, heat, mechanics, atomic and nuclear physics, and advanced calculus. Deficiencies may cause a delay of as much as a year. A reading knowledge of German or French is desirable.

MASTER OF SCIENCE. The Department requires candidates for this degree to take four courses selected from those in the 500 series. A grade-point average of less than 3.00, unless there are compensating qualifications, will prevent the student from becoming a candidate for the degree. A thesis describing the results of a research investigation must be submitted. Each candidate will take the yearly departmental comprehensive examination until he has passed his oral master's examination.

Students in other fields desiring a minor in physics for a master's degree must submit 18 credits in undergraduate courses selected from those numbered above 300 and one graduate course.

DOCTOR OF PHILOSOPHY. The Department requires basic training equivalent to the courses 505, 506, 509, 510, 513, 514, 515, 517, 518, 524, 525, and 528, as well as Mathematics 527, 528, and 529 (Methods of Mathematical Physics). Additional courses of interest will be selected by the student and his supervisory committee. A grade-point average of less than 3.00, unless there are compensating qualifications, will prevent the student from becoming a candidate for this degree.

Each Spring Quarter, a comprehensive examination is given to each student who has not passed his general examination. The former is mainly written and is designed to indicate the student's growth of understanding. The latter is an individual oral examination given by the student's supervisory committee, generally after about two years of graduate study and satisfaction of the language requirement. Completion of this examination signifies admission to candidacy and an intensification of research effort.

The Department recognizes German and French as suitable foreign languages. Others may be substituted with the approval of the supervisory committee and the Graduate School.

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

315	Photography (4)	Higgs
320	Introduction to Modern Physics for Engineers (3)	Staff
321, 322	Introduction to Modern Physics (3,3)	Manley
323	Introductory Nuclear Physics (3)	Manley
325, 326	Electricity (4,4)	Streib
327	Low- and High-Frequency Measurements (4)	Streib
340	Sound (3)	Kenworthy
350	Heat and Introduction to Thermodynamics and Kinetic Theory (3)	Sanderman
360, 361	Optics (3,3)	Clark
367, 368, 369	Special Problems (*,*,*)	Staff
380	History of Physics (2)	Staff
491, 492	Mechanics (4,4)	Geballe
495, 496	Experimental Atomic Physics (3,3)	Higgs
497	Experimental Nuclear Physics (3)	Farwell
505, 506	Advanced Mechanics (3,3)	Staff
	Dynamics of a particle and of rigid bodies; generalized coordinates and Lagrangian theory; variational principles. Hamilton's equations of motion, vibration, and normal coordinates.	
509, 510	Atomic, Molecular, and Nuclear Structure (3,3)	Staff
	Energy-level systems of nuclear, atomic, and molecular aggregates of elementary particles studied primarily on the vector model and other phenomenological modes of description; radioactive transitions and selection rules; atomic and molecular spectra; nuclear interactions and transitions.	

- 513, 514, 515 Electricity and Magnetism (4,4,4)** **Staff**
The properties of electric and magnetic fields as boundary value problems; application of harmonic functions and conformal representation; electrodynamics and electromagnetic waves in empty space and material media.
- 517, 518, 519 Quantum Mechanics (4,4,3)** **Staff**
Prerequisite, 513 for 518.
- 520 Seminar (1-2)** **Staff**
Seminars in the following subjects meet regularly: cosmic rays, gaseous electronics and spectroscopy, nuclear physics, theoretical physics, and solid state physics. Prerequisite, permission.
- 524 Thermodynamics (3)** **Staff**
- 525 Statistical Mechanics (3)** **Staff**
Prerequisite, 517.
- 528 Current Problems in Physics (2)** **Staff**
Discussion of several active research fields; survey of the background of each field; discussion of generally accepted concepts and those at variance with experiment or untested; detailed study of at least one recent paper in the field.
- 550 X Rays (3)** **Staff**
(Not offered 1955-57.) Prerequisite, 509.
- 552 Conduction through Gases (3)** **Staff**
Prerequisite, 509.
- 558 Cosmic Rays (3)** **Staff**
Prerequisite, 510.
- 560, 561 Theoretical Nuclear Physics (3,3)** **Staff**
Prerequisites, 510 and 518.
- 562 Theory of Spectra (3)** **Staff**
(Offered alternate years; offered 1956-1957.) Prerequisites, 509 and 518.
- 564 Relativity (3)** **Staff**
(Offered alternate years; offered 1955-56.) Prerequisites, 506 and 515.
- 566 Theory of Collisions (3)** **Staff**
(Offered alternate years; offered 1956-57.) Prerequisite, 518.
- 568 Theory of Solids (3)** **Staff**
Prerequisite, 518.
- 570 Radiation Theory (3)** **Staff**
(Offered alternate years; offered 1955-56.) Prerequisite, 519.
- 572 Foundations of Statistical Mechanics (3)** **Staff**
(Offered alternate years; offered 1956-57.)
- 574 Atomic and Molecular Interactions (3)** **Staff**
(Not offered 1955-57.)
- 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, cosmic rays, gaseous electronics, low temperature physics, magnetic resonance phenomena, natural radioactivity, nuclear physics, solid state physics, spectroscopy, and theoretical physics. Prerequisite, permission.
- Thesis (*)** **Staff**
Prerequisite, permission.

Physics courses offered through the University of Washington at the Graduate School of Nuclear Engineering, Richland, Washington.

- R321 Introduction to Modern Physics (3)**
R322 Introduction to Modern Physics (3)
R337 Radiation and Shielding (3)
R488 Introduction to Pile Physics (3)
R493 Theoretical Physics I (3)
R494 Theoretical Physics II (3)
R501 Nuclear Physics I (3)
R502 Nuclear Physics II (3)
R513 Electricity and Magnetism (4)
R517 Quantum Mechanics I (*, maximum 6)
R518 Quantum Mechanics II (5)

POLITICAL SCIENCE

Executive Officer: KENNETH C. COLE, 206 Smith Hall

The Department of Political Science offers courses leading to the degrees of Master of Arts, Master of Public Administration, 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 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 courses included in degree programs must consist of those numbered 500 or above.

The Department cooperates with other departments and schools in a program leading to the degree of Master of Arts in Urban Planning (see page 157).

MASTER OF ARTS. A total of 45 credits is normally required, including 9 allowed for the thesis. In exceptional cases, a candidate's committee may reduce the total credits including thesis to as few as 36. The candidate must present a field of concentration and two supporting 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. The Institute of Public Affairs offers a two-year professional curriculum leading to this degree. The purpose is to prepare students for administrative positions in the public service rather than to train technical specialists, teachers, or research technicians. The program consists of instruction in six fields: the administrative process, the development of American institutions, the economics of public activity, public law, public management, and administrative problems. Three fields are studied each year, and students undertake the analysis of various problems in each field. Every student is expected to complete an approved internship during the summer between the first and second years.

The public administration curriculum is limited to a small group of graduate students who show special promise of success in the public service. A broad educational background in the social sciences is desirable.

DOCTOR OF PHILOSOPHY. 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

362 Introduction to Public Law (5)

411 The Western Tradition of Political Thought (5)

412 American Political Thought (5)

Cole

Harbold

Harbold

- 413 Contemporary Political Thought (5) Harbold
 414 Oriental Political Thought (5) Staff
 415 Analytical Political Theory (5) Harbold
 418 The Evolution of Western Political Institutions (5) Harbold
 460 Introduction to Constitutional Law (5) Cole
 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 (3-5) Harbold
 Selected topics, historical and conceptual, national, regional, and universal.
 515 Methods and Research in Political Science (3-5) Harbold
 Political science and the social sciences; methods of research; bibliography of general and special fields.
 562, 563, 564 Public Law (3,3,3) Cole
 General legal concepts applicable to the conduct of governmental activities.

GOVERNMENT, POLITICS, AND ADMINISTRATION

- 350 Government and Interest Groups (5) Bone
 351 The American Democracy (5) Gottfried
 353 Theory and Practice of Government in the State of Washington (3) Gore
 360 The American Constitutional System (3) Webster
 370 Government and the American Economy (5) Gottfried
 376 State and Local Government and Administration (5) Webster
 378 Rural Government (5) Gore
 450 Political Parties and Elections (5) Bone
 451 The Legislative Process (5) Bone
 452 Political Processes and Public Opinion (3) Gottfried
 470 Introduction to Public Administration (5) Gore
 471 Administrative Management (5) Gore
 472 Introduction to Administrative Law (5) Shipman
 475 Problems of Municipal Government and Administration (5) Webster
 550, 551, 552 Seminar in Politics (3,3,3) Bone
 Topical and regional studies of political associations in the United States; leading principles and motivations of political action and leadership; legislative processes; methodology and bibliography.
 570-571-572 The Administrative Process (3-3-3) Shipman
 Forms and characteristics of administrative activity, organization, and function; the executive; administrative discretion; administrative legislation and adjudication; responsibility and control.
 573-574-575 Public Management (3-3-3) Shipman
 Methods and problems of managing public activities, emphasizing work supervision and control, management-staff problems, personnel administration, budgetary and fiscal administration, organization and methods analysis, reporting techniques, program planning and control. Prerequisite, admission to graduate curriculum in public administration or special approval.
 576-577-578 Administrative Problems (3-3-3) Gore
 Supervised analysis of selected administrative problems in local, state, and national government and the preparation of action reports. Prerequisite, admission to graduate curriculum in public administration.
 580 Seminar in State and Local Government (3) Webster
 Critical analysis of governmental structure: areas of administration, functions, limitations on state and local authority, regionalism, and forms of regional control.
 581 Seminar in Public Policy in Planning (5) Webster
 Planning theory; law and administration; legal basis of governmental planning, with emphasis upon state, local, and regional government; the planning agency in government; general scope and limitations of powers and functions; policy determination and public relations; coordination with administrative departments; drafting enabling legislation, planning regulations, and zoning and subdivision ordinances.

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) Ballis
- 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
- 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.
- 528, 530 Seminar in Regional Foreign Policy (3,3) 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) Hitchner
- 344 Chinese Government (5) Michael
- 345J Japanese Government (3) Maki
Offered jointly with the Far Eastern and Russian Institute.
- 346 Governments of Western Europe (5) Hitchner
- 347 Governments of Eastern Europe (5) Ballis
- 441 Political Institutions of the Soviet Union (5) Ballis
- 445 Comparative Political Institutions (5) Martin
- 540J Seminar on the Soviet Union: Government and Diplomacy (4, maximum 8) Ballis
Offered jointly with the Far Eastern and Russian Institute. Prerequisite, permission.
- 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 Graduate Seminar (3,3,3) Martin
Oral and written studies in contemporary problems, domestic and foreign.
- 600 Research (*) Staff
- Thesis (*) Staff

PSYCHOLOGY

Executive Officer: ROGER B. LOUCKS, 335 Savery Hall

The Department of Psychology offers courses leading to the degrees of Master of Science and Doctor of Philosophy.

COURSES

- 301 Statistical Methods (5) Edwards, Smith
- 305 Abnormal Psychology (5) Strother
- 306 Child Psychology (5) Bijou, Katcher
- 307 Psychology of Adolescence (3) Katcher

308	Genetic Psychology (5)	Bijou, Katcher
309	Psychology of Exceptional Children (3)	Bijou
335	Industrial Psychology (3)	Staff
336	Industrial Psychology for Engineers (3)	Culbert
337	Vocational Psychology (3)	Staff
345	Social Psychology (3)	Culbert, Edwards, Guthrie
346	Personality (5)	Katcher
400	Psychology of Learning (5)	Smith
401, 402	Contemporary Psychological Theory (3,3)	McKeever
403	Psychology of Motivation (3)	Smith
406	Experimental Psychology (5)	Loucks
407	History of Psychology (5)	Esper
413	Tests and Measurements (5)	Heathers
416	Animal Behavior (3)	Horton
421	The Neural Basis of Behavior (5)	Esper
422	Physiological Psychology (5)	Loucks
423	Sensory Basis of Behavior (5)	Horton
426	Animal Laboratory (5)	Smith
427	Conditioning (5)	Loucks
441	Perception (5)	Culbert
446	Public Opinion Analysis (3)	Edwards
447	Psychology of Thinking (5)	Esper
449	Psychology of Social Movements (3)	Culbert
462	Readings in Psychology (1-3, maximum 9)	Staff
484	Laboratory in Child Behavior (5)	Katcher
501	Theoretical Problems in Psychology (3) Analysis of the scientific method in the field of psychology and review of types of psychological constructs and major theoretical approaches. Prerequisite, permission.	McKeever
507	Psychological Development of the Child (2) Sequences and factors in the psychological development of the average child from preschool through the adolescent ages. Prerequisite, permission.	Katcher
509	Problems in Developmental Psychology (3) 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 and permission.	Bijou
514-515	Experimental Design (3-3) 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.	Edwards
516	Introduction to Multivariate Psychological Measurement (5) Special quantitative techniques essential to understanding of multivariate psychological measurement theory. Elementary principles of matrix algebra basic to this theory and efficient computational routines are emphasized. Prerequisites, 301 and 413, or permission.	Horst
517	Factor Analysis (5) Mathematical and theoretical foundations; alternative methods of analysis; computational procedures; applications to psychological problems. Prerequisite, 516 or permission.	Horst
518	Test Construction (5) Correlational analysis; statistical bases of test construction and of the use of test batteries; practice in test construction. Prerequisite, 517 or permission.	Horst
520	Seminar (2) May be repeated for credit. Prerequisite, permission.	Staff
522	Seminar in General Psychology (2) May be repeated for credit. Prerequisite, permission.	McKeever
523	Seminar in the History of Psychology (2) May be repeated for credit. Prerequisite, permission.	Esper
524	Seminar in Physiological Psychology (2) May be repeated for credit. Prerequisite, permission.	Horton, Loucks
525	Seminar in Genetic and Comparative Psychology (2) May be repeated for credit. Prerequisite, permission.	Horton
527	Seminar in Social Psychology (2) May be repeated for credit. Prerequisite, permission.	Edwards

- 528 Seminar in Experimental Psychology (2)** Hermans
May be repeated for credit. Prerequisite, permission.
- 529 Seminar in Clinical Psychology (2)** Bijou, 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)** Guthrie
May be repeated for credit. Prerequisite, permission.
- 541J Seminar on Small Group Research (3)** Katcher, 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. Offered jointly with the Department of Sociology. 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.
- 581 Individual Testing (Children) (5)** Bijou
Construction, administration, and scoring of individual mental tests used with children. Prerequisites, 306, 413, and permission.
- 582 Individual Testing (Adults) (5)** Heathers
Construction, administration, and scoring of clinical psychological tests used with adults. Prerequisites, 305, 413, and permission.
- 587 Clinical Pro-seminar I: Personality Theory (5)** Katcher
The theories of personality development relating to the psychodynamics of personality organization. Prerequisite, permission.
- 588 Clinical Pro-seminar II: Psychopathology (5)** Bijou
Major historical and contemporary theories of psychopathology and research in the main categories of the behavior disorders. Prerequisite, 587.
- 589 Clinical Pro-seminar III: Theories and Systems of Psychotherapy (5)** Strother
A review of some of the principal theories and systems of psychotherapy. Prerequisite, 588.
- 591 Projective Personality Tests (3)** Strother
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 (5)** Strother
Training in interpretation of normal Rorschach records; review of literature on the use of the Rorschach in psychopathology. Prerequisite, 591 or 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 Graduate School of Social Work.
- 600 Research (*)** Staff
The name of the staff member with whom research will be done should be indicated in registration. Prerequisite, permission.
- Thesis (*)** Staff

ROMANCE LANGUAGES AND LITERATURE

Executive Officer: HOWARD L. NOSTRAND, 202 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 literatures are strongly recommended for all candidates. Romance 401 and 581 are required for all degree candidates. An equivalent of an undergraduate major in Romance languages is required for admission to candidacy for an advanced degree in the Department.

MASTER OF ARTS. The course requirements are: at least 36 credits divided between major and minor subjects, 14 of which must be in courses numbered 500 or above; a knowledge of representative literary works such as those listed in syllabi obtainable from the Department (the M.A. and B.A. syllabi for an M.A. major and the B.A. syllabus for an M.A. minor); and oral proficiency in the major language. The thesis must be submitted to the Department in completed form not less than four weeks before the date of the final examination.

DOCTOR OF PHILOSOPHY. The course requirements are: at least 90 credits (which are intended to require two academic years, exclusive of summers, for a full-time student), 45 of which should be in the major subject, 30 in a first minor, and 15 in a second minor (half of these credits must be in courses numbered 500 or above); a knowledge of the history of two Romance languages and of the history of three Romance literatures as outlined in the syllabi referred to above (the M.A. and B.A. syllabi for the first minor and the B.A. syllabus for the second minor); and oral proficiency in the major language. The major and minor requirements may be modified to make room for developing special competences, within the departmental field or extending beyond it. The thesis must be submitted to the Department in completed form not less than six weeks before the date of the final examination.

When a Romance language is used as a minor for the doctoral degree, the requirements are at least the same as for the undergraduate major in that language and literature. One of the two languages used to satisfy the reading knowledge requirement must be a non-Romance language.

COURSES

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 1955-56.)

FRENCH

- 301, 302, 303 Advanced Composition and Conversation (2,2,2)** Staff
304, 305, 306 Survey of French Literature (3,3,3) Staff
307, 308 Themes (2,2) Staff
318, 319, 320 French Literature in English (2,2,2) Chessex
327, 323, 329 Advanced Conversation (2,2,2) Staff
330 Conversational French (2½-4, maximum 12) Staff
(Offered Summer Quarter only.)
337, 338, 339 Upper-Division Scientific French (2,2,2) Staff
341 Phonetics (3) Creore, David
358, 359 Advanced Syntax (2,2) Staff
390 Supervised Study (2-5, maximum 20) Staff
421, 422, 423 Prose (3,3,3) David, Keller, C. Wilson
421: classical prose. (Offered 1955-56.)
422: eighteenth-century and romantic prose. (Offered 1955-56.)
423: contemporary prose. (Offered when demand is sufficient.)
424, 425, 426 Modern Prose Fiction (3,3,3) David, Weiner, C. Wilson
424: the novel, 1800-50. (Offered when demand is sufficient.)
425: the novel, 1850-1900. (Offered 1956-57.)
426: the novel, 1900-50. (Offered 1955-56.)
431, 432, 433 Lyric Poetry (3,3,3) Creore, Nostrand, Weiner
431: Renaissance poetry. (Offered 1956-57.)
432: romantic poetry. (Offered when demand is sufficient.)
433: Parnassians, symbolists, and contemporary poetry. (Offered 1956-57.)
441, 442, 443 Drama (3,3,3) Chessex
441: classical tragedy. (Offered 1955-56.)
442: romantic drama. (Offered 1955-56.)
443: modern drama. (Offered 1956-57.)
444, 445, 446 Drama (3,3,3) Chessex
444: Molière. (Offered 1956-57.)
445: eighteenth-century comedy. (Offered when demand is sufficient.)
446: modern comedy. (Offered when demand is sufficient.)
451, 452, 453 Moralists and Essayists (3,3,3) David, Keller, Nostrand
451: Montaigne. (Offered when demand is sufficient.)
452: from Montesquieu to Comte. (Offered when demand is sufficient.)
453: essayists of the twentieth century. (Offered 1956-57.)
482 French Literary Criticism (2) Nostrand
(Offered 1956-57.)
501 Studies in Renaissance Prose (5) Keller
Rabelais and Montaigne. (Offered 1956-57.)

- 502 Studies in Renaissance Poetry (5)** Creore
The *Pleïade*. (Offered 1955-56.)
- 504 Contemporary French Literature (5)** David
Special emphasis will be laid on "intelligence" and related concepts such as the "heart" and "honor." Parties and schools of thought after World War I. (Offered 1956-57.)
- 513 Old French Literature (3)** Simpson
Literary backgrounds; reading and discussion of selected texts. (Offered 1955-56.)
- 531 Literary Problems (2-5, maximum 20)** Staff
Work to be done through conference. Field must be indicated in registration.
A. Middle ages D. Eighteenth century
B. Renaissance E. Nineteenth century
C. Classic period F. Twentieth century
- 541, 542, 543 History of the French Language (2,2,2)** Staff
541: historical study of phonology.
542: historical morphology.
543: historical word formation and syntax.
(Offered 1956-57.)
- 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, discussions, and student *explications*. (Offered 1955-56.)
- 600 Research (2-5, maximum 20)** Staff
Thesis (*) Staff
- ITALIAN**
- 311, 312, 313 Modern Italian Literature (2-3,2-3,2-3)** Staff
(Offered alternate years; offered 1956-57.)
- 321, 322, 323 Masterpieces of Italian Literature (2,2,2)** Staff
(Offered alternate years; offered 1955-56.)
- 384 Renaissance Literature of Italy in English (2)** Staff
(Offered 1955-56.)
- 390 Supervised Study (2-5, maximum 20)** Staff
- 481, 482 Dante in English (2,2)** Staff
- 512 Old Italian Reading (3)** Staff
Reading of material illustrative of phonological and morphological principles.
- 521, 522, 523 Italian Literature of the Twelfth to Fifteenth Centuries (2-5,2-5,2-5)** Staff
(Offered alternate years; offered 1956-57.)
- 531, 532, 533 History of Old Italian Literature (2-5,2-5,2-5)** Staff
(Offered alternate years; offered 1955-56.)
- 600 Research (2-5, maximum 20)** Staff
Thesis (*) Staff
- PORTUGUESE**
- 390 Supervised Study (2-5, maximum 20)** C. Wilson
- PROVENÇAL**
- 534 Old Provençal (3)** Simpson
(Offered when demand is sufficient.)
- ROMANCE LINGUISTICS AND LITERATURE**
- 360 The Literature of the Renaissance in English (5)** Keller
(Offered 1955-56.)
- 401, 402 Introduction to Romance Linguistics (2,2)** Staff
- 505, 506, 507 Romance Linguistics (2,2,2)** Staff
Linguistics as a physical and social science. Brief history of the Romance languages and present-day problems of Romance linguistics. (Offered when demand is sufficient.)
- 531 Problems in Romance Linguistics (2-5, maximum 10)** Staff
- 581, 582, 583 Problems and Methods of Literary History (2,2,2)** Nostrand
The philosophies of literary history and its relation to criticism; recurrent types of research problems and the accumulating methodology; standards of evidence; bibliographical resources for French and Hispanic literature.
- 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 alternate years; offered 1955-56.)
- 590 Research in Comparative Romance Literature (2-5, maximum 20)** Staff
- 599 Research in Romance Linguistics (2-5, maximum 20)** Staff
Thesis (*) Staff

RUMANIAN

- 536 Rumanian Language (5) Staff
 Rumanian grammar; readings in the language and lectures on its history. (Not offered 1955-56.)
- 537 Rumanian Literature (5) Staff
 History of Rumanian literature from the sixteenth century; the contemporary novel; the poetry of Mihail Eminescu. (Not offered 1955-56.)

SPANISH

- 301, 302, 303 Advanced Composition and Conversation (3,3,3) Staff
- 304, 305, 306 Survey of Spanish Literature (2,2,2) Staff
- 315 Spanish-American Authors in English (5) Vargas-Baron
- 327, 328, 329 Advanced Conversation (2,2,2) Staff
- 330 Conversational Spanish (2½-4, maximum 12) Staff
 (Offered Summer Quarter only.)
- 358, 359 Advanced Syntax (2,2) Staff
- 390 Supervised Study (2-5, maximum 20) Staff
- 441, 442, 443 Drama (3,3,3) W. Wilson
 (Offered alternate years; offered 1956-57.)
- 451, 452, 453 Spanish Literature since 1700 (3,3,3) W. Wilson
 (Offered alternate years; offered 1955-56.)
- 461, 462, 463 Spanish Literature of the Golden Era (3,3,3) W. Wilson
 (Offered alternate years; offered 1955-56.)
- 471, 472, 473 Individual Spanish Authors (3,3,3) Staff
 (Offered alternate years; offered 1956-57.)
- 481, 482, 483 Spanish-American Literature (3,3,3) Garcia-Prada, Vargas-Baron
 (Offered alternate years; offered 1955-56.)
- 484 The Colonial Period in Spanish-American Literature (3) Garcia-Prada
 (Offered alternate years; offered 1956-57.)
- 485 The Romantic and Costumbrista Movements in Spanish-American Literature (3) Garcia-Prada
 (Offered alternate years; offered 1958-59.)
- 486 The Modernista Movement in Spanish-American Literature (3) Garcia-Prada
 (Offered alternate years; offered 1956-57.)
- 487 The Contemporary Spanish-American Novel (3) Garcia-Prada
 (Offered alternate years; offered 1956-57.)
- 511 The Poema de Mio Cid (3) W. Wilson
 (Offered 1955-56.)
- 512 Epic Poetry (3) W. Wilson
 The epic material in old Spanish literature and its later treatment in poetry and drama. Special investigations and reports. (Offered alternate years; offered 1955-56.)
- 513 The Spanish Ballad (3) Staff
 The origin and evolution of the Spanish ballad. (Offered 1956-57.)
- 521 The Renaissance in Spain (5) Staff
 (Offered alternate years; offered 1955-56.)
- 531 Literary Problems (2-5, maximum 20) Staff
 Work to be done through conference. Field must be indicated in registration. Maximum credits to be 5 in any one subdivision.
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|-----------------------|--|
| A. Middle ages | E. Nineteenth century |
| B. Renaissance | F. Twentieth century |
| C. Golden age | G. Spanish colonial literature |
| D. Eighteenth century | H. Latin America (Only field offered 1956-57.) |
- 541, 542, 543 History of the Spanish Language (2,2,2) Staff
 541: historical study of phonology.
 542: historical morphology.
 543: historical word formation and syntax.
 (Offered 1955-56.)
- 600 Research (2-5, maximum 20) Staff
- Thesis (*) Staff

SCANDINAVIAN LANGUAGES AND LITERATURE

Executive Officer: SVERRE ARESTAD, 210 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 obtain 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

501 Old Icelandic (*, maximum 5) Johnson

503 Problems in Scandinavian Literature (*, maximum 5) Arestad, Johnson

507 Ibsen (*, maximum 5) Arestad

508 The Scandinavian Novel (*, maximum 5) Arestad

510 Strindberg (*, maximum 5) Johnson

Thesis (*) Staff

SWEDISH

450 History of Swedish Literature (3) Johnson

455 History of the Swedish Language (3) Johnson

490 Supervised Reading (*, maximum 5) Johnson

COURSES IN ENGLISH

309, 310, 311 The Scandinavian Novel in English (2,2,2) Arestad, Johnson

380 Ibsen and His Major Plays in English (2) Arestad

381 Strindberg and His Major Plays in English (2) Johnson

382 Twentieth-Century Scandinavian Drama 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.

The Department of Sociology requires all graduate students to 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.

The Department cooperates with other departments and schools in a program leading to the degree of Master of Arts in Urban Planning (see page 157).

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 10 of the sociology credits must be in courses numbered 500 and above. Candidates must take a final examination in two fields of sociology and a separate examination in the minor given by the department in which the minor courses are taken. The master's thesis must be submitted seven weeks before the degree is to be granted.

The requirement for a minor for a master's degree is 36 graduate and undergraduate credits, of which at least half must be in advanced work, including 6 credits in courses numbered 500 and above.

DOCTOR OF PHILOSOPHY. Candidates must complete a program that includes a minimum of 60 credits in advanced sociology courses. The rest of the course work must include a minor in a related field, for which requirements are determined by the department in which the work is taken. At least 20 of the sociology credits must be in courses numbered 500 and above. The thesis must be submitted seven weeks before the degree is to be granted. Upon recommendation of the Department, another foreign language may be substituted for French or German, but these two languages are the usual requirement. The language requirement must be met at least nine months before the degree is to be granted.

Candidates take a preliminary written examination covering four fields of specialization, one of which must be research methods and social statistics. A preliminary oral examination may be given at the discretion of the major or minor department. A final oral examination is given on the thesis and related subjects.

COURSES

310	General Sociology (5)	Larson, Staff
324	Machine Techniques in Research (3)	Staff
331	Population Problems (5)	Staff
352	The Family (5)	Bowerman, Larsen
353	Social Factors in Marriage (3)	Bowerman
362	Race Relations (5)	Barth
364	Rural Community (5)	Staff
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)	Martel
411, 412, 413	Systematic Sociology (3,3,3)	Dodd
414	Sociological Theory (5)	Lundberg
415	Theory of Social Organization (5)	Martel
420	Methods of Sociological Research (5)	Faris
421	Methodology: Case Studies and Interviewing (3)	Camilleri
423	Advanced Social Statistics (5)	Bowerman, Camilleri
425J	Graphic Techniques in the Social Sciences (5) Offered jointly with the Department of Geography.	Schmid
426	Methodology: Quantitative Techniques in Sociology (3)	Bowerman
427	Statistical Classification and Measurement (3)	Camilleri
428-429	Sampling and Experimentation (3-3)	Camilleri
430	Human Ecology (5)	Cohen, Schmid
432	Human Migration (5) (Not offered 1955-56.)	Staff
440	Primary Interaction and Personal Behavior (5)	Faris
442	Public Opinion (3)	Larsen, Miyamoto
443	Mass Communication (3)	Larsen
445	Social Movements (3)	Miyamoto
446	Social Adjustment of the Worker (3)	Miller
447	Social Control (5)	Lundberg
450	Contemporary American Institutions (5)	Miller
451	Social Change and Trends (5)	Miller
455	Housing in the American Community (5)	Cohen
456	Latin-American Social Institutions (3) (Not offered 1955-56.)	Hayner
458	Institutional Forms and Processes (5)	Faris
460	Social Differentiation (5)	Staff
463	American Negro Community (3)	Barth

- 466 Industrial Sociology (5)** Miller
- 467 Industry and the Community (3)** Miller
- 472 Juvenile Delinquency (5)** Hayner, Schrag
- 473 Penology (5)** Hayner, Schrag
- N510, N511, N512 Departmental Seminar (0,0,0)** Staff
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)** Lundberg
Prerequisites, 223, 414, and 420, or equivalents.
- 528 Seminar in Selected Statistical Problems in Social Research (3)** Camilleri
- 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.
- 532 World Migration (2)** Staff
(Not offered 1955-56.)
- 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.
- 541J Seminar on Small Group Research (3)** Katcher, 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. Offered jointly with the Department of Psychology. Prerequisite, permission.
- 543 Communications Seminar (2)** Staff
- 550, 551, 552 Marriage and the Family (3,3,3)** Bowerman
Analysis of marriage and family patterns and problems, with initial emphasis on research findings and methods. Individual research on selected projects. Prerequisite, 352 or equivalent.
- 556 Seminar on Sociological Problems of Latin America (3)** Hayner
- 562 World Survey of Race Relations (3)** Staff
Prerequisite, 25 credits in social science.
- 566, 567 Industrial Sociology Seminar (3,3)** Miller
Research training in industrial sociology. Readings and field projects. Prerequisite, 466 or equivalent.
- 571 Correctional Institutions (3)** Hayner
Prerequisite, 371 or equivalent.
- 572 Analysis of Criminal Careers (3)** Hayner, Schrag
Personal and social factors in criminal maturation and reformation. Prerequisite, 371 or equivalent.
- 573 Crime Prevention (3)** Hayner
Prerequisite, 371 or equivalent.
- 599 Reading in Selected Fields (2-5, maximum 15)** Staff
Open only to qualified graduate students by consent of instructor.
- 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 consent of instructor.
- 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 a program of study leading to a graduate degree in speech are expected to present an undergraduate background of not less than 35 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 field of specializa-

tion, either as additional undergraduate training or as part of the graduate program.

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

VOICE AND PHONETICS

- 411 Anatomy of the Vocal Organs and Ear (5)** Palmer
 (Offered alternate years; offered 1956-57.)
- 415 Advanced Voice and Phonetics (5)** Tiffany
- 510 Experimental Phonetics (3)** Tiffany
 Application of experimental methods to research in voice and phonetics; critical review of research literature. Prerequisite, 415 or permission.

PUBLIC ADDRESS

- 327 Extempore Speaking (3)** Franzke
- 420 Advanced Problems in Speaking (5)** Baskerville
- 425, 426 Public Speaking in America (5,5)** Baskerville
 (Offered alternate years; 425 offered 1956-57; 426 offered 1955-56.)
- 521 Studies in Greek and Roman Rhetoric (5)** Rahskopf
 Critical analysis of writings on rhetoric by Plato, Aristotle, Cicero, Quintilian, and others. (Offered alternate years; offered 1956-57.)
- 522 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 1956-57.) Prerequisite, 521.
- 525 Rhetorical Criticism (3)** Baskerville
 The history and method of rhetorical criticism. Application of critical standards to notable British and American speeches. (Offered alternate years; offered 1955-56.) Prerequisite, 425 or 426.
- 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 1955-56.) Prerequisites, 430 and an approved course in statistics.

ARGUMENT AND DISCUSSION

- 332 Principles of Group Discussion (3)** Crowell
- 430 Advanced Argument (5)** Pence
- 436 Methods of Public Discussion (5)** Franzke

ORAL INTERPRETATION OF LITERATURE

- 345 Choral Speaking (3)** Grimes
 (Offered alternate years; offered 1956-57.)
- 440 Advanced Oral Interpretation (5)** Grimes
- 540 Studies in Oral Interpretation (3)** Grimes
 Critical analysis of writings by Sheridan, Walker, Rush, Delsarte, Bell, Curry, Emerson, and others. Prerequisite, 440.

TEACHING OF SPEECH

- 352 Introduction to the Teaching of Speech (2)** Nelson
- 357 Debate and Discussion Problems in High School (2½)** Richards
 (Offered Summer Quarter only.)
- 359 Speech in the Classroom (3)** Nelson
- 550 Studies in Speech Education (3)** Nelson
 Philosophical, curricular, and methodological problems of speech instruction.

RADIO SPEECH

- 361 Advanced Radio Speech (3)** Bird, Shepherd
- 462 Radio Production Methods (3)** Bird, Shepherd
- 463 Radio Program Building (3)** Bird

SPEECH CORRECTION

- 470, 471 Speech Correction (3 or 5, 5)** Carrell, Hanley
In 470, only 3 credits can be obtained through extension; 5 in residence.
- 473 Diagnostic Methods in Speech Correction (2)** Holliday
- 474 Clinical Practice in Speech Correction (1-5, maximum 15)** Palmer, Staff
- 475 Stuttering (2)** Carrell
- 571, 572, 573, 574 Organic Disorders of Speech (3,3,3,3)** Carrell
Etiology, diagnosis, and therapy. 571: dysarthria, especially cerebral palsy. (Offered alternate years; offered 1955-56.) 572: aphasia. (Offered alternate years; offered 1956-57.) 573: pathologic disorders of voice. (Offered alternate years; offered 1955-56.) 574: morphogenic disorders, especially cleft palate and dental malocclusions. (Offered alternate years; offered 1956-57.) Prerequisite for each course, 471 or permission.

HEARING

- 480 Introduction to Hearing (3 or 5)** Hanley
Only 3 credits can be obtained through extension; 5 in residence.
- 481 Methods in Aural Rehabilitation (5)** Palmer
- 484 Clinical Practice in Aural Rehabilitation (1-5, maximum 15)** Palmer, Staff
- 485 Medical Background for Audiology (2)** Phillips
- 489 Audiometry (2)** Hanley
- 580 Advanced Audiology (5)** Hanley
Methods, techniques, and instruments used in the measurement of auditory function especially as related to perception of speech. Review of research literature. Prerequisite, 480 or permission.

GENERAL

- 400 Backgrounds in Speech (5)** Rahskopf
- N500 Departmental Seminar (0)** Staff
Reports of research by graduate students and staff members.
- 501 Introduction to Graduate Study in Speech (2)** Crowell
- 600 Research (*)** Staff
- Thes's (*)** Staff

ZOOLOGY

Executive Officer: ARTHUR W. MARTIN, 142 Johnson Hall

The Department of Zoology offers courses leading to the degrees of Master of Science and Doctor of Philosophy.

COURSES**BIOLOGY**

- 401 Cytology (3)** Hsu
- 401L Cytology Laboratory (2)** Hsu
Must be accompanied by 401.
- 451 Genetics (3 or 5)** Roman
- 452 Cytogenetics (3 or 5)** Roman
(Offered alternate years; offered 1955-56.)
- 453 Topics in Genetics (2, maximum 6)** Roman
- 454 Evolutionary Mechanisms (3)** Kruckeberg
(Offered alternate years; offered 1955-56.)
- 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 1955-56.)
- 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.

- 551 Genetics of Microorganisms (3)** Roman
(Offered alternate years; offered 1956-57.) Prerequisite, 451 or permission.
- 573 Topics in Limnology (2)** Edmondson
May be repeated for credit.

ZOOLOGY

- 330 Natural History of Marine Invertebrates (5)** Illg, Ray
- 358 Vertebrate Physiology (6)** Martin
- 362 Natural History of Vertebrates (5)** Snyder
(Offered Summer Quarter only.)
- 381 Microtechnique (4)** Hsu
- 383 Museum Technique (3)** Flahaut
- 400 General Physiology (5)** Staff
- 402 History of Zoology (3)** Hatch
- 403 Comparative Vertebrate Histology (5)** Hsu
- 423 General Protozoology (5)** Osterud
- 432 Marine Invertebrate Zoology (8)** Staff
(Offered at Friday Harbor Summer Quarter only.) Not open to students who have had 433, 434.
- 433, 434 Invertebrate Zoology (5,5)** Illg, Ray
Not open to students who have had 432.
- 435 Parasitology (5)** Osterud
(Offered alternate years; offered 1955-56.)
- 444 Entomology (5)** Hatch
- 453-454 Comparative Anatomy of Chordates (5-5)** Snyder
- 456 Vertebrate Embryology (5)** Fernald
- 457 Experimental Morphogenesis (3)** Fernald
- 457L Experimental Morphogenesis Laboratory (2)** Fernald
Must be accompanied by 457.
- 463 Natural History of Amphibia and Reptiles (5)** Svihla
(Offered alternate years; offered 1955-56.)
- 464 Natural History of Birds (Ornithology) (5)** Svihla
(Offered alternate years; offered 1956-57.)
- 465 Natural History of Mammals (5)** Svihla
- 475 Vertebrate Zoogeography (3)** Svihla
- 498 Special Problems in Zoology (3 or 5)** Staff
- 506 Topics in Experimental Embryology (6, maximum 12)** Staff
(Offered at Friday Harbor Summer Quarter only.) Prerequisite, permission.
- 516 Chemical Embryology (3)** Whiteley
Prerequisite, permission.
- 516L Chemical Embryology Laboratory (2)** Whiteley
Must be accompanied by 516.
- 517 Chemical Embryology (3)** Whiteley
Prerequisite, permission.
- 517L Chemical Embryology Laboratory (2)** Whiteley
Must be accompanied by 517.
- 520, 521, 522 Seminar (1,1,1)** Staff
- 528 Experimental Protozoology (6)** Osterud
Cultivation; identification; cytology; physiology and genetics; general literature and current research in protozoology. (Offered alternate years; offered 1956-57.) Prerequisite, 423 or equivalent.
- 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.
- 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)** **Staff**
Adaptation of animals to the physical properties of the environment and mechanisms of adjustment to changes in the environment. Prerequisites, 400 and 434.
- 537L Comparative Invertebrate Physiology Laboratory (2)** **Staff**
Must be accompanied by 537. Prerequisite, permission.
- 538 Advanced Invertebrate Physiology (6)** **Staff**
Physiological bases of ecology, evolution, and tolerance to stress, as illustrated by many diverse forms. (Offered at Friday Harbor 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. Prerequisite, 400 or equivalent.
- 581 Systematic Zoology (4)** **Illg**
History, principles, and procedures of zoological taxonomy; review of biological bases of phylogeny; history and principles of zoological nomenclature.
- 600 Research (*)** **Staff**
- Thesis (*)** **Staff**

COLLEGE OF BUSINESS ADMINISTRATION

Dean: AUSTIN GRIMSHAW, 210 Commerce Hall

The College of Business Administration offers courses leading to the degrees of Master of Arts, Master of Business Administration, 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; foreign trade; insurance; marketing; personnel and industrial relations; production; research and statistical control; and transportation.

Graduate students seeking degrees in business administration must first file an application for admission to the Graduate School of the University. The Graduate School passes upon the application and, if found satisfactory, forwards it to the College of Business Administration for final approval.

The candidate for a graduate degree in the College of Business Administration must (1) have a bachelor's degree in business administration from an approved college or (2) present not less than 45 quarter credits in accounting, business fluctuations, business law, business statistics, corporation finance, economics, human relations, marketing, and production. Candidates for the degrees of Master of Business Administration and Doctor of Business Administration must include at least 9 credits in accounting and at least one course in business statistics, corporation finance, human relations, marketing, and production.

A student must have a 3.00 (B) average in his senior year to be eligible for graduate courses in the first quarter of graduate work. He must maintain a 3.00 average in his first quarter of graduate work or he cannot take graduate courses in his second quarter. A student who fails to maintain a 3.00 average during the first two quarters of his graduate work will have his case reviewed by the Graduate Study Committee to determine whether or not he will be permitted to continue his work toward an advanced degree.

The College cooperates with other departments and schools in a program leading to the degree of Master of Arts in Urban Planning (see page 157).

MASTER OF ARTS. The student must complete a minimum of 36 credits 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 15 credits must be earned in courses for graduates (500 and 600 series), and the remaining course credits must be in courses approved for graduate

credit. The student must have a reading knowledge of an acceptable foreign language, as determined by examination.

The student's entire program must receive the approval of his advisory committee.

MASTER OF BUSINESS ADMINISTRATION. The student must complete a minimum of 36 credits including the thesis. At least 24 credits must be in business administration courses. Students may elect to participate in seminars in business research and writing in lieu of completing a formal thesis. The following courses or alternatives are required:

	CREDITS
Policy and Administration 560 or 561.....	3
Policy and Administration 590, or 591, or 596.....	3
Accounting 591 or 592.....	3
Thesis or General Business 570 and 571.....	9
Electives (at least six in 500 series other than policy administration and accounting controls)	18
	<hr/> 36

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 requirement for consideration for the D.B.A. program is a grade-point average during the senior year of at least 3.25 and the necessary prerequisites for work in the College of Business Administration. The student must maintain a 3.25 or better average in his graduate work.

Residence requirement for the D.B.A. is three years, two of which must be spent at the University of Washington with at least one year in continuous full-time residence. Residence may include any course work taken after the bachelor's degree for which graduate credit is given and also thesis registration. Enrollment in a summer session is acceptable.

The doctoral program is designed to further advanced study in business administration for persons preparing for positions in teaching, business, and government. In addition to the general requirements of the Graduate School, the candidate for the doctoral degree must demonstrate competence in four areas of study, at least three of which must be in the College of Business Administration.

The candidate must also complete a minimum of 15 credits in courses numbered 500 or above in the fields of business and its environment, economics, or other social sciences; concentration of study in any of these areas may be used to satisfy one of the four area requirements. In addition, the candidate must show evidence of competency in business research and must understand administrative functions of management. He must also demonstrate a knowledge of economics pertinent to his fields.

Under the rules of the Graduate School, all work taken for the doctor's degree must be completed within a period of ten years. This includes work transferred from another institution.

The general examination consists of written and oral examinations, all of which are to be taken in one quarter and scheduled by the Graduate Study Committee.

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 from the Library.

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 the field of the thesis and will not be given until after the thesis has been read and approved.

COURSES**ACCOUNTING**

- 310 Intermediate Accounting (5) Berg
 320 Income Tax I (3) Roller
 330 Cost Accounting (5) Berg, Walker
 340 Accounting Systems (3) Cannon, Hamack
 350 Budgetary Control (2) Staff
 351 Distribution Cost Analysis (2) Staff
 360 Advanced Accounting (5) Hamack
 420 Income Tax II (3) Roller
 470 Auditing I (5) Cox, Johnson
 471 Auditing II (3) Johnson
 480 Government Accounting I (3) Lorig
 485 Consolidations and Mergers (3) Johnson, Mackenzie
 486 Fiduciary Accounting (2) Hamack, Johnson
 490 C.P.A. Problems (3) Lorig, Mackenzie
 520, 521, 522 Seminar (3,3,3) Berg, Cannon, Lorig
 Critical examination of accounting theories, concepts and standards, and study of current problems. 520: general principles, measurement, historical costs versus current values, current assets and liabilities, and the fund theory of accounting. 521: fixed items in the balance sheet and the related expenses and incomes, including fixed investments and liabilities, plant assets and depreciation, wasting assets and depletion, intangible assets and their amortization, capital stock, dividends, capital surplus, and reserves. 522: income matters such as accounting period convention, realization of income, matching costs and revenues, joint costs, and trends in accounting and reporting. Each course is a separate unit and need not be taken in order. Prerequisite, permission.
 591, 592 Seminar in Administrative Controls (3,3) Berg, Hanson, Walker
 Accounting and statistical controls employed by management. 591: major administrative control techniques, including the accounting plan, budgets, standard costs, cost analyses, inventory control, and profit planning. 592: major aspects of budgetary control, principles and application. Prerequisite, permission. 255 or 330 is recommended. 591 is not a prerequisite for 592.
 604 Research (*, maximum 10) Staff
 Prerequisite, permission.
 Thesis (*) Staff

BUSINESS LAW

- 420 Law in Accounting Practice (3) S. D. Brown

BUSINESS STATISTICS

- 340 Advanced Statistical Analysis (5) Butterbaugh
 341 Sampling (3) Butterbaugh
 342 Correlation (3) Butterbaugh
 443 Statistical Problems (3) Butterbaugh
 520 Seminar (5) Butterbaugh
 Administrative use of modern statistical techniques available for solution of problems in industrial, commercial, governmental, and nonprofit organizations. Emphasis on the utilization of statistical methods in administrative control. Group discussion, lecture, and reading groups. Prerequisite, permission.
 604 Research (*, maximum 10) Staff
 Prerequisite, permission.
 Thesis (*) Staff

BUSINESS WRITING

- 410 Business Reports (5) Peck

FINANCE

- 334 Credits and Collections (5) Blythe
 340 Securities Markets (3) Blythe, Henning
 367 Foreign Exchange (5) Henning
 410 Mortgage Banking (3) Blythe, Henning
 423 Bank Organization and Administration (5) Blythe, Henning

- 426 Management of Bank Funds (5) Blythe, Henning
 428 Bank Credit Administration (3) Staff
 444 Principles of Investment (5) Kester, Wright
 446 Investment Analysis (5) Kester
 450 Problems in Corporation Finance (5) Kester
 520 Seminar in Banking Problems (3) Blythe
 Selected problems of contemporary and permanent significance in domestic and international banking and finance. Prerequisite, permission.
 521 Seminar in Money Markets (3) Henning
 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. Integrating corporation finance and banking, 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) Kester, Wright
 Emphasizes selected contemporary problems and methods used, internal and external, in financing business corporations; sources of information useful for research 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.
 Thesis (*) Staff

FOREIGN TRADE

- 301 Principles of Foreign Trade (5) Dowd, Kolde
 380 Foreign Trade Practices (5) Dowd
 450 Far East Foreign Trade Problems (5) Dowd
 461 Problems in Foreign Trade (5) Dowd
 520, 521 Seminar (3,3) Dowd
 Research in problems and policies of exporting and related activities; effects of governmental policies on the conduct of trade. Prerequisite, permission.
 604 Research (*, maximum 10) Staff
 Prerequisite, permission.
 Thesis (*) Dowd

GENERAL BUSINESS

- 439 Business Fluctuations (5) McGuire, Robinson
 462 Responsibilities of Business Leadership I (3) McGuire, Robinson
 562 Responsibilities of Business Leadership II (3) McGuire, Robinson
 Examination of a wide range of domestic and international forces, social and economic, which influence the policy-making decisions of executives. Emphasis is on problems of top business executives in their relationships with employees, customers, stockholders, competitors, government, and the public in matters of social responsibility. Prerequisite, permission.
 570 Seminar in Business Research (4) Staff
 Business research methods and techniques. Emphasis is placed on what business research is; how it is done; and who does it. Instruction in planning research projects and budgets. The place of business research in business management is an important part of the seminar. The student learns through doing as well as reading and discussion. Prerequisites, graduate standing and permission of instructor.
 571 Business Studies (5) Henning
 Independent study in the field of business administration; critical evaluation of business analysis and research methods. Topics, methods, and content of independent research studies are subjected to critical evaluation in seminar discussion. Effective communication of ideas is emphasized. Prerequisite, permission.
 590 Business History (3) Wheeler
 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.
 593 Seminar in Business Fluctuations (3) Robinson
 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.
 594 Seminar in Business Forecasting (3) Demmery, Robinson
 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.

- 598 Current Problems in Business (3)** **Engle**
Current problems of business in the American economy. Timely topics are selected covering relationship of business to government in general and in specific fields, such as anti-trust and government controls in wartime. Small business, in relation to big business, big labor, and big government may be included. The student is expected to familiarize himself with the assigned subjects and to discuss the problems raised. Prerequisites, graduate standing and permission of instructor.

- 604 Research (*, maximum 10)** **Staff**
Prerequisite, permission.

- Thesis (*)** **Staff**

HUMAN RELATIONS

- 460 Human Relations in Business and Industry (5)** **Staff**

INSURANCE

- 360 Life Insurance for the Individual (5)** **Hayne**

- 370 Property Insurance (5)** **Hayne**

- 375 Casualty Insurance (5)** **Hayne**

- 460 Life Insurance for Business (5)** **Hayne**

- 480 Insurance Programming for Business Enterprise (3)** **Hayne**

- 520 Seminar (3)** **Hayne**

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.

- Thesis (*)** **Staff**

MARKETING

- 351 Principles of Salesmanship (2)** **Staff**

- 361 Cooperative Marketing (3)** **Gordon**

- 371 Wholesaling (5)** **Gordon, Kolde**

- 381 Retailing (5)** **Comish, Gordon, Miller**

- 391 Advertising (5)** **Wagner**

- 401 Sales Management (5)** **Stanton**

- 421 Marketing Research (5)** **Wagner**

- 431 Retail Merchandising Problems (3)** **Comish**

- 441 Retail Sales Promotion (3)** **Comish**

- 451 Wholesale and Industrial Marketing Problems (5)** **Miller**

- 461 Retail Management Problems (5)** **Comish**

- 471 Advertising Problems (5)** **Wagner**

- 520, 521, 522 Seminar (3,3,3)** **Staff**

Social, economic, and business implications of marketing operations, institutions, and policies. Each quarter is concerned with different aspects of the problem. Prerequisites, one marketing course and permission.

- 604 Research (*, maximum 10)** **Staff**
Prerequisite, permission.

- Thesis (*)** **Staff**

PERSONNEL

- 345, 346 Personnel Management Techniques (3,3)** **Staff**

- 450 Industrial Relations Administration (5)** **Wolf**

- 520 Seminar in Personnel Management (3)** **Sutormeister**

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.

- 604 Research (*, maximum 10)** **Staff**
Prerequisite, permission.

- Thesis (*)** **Sutormeister**

POLICY AND ADMINISTRATION

- 463 Administrative Practices (5)** Barnowe, Hennessey
- 470 Business Policy (5)** Staff
- 471 Problems of the Independent Businessman (5)** E. G. Brown
- 560, 561 Policy Determination and Administration (3,3)** E. G. Brown, 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 seminar. Prerequisites, M.B.A. candidacy and permission for 560; 560 for 561.
- 590, 591 Seminar in Administration (3,3)** Barnowe
An examination of present-day thinking, points of view, and developing research in the field of administration. Various areas are developed by extensive reading, case discussion, and individual reports on special projects and research. Prerequisite, permission.
- 596 Seminar in Administrative Organization (3)** Bryan
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.
- 604 Research (*, maximum 10)** Staff
Prerequisite, permission.
- Thesis (*)** Staff

PRODUCTION

- 351 Production Planning and Control (5)** Kast
- 355 Purchasing and Material Management (5)** Bryan
- 460 Manufacturing Administration (5)** Bryan, Wolf
- 470 Industrial Analysis of the Pacific Northwest (5)** Staff
- 520, 521 Seminar (3,3)** Bryan
Advanced study in policies and problems of production management. Research, reading, and reports on current problems of manufacturing administration. 520 is concerned with decisions normally requiring frequent review, such as product research and development, quality control, production planning and control, materials purchasing and management, cost analysis and control, manpower and wage administration, government regulation of production. 521 is concerned with long-term decisions which are not readily changed, such as plant location, industrial power, industrial buildings and facilities, machinery and equipment, automation and mechanized materials handling, plant layout. Each course is a separate unit and need not be taken in order. Prerequisite, permission.
- 604 Research (*, maximum 10)** Bryan
Prerequisite, permission.
- Thesis (*)** Staff

REAL ESTATE

- 410 Real Estate Appraisals, Brokerage, and Management (5)** Demmery
- 495, 496 Research in Real Estate (3,3)** Demmery
- 604 Research (*, maximum 10)** Staff
Prerequisite, permission.
- Thesis (*)** Demmery

TRANSPORTATION

- 311 Railroad Transportation (5)** Brewer, Staff
- 313 Air Transportation (5)** Brewer, Little
- 315 Highway Transportation (5)** Brewer
- 317 Water Transportation (5)** Little
- 435 Industrial Transportation Problems (5)** Brewer
- 440 Industrial Traffic Management (5)** Brewer
- 450 Air Law and Regulation (3)** Brewer
- 452 Transportation Insurance (5)** Hayne
- 455 Airport Management (3)** Brewer
- 520, 521 Seminar (3,3)** Brewer, Staff
Advanced analysis and research on current transportation problems and practices. Study and discussion of techniques employed in the evaluation of an industrial firm's transportation problem. Relationship and effect of changing national policies and regulations on transportation businesses. Prerequisite, permission.

604 Research (*, maximum 10)

Prerequisite, permission.

Staff

Thesis (*)

Staff

SCHOOL OF DENTISTRY

Acting Dean: BERTON E. ANDERSON, C301 Health Sciences Building

The School of Dentistry offers courses leading to the degree of Master of Science in Dentistry, with a major in orthodontics, pedodontics, or restorative dentistry, and to a certificate in orthodontics, pedodontics, or restorative dentistry.

To be eligible for graduate study, the applicant must be a graduate of either a school of dentistry approved by the Council on Dental Education of the American Dental Association or a university school of dentistry outside North America whose curriculum and admission requirements are similar to those of this School. Acceptance must be approved by the Graduate Admissions Committee of the School of Dentistry. This approval is 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.

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 that will 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 is generally used, and students are encouraged to further their interests in research in their own 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.

MASTER OF SCIENCE IN DENTISTRY. A minimum of six quarters of residence is required for a major in orthodontics, five quarters for a major in pedodontics, and a minimum of three quarters for a major in restorative dentistry. No foreign language is required.

ORTHODONTICS. Required courses are: Dentistry 500-501, 510, 511, 512, 513, 522, 523; Orthodontics 500, 501, 502, 503, 504, 546, 547, 548, 549, 550, 551; Pediatrics 505 (Physical Growth of the Well Child); Psychiatry 450 (Principles of Personality Development); and Public Health 472 (Applied Statistics in Health Sciences).

PEDODONTICS. Required courses are: Dentistry 500-501, 510, 511, 512, 513, 522, 523; Orthodontics 500; Pediatrics 505; Pedodontics 500, 501, 502, 503, 504, 546, 547, 548, 549, 550; Psychiatry 450; and Public Health 472.

RESTORATIVE DENTISTRY. Required courses are: Dentistry 511, 522, 580, 581, 582, 583; Public Health 472; 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, psychology, public health, and speech.

CERTIFICATE IN ORTHODONTICS, PEDODONTICS, OR RESTORATIVE 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 take the same courses and maintain the same academic standards as the graduate student. These programs are not administered by the Graduate School and no thesis is required. The minimum residence requirement for a certificate in orthodontics and pedodontics is five quarters; for restorative dentistry, three quarters.

COURSES

DENTAL SCIENCE AND LITERATURE

400, 401, 402 Applied Dental Science (1,2,2) Staff of the Schools of Dentistry and Medicine

DENTISTRY

500-501 Advanced Oral Histology, Pathology, and Embryology (2-2) Staff

Lectures and seminar discussions on the details of development, histology, and pathology of cranial, facial, and oral structures, with emphasis on clinical application of basic knowledge. (Department of Periodontology)

510 Applied Osteology and Myology of the Head and Neck (2) Moore, Riedel
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) Bolton, Gibbs, 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 studies of the head; growth of the head and development of the dentition from birth through maturity; analysis of the factors that produce normal occlusion and malocclusion. Each course is a prerequisite to the following course. (Department of Orthodontics)

521 Applied Dental Nutrition (1) Hileman
Lectures and seminar discussions on pathogenesis, pathology, and clinical signs of nutritional deficiencies, functions of the essential nutrients; value of clinical laboratory tests. Practical qualitative and quantitative diet analysis is performed. (Department of Periodontology)

522 Dental Caries Control (2) Law, Staff
Seminar on etiology and control of dental caries. Discussion based on assigned reading on physiology, composition of saliva, chemical composition of the teeth, oral microbiology, degradation of carbohydrates, systemic factors in the caries process, fluorides, enzyme inhibitors, and caries susceptibility tests. (Department of Pedodontics)

523 Public Health Dentistry (1) Hoffman

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) Stibbs, 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) Stibbs, Staff
Metallography of cast metals; physical properties of waxes and investments. Control of shrinkage. Interrelationships of physical properties of metals and physiology of oral tissues; thermal conductivity and pulpal response; galvanism; tissue tolerance in respect to various metals. Direct and indirect technics. Principles of cavity preparation that apply specifically to cast restorations. (Department of Fixed Partial Dentures)

583 Reproduction of Oral Tissues (4) Austin, Young
A seminar-laboratory-clinic in the various needs for reproduction of oral tissues in restorative dentistry. Physical requirements of various types of restoration; routines, materials, and equipment used; tissue responses to physical and functional stimuli. (Department of Prosthodontics)

FIXED PARTIAL DENTURES

300, 301, 302 Fixed Partial Dentures (1,1,1) Guthrie

346 Clinical Crowns and Fixed Partial Dentures (5) Stibbs, Staff

400, 401 Advanced Fixed Partial Dentures (1,1) Hagen, Stibbs

446 Advanced Clinical Crowns and Fixed Partial Dentures (6) Stibbs, Staff

561 Abutments and Distribution of Masticatory Stresses (4) Stibbs, Staff
Tissue responses of bone and periodontal membrane to increased masticatory loads; physical principles involved in replacements in different locations in the mouth; considerations involved in length of span; retention form and resistance form; study of broken-stress design and fixed removable attachments; esthetic consideration of abutment preparation.

562 Advanced Dental Ceramics (3) Stibbs, 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.

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**300, 301, 302 Operative Dentistry (1,1,1)****Hamilton****400, 401, 402 Advanced Operative Dentistry (1,1,1)****Stibbs****445 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.

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**300, 301 Oral Diagnosis and Treatment Planning (1,1)****Degering, Jacobson****346 Clinical Oral Diagnosis and Treatment Planning (3)****Staff****400, 401, 402 Advanced Oral Diagnosis and Treatment Planning (1,1,1)****Jacobson****446 Advanced Clinical Oral Diagnosis and Treatment Planning (3)****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.

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.

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.

PERIODONTOLOGY**300, 301, 302 Periodontology (1,1,1)****Staff**

304	Endodontia (1)	Ingle
331	Oral Pathology (4)	Staff
346	Clinical Periodontology (3)	Staff
349	Clinical Endodontia (1½)	Staff
400	Advanced Periodontology (1)	Staff
446	Advanced Clinical Periodontology (3)	Staff
449	Advanced Clinical Endodontia (1½)	Staff

PROSTHODONTICS

400, 401	Advanced Complete Denture Prosthodontics (1,1)	Young, Special Lecturers
402	Advanced Removable Partial Denture Prosthodontics (1)	Austin
446	Senior Clinical Prosthodontics (5)	Staff
561	Immediate Dentures (4)	Austin, Young
A seminar-clinic in removable partial denture treatments. Discussions of diagnosis and treatment planning; variations in basic denture procedures; the surgical operations of preparing the ridges for dentures; tissue reaction and wound healing; postoperative care; patient information. Clinical operations using procedures and equipment for denture construction.		
562	Removable Partial Dentures (4)	Austin, Young
A seminar-clinic in removable partial denture treatments. Discussion 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.		

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: FRANCIS F. POWERS, 230 Miller Hall**

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 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 from which work may be taken for the M.A. degree are: college teaching, 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 a written final examination 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 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, college teaching, comparative education, curriculum, educational administration, educational methods, educational psychology, educational sociology, educational supervision, elementary education, guidance and counseling, history and philosophy of 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: college teaching, 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 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: college teaching, 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 quarterly Time Schedule and Room Assignments 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 Announcement for the specific number of credits for a particular course.

401	Advanced Educational Psychology (3)	Fea
402	Child Study and Development (3)	Fea
403	Psychology of Elementary School Subjects (3)	Fea
404	Education of Exceptional Children (5)	Hayden
405	Problems of Adolescence (5)	Staff
406	Character Education (3)	Staff
408	Mental Hygiene for Teachers and Administrators (3)	Staff
410	Educational Sociology (3)	Jessup
415	Principles of Safety Education (3)	Corbally
415D	Principles of Safety Education: Driver Education (3)	Corbally
417	Adult Education (3)	Jessup
420	Theory and Technique of Kindergarten and Primary Teaching (3)	MacDonald
421	Remedial Education (3)	Fea
422	Remedial Education Clinic (3)	Fea
425	Remedial Reading (3)	Fea
430	Public School Administration (3)	Strayer
431	School Finance (3)	Strayer
433	Elementary School Organization and Administration (3)	Jessup
434	High School Organization and Administration (3)	Strayer
435	Administration and Supervision of Junior High Schools (3)	Staff
437	School Supervision (5)	Jessup

439	Pupil Personnel and Progress Reporting (3)	Staff
445V	Principles and Objectives of Vocational Education (3)	Baily
447	Principles of Guidance (3)	Corbally
448	Improvement of Guidance Techniques (3)	Staff
455	Auditory and Visual Aids in Teaching (3)	Hayden
456	Auditory and Visual Aids in Teaching (3)	Hayden
457	Audio-visual Aids Management (3)	Hayden
460J	Field Training in Health Education (5) Offered jointly with the Department of Public Health and Preventive Medicine.	Vavra
461	Elementary School Curriculum (5)	Jessup
466	Workshop in Curriculum Improvement (1-15, maximum 15)	Draper
467	Techniques of Curriculum Improvement (3)	Draper
470	Historical Backgrounds of Educational Methods (3)	Williams
474	Workshop in the Improvement of Teaching (5)	Staff
475	Improvement of Teaching (3)	Staff
475A	Improvement of Teaching: Secondary Mathematics (3)	Staff
475H	Improvement of Teaching: Language Arts (3)	Fea
475I	Improvement of Teaching: Industrial Education (3)	Baily
475LJ	Improvement of Teaching: Latin (5) Offered jointly with the Department of Classics. (Offered Summer Quarter only.)	Grummel
475M	Improvement of Teaching: Social Studies (3)	Staff
475S	Improvement of Teaching: Science (3)	Staff
476D	Materials and Methods of Teaching Typewriting (2½) (Offered Summer Quarter only.)	Staff
476E	Materials and Methods of Teaching Office and Clerical Practice (2½) (Offered Summer Quarter only.)	Staff
476H	Workshop in Current Problems of Distributive Education (2½, maximum 5) (Offered Summer Quarter only.)	Staff
476L	Materials and Methods of Teaching Gregg Shorthand and Transcription (2½) (Offered Summer Quarter only.)	Staff
476M	Principles and Problems of Business Education (2½) (Offered Summer Quarter only.)	Staff
476N	Materials and Methods of Teaching Bookkeeping and General Business Subjects (2½) (Offered Summer Quarter only.)	Staff
477	The Teaching of Reading (3)	Fea
480	History of Education (5)	Jessup
484	Comparative Education (5)	Jessup
485	Advanced General Shop for Industrial Education Teachers (3)	Baily
486	Trends in Industrial Education (3)	Baily
488	Philosophy of Education (3)	Staff
489	Current Problems in Industrial Education (3)	Baily
490	Educational Statistics (5)	Dvorak
491	Advanced Educational Measurements (3)	Dvorak
501	Seminar in Educational Psychology (3) Psychological principles of education; summary of research results in application to school problems. Prerequisite, a background in general and educational psychology.	Fea
510	Seminar in Educational Sociology (3) 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.	Jessup
522	Seminar in Diagnostic and Remedial Work in Education (5)	Staff
525	Seminar in Elementary Education (3) A critical examination of the elementary school, with special emphasis on curriculum and method. Prerequisite, doctoral candidacy or special permission.	Boroughs
531	Seminar in Administration: Finance (5) 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	Strayer

- 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 (5)** **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 (5, maximum 15)** **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 (5)** **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.
- 539 Seminar in Public School Administration (3)** **Strayer**
Current studies on administrative trends and problems; principles for the evaluation of administrative decisions; desirable research problems; appraisal of problems in certain school districts. For school administrators. Prerequisites, 430 and doctoral candidacy or special permission.
- 541, 542, 543 Guidance and Counseling (3,3,3)** **Staff**
Techniques and materials used in school guidance; organization and administration of the guidance program. Primarily for people who plan to become counselors or guidance workers in educational institutions. Prerequisite, permission.
- 547 Seminar in Guidance (5)** **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. Prerequisites, 447 or equivalent and doctoral candidacy or special permission.
- 550 Development and Organization of Higher Education (3)** **Williams**
Higher education from the standpoint of the new instructor; history of administrative organization. Prerequisite, doctoral candidacy or special permission.
- 551 College Problems (3)** **Williams**
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)** **Williams**
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 Curriculum: Extraclass Activities (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)** **Williams**
The nature of teaching and the problems involved in the underlying principles and practices of types of modern methodology, with special reference to experimental studies in the project, the unit, socialized recitation, audio-visual aids, supervised study, lesson plans, lectures, assignments, and the activity movement.
- 587, 588, 589 Seminar in Philosophy of Education (3,3,3)** **Williams**
The nature and meaning of philosophy as it relates to educational objectives, methodology, curriculum, and administration, from the points of view represented in idealism, realism, naturalism, and pragmatism.
- 591 Methods of Educational Research (3)** **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 educational research. Instructor and field must be designated in registration.

Audio-visual education

College teaching

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

Tests and measurements

Thesis (*)**Staff**

Advanced degree candidates in education must register for "thesis." When registration is for "thesis only," an incidental fee of \$27.50 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. This degree may be of particular interest to those students who are planning a program of graduate studies that will prepare them for the field of nuclear engineering. Elective courses in nuclear physics may be incorporated in the study program for such students.

The degrees of Master of Aeronautical Engineering and Master of Electrical Engineering are offered to students who satisfactorily complete an approved two-year program of graduate work in aeronautical or electrical engineering.

Graduate study leading to the Doctor of Philosophy degree is available in chemical, civil, and electrical engineering.

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.

AERONAUTICAL ENGINEERING

Executive Officer: VICTOR M. GANZER, 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 above), and Master of Aeronautical Engineering. 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 36 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.

COURSES

300, 301, 302	Aerodynamics (3,3,3)	Staff
320	Aerodynamics Laboratory (3)	Staff
330, 331, 332	Aircraft Structural Analysis (3,3,3)	Weikel
350	Aircraft Structural Laboratory (2)	Weikel
360	Aircraft Engines (3)	Eastman
380	Aeronautical Engineering Measurements (2)	Staff
385	Selected Subjects in Aeronautical Design (2)	Staff
N390-N391-392	Seminar (0-0-1)	Eastman, Staff
395	Special Projects (2-5)	Staff
404	Introduction to Theoretical Aerodynamics (3)	Ganzer, Street
410, 411, 412	Aircraft Design (3,3,3)	Ganzer, Weikel
422	Aerodynamics Laboratory (3)	Staff
425	Flight Test Laboratory (3)	Joppa
441	Advanced Structural Design (3)	Weikel
461	Jet Propulsion (3)	Ganzer
462	Propellers and Moving Wing Systems (3)	Eastman
470	Analytical Problems in Aeronautics (3)	Martin, Street
480	Elementary Dynamics (3)	Ganzer, Martin
481	Elementary Aero-elasticity (3)	Ganzer, Martin
505	Aerodynamics of Incompressible Fluids (3) 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.	Street
506	Aerodynamics of Incompressible Fluids (3) 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. Prerequisite, 505.	Street
508	Aerodynamics of Compressible Fluids (3) Thermodynamics of ideal gases; isentropic flow in one dimension, shock waves, equations of motion in nonviscous flow; airfoils and wings; similarity laws.	Street
509	Aerodynamics of Compressible Fluids (3) Theory of characteristics; equations in the hodograph plane, exact solutions; linearized supersonic flow over wings and bodies of revolution; laminar compressible boundary layer. Prerequisite, 508.	Street
513	Heat Transfer in Aeronautics (3) The fundamental laws of heat transfer; temperature boundary layer in laminar and turbulent flow and its relation to the fluid flow; thermal radiation; applications to high-speed aerodynamic heating of aircraft. (Offered when demand is sufficient.) Prerequisites, 506 and Physics 350 or equivalent.	Street
516	Stability and Control (3) Aerodynamics of control; the general problem of dynamic stability; the influence of aerodynamic parameters on flying characteristics.	Ganzer
N520-N521-522	Seminar (0-0-1)	Staff
530	Theory of Elastic Structures (3) Discussion of stresses, strains, displacements; development of the basic equations of elasticity; principle of virtual work and the energy theorems; approximate methods; application of basic theory in formulating and solving problems in elastic structures.	Martin, Weikel
533	Theory of Plasticity (3) 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.	Martin

- 540 Aircraft Structural Problems (3)** **Martin**
Application of the methods of elasticity to aircraft structural problems using original papers and reports as source material; discussion of problems of current interest. (Offered when demand is sufficient.) Prerequisite, 530 or Civil Engineering 572.
- 545 Experimental Stress Analysis (3)** **Martin**
A survey of the experimental methods commonly used in investigating and testing aircraft structures; demonstration experiments; visits to experimental projects and facilities on the campus.
- 550 Dynamics of Aircraft Structures (3)** **Martin**
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, 530, 553, and 572.
- 553 Aircraft Vibrations (3)** **Martin**
Natural frequencies and modes of vibration of simple linear systems; free, damped, and forced vibrations; continuous systems with emphasis on aircraft-type structures; development of Lagrange's equation; matrix methods.
- 556 Aero-elasticity (3)** **Martin**
Two- and three-dimensional flutter theory; aerodynamic forces; flutter stability determinant and its solution; wing divergence and aileron reversal; flutter prevention; control effectiveness. Prerequisite, 553.
- 557 Nonlinear Problems in Airplane Dynamics (3)** **Martin, Street**
The application to aeronautics of nonlinear ordinary differential equations of motion, and the topology of their integral curves in the phase plane; dynamical interpretation of singular points; existence of periodic solutions; questions of stability; nonlinear resonance; frequency demultiplication; relaxation oscillations. (Offered when demand is sufficient.)
- 571, 572, 573 Analysis in Aeronautics (3,3,3)** **Martin, Street**
Mathematical methods for solving problems arising in aeronautical engineering; complex variables, vector analysis, matrices, cartesian tensors, calculus of variations, operational calculus, finite difference methods, partial differential equations, and boundary value problems. Prerequisite, Mathematics 421.
- 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 (2-5)** **Staff**
- Thesis (*)** **Staff**

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 121), 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 36 credits of course work and a thesis. The course work is usually divided in the ratio of about two to one between the major department and other departments. 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

- N381, N382 Field Trip (0,0)** David
- 334 Industrial Stoichiometry (4)** David
- 385 Chemical Engineering Thermodynamics (4)** McCarthy
- 470 Transport Process Principles (4)** McCarthy
- 471, 472, 473 Unit Operations (3,3,3)** Johanson, Moulton
- 474, 475, 476 Unit Operations Laboratory (2,2,2)** Babb
- 477 Advanced Chemical Calculations (3)** Staff
- 491 Inorganic Chemical Processes (3)** Moulton
- 482 Organic Chemical Processes (3)** Babb, Moulton
- 483 Chemical Engineering Process Design (4)** Babb, Moulton
- 485 Industrial Electrochemistry (3)** Moulton
(Offered when demand is sufficient.)
- 491, 492 Unit Process Laboratory (1,1)** Moulton
- 498 Chemical Engineering Thesis (1-5)** Staff
- 520 Graduate Seminar (1-5)** Staff
- 570 Introduction to Transport Properties (3)** Babb
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 Distillation (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. (Offered alternate years; offered 1956-57.) Prerequisites, 570 and 575 or permission.
- 573 Absorption and Extraction (3)** Babb
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 1955-56.) Prerequisites, 570 and 575 or permission.
- 574 Fluid Flow (3)** McCarthy
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
Principle of thermodynamics. Applications to unit operations and to prediction of phase equilibria and chemical equilibria. Prerequisite, 385.
- 580 Nuclear Engineering (3)** Moulton
Fundamentals of nuclear reactions. Elementary pile theory, design and construction of nuclear reactors, shielding, control, waste disposal. Methods of isotope separation, chemical separation processes for the recovery of fissionable products. (Offered alternate years; offered 1955-56.) Prerequisite, 570.
- 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 Multistage Separation Processes (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 Topics in Chemical Engineering Unit Operations (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 Topics in Chemical Engineering Unit Processes (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 1955-56.) Prerequisites, 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 1956-57.) 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**
Thesis (*) **Staff**

Chemical engineering courses offered through the University of Washington at the Graduate School of Nuclear Engineering, Richland, Washington.

- R475 Diffusional Processes I (4)**
R476 Diffusional Processes II (4)
R486 Heat Transmission (4)
R487 Advanced Engineering Thermodynamics (4)
R488 Analytical Treatment of Chemical Engineering Processes (4)
R489 Chemical Engineering Economic Balance (4)
R490 Chemical Engineering Kinetics (4)

CIVIL ENGINEERING

Executive Officer: ROBERT B. VAN HORN, 201 More Hall

The Department of Civil Engineering offers courses leading to the degrees of Master of Science in Engineering (see page 121), 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, structural engineering, and transportation (highway) engineering. The requirements are: a minimum of 45 credits, of which 36 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, structural engineering, or transportation engineering.

COURSES

GENERAL

- 509 Engineering Relations (2)** **Staff**
Methods of setting up engineering problems and investigations; written and oral presentation of professional ideas and analysis of current research and investigations, both professional and economic, in the student's major field. Prerequisite, graduate standing.
- 520 Seminar (1)** **Staff**
Formal presentation for discussion and criticism of all research of the graduate year. Required of all candidates for an advanced 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 investigations by graduate students under the direction of staff members. Students should register for H, M, P, S, W, or T.

Thesis (*) **Staff**

SURVEYING

- 315 Photogrammetry (3)** **Chittenden, Colcord**

TRANSPORTATION ENGINEERING

- 321 Roads and Pavements (3)** **Ekse, Meese**
403 Principles of Urban Planning (3) **Horwood**
422 Railway Engineering (3) **Ekse**
423 River and Harbor Engineering (3) **Ekse, Meese**
424 Highway Design (3) **Ekse**
426 Airfield Design (3) **Ekse**
428 Highway Economics and Administration (3) **Hennes, Horwood**
429 Urban Traffic (3) **Ekse, Horwood**
523 Port Development (4) **Hennes, Meese**
 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.

HYDRAULIC ENGINEERING

- 342 Fluid Mechanics (5)** **Campbell, Chenoweth, Kent, Moritz, Richey**
343 Hydraulic Engineering (5) **Chenoweth, Moritz, Richey**
445 Hydraulic Machinery (3) **Chenoweth, Moritz**
447 Hydraulic Power (3) **Campbell, Richey**
448 Reclamation (3) **Campbell, Van Horn**
547 Advanced Hydraulic Power (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.

SANITARY ENGINEERING

- 350 Introduction to Sanitary Engineering (3)** **Bogan, Sylvester**
452 Water Supply (3) **Bogan, Sylvester**
453 Water Treatment (3) **Bogan, Sylvester**
454 Sewerage (3) **Bogan, Sylvester**
456 Sewage Treatment (3) **Bogan, Sylvester**
457 Environmental Engineering Problems (3) **Bogan, Sylvester**

ENGINEERING MATERIALS

- 362 Materials of Construction (3)** **Mittet**
363 Materials of Construction (3) **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. 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, 467 and senior or graduate standing.

STRUCTURAL ANALYSIS AND DESIGN

- 371, 372, 373 Structural Theory (3,3,3)** Chenoweth, Clanton, Mittet, Rhodes, Vasarhelyi
475, 476, 477 Structural Design (3,3,3) Clanton, Miller, Rhodes, Sergev
485 Applied Structural Analysis (3) Miller
491 Advanced Professional Design (2-5, maximum in one field, 15) Staff
560 Photoelasticity (3) Sergev
 Introduction of stress determination using polarized light and transparent plastics. To gain familiarity with the polariscope, the making of models, and solution of some common engineering problems in two dimensions. Modern photoelastic theory, plastics and similitude. Prerequisite, graduate standing or permission.
- 571 Advanced Strength of Materials (3)** Chenoweth, 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.
- 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.
- 573 Elastic Stability (3)** Sergev
 The study of buckling phenomena in columns, beams, plates, and tubes, with practical application.
- 581 Advanced Structures (3)** Miller
 Truss deflection and secondary stresses. Trussed arches. Multi-span trusses. Redundant members. Mueller-Breslau, Maxwell-Mohr, and strain-energy methods.
- 582 Advanced Structures (3)** 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.
- 583 Advanced Structures (3)** 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.
- 585 Structural Model Analysis (3)** Vasarhelyi
 Basic structural theory taught in laboratory by structural model analysis. A rational examination of structural theory, its development from the elements of physics, geometry, and properties of materials, and its application to statically determinate and indeterminate structures.
- 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.
- 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 Suspension Structures (3)** Farquharson
 Fundamental principles of structural action as applied to suspension bridges, suspended pipe lines, conveyors, and transmission lines. Analysis for dead and live loading and static wind action. The mechanisms of wind excitation on typical cross sections and their application to various modes of vibration.

Civil engineering courses offered through the University of Washington at the Graduate School of Nuclear Engineering, Richland, Washington.

R442 Advanced Fluid Mechanics (3)

R571 Advanced Strength of Materials (3)

ELECTRICAL ENGINEERING

Executive Officer: AUSTIN V. EASTMAN, 201 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 121), 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. Electrical engineering courses normally must be chosen from those numbered above 500 and must include Electrical Engineering 510 and N520-N521-522.

MASTER OF ELECTRICAL ENGINEERING. This is a more advanced degree than that of Master of Science in Electrical Engineering. A total of 72 credits of course work and a more extensive thesis are required. Other requirements are similar to those for the Master of Science degree. Certain physics courses may be used in partial satisfaction of the major requirements.

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 taken must include Electrical Engineering 510, 511, 512, and N520-N521-522.

COURSES

300	Elements of Electrical Engineering (5)	Staff
301	Electrical Machinery (5)	Staff
322	Electric Transients (4)	Staff
325	Direct-Current Machinery (5)	Staff
340	Alternating-Current Machinery (4) To be taken concurrently with 341.	Staff
341	Alternating-Current Machinery Laboratory (4) To be taken concurrently with 340.	Staff
400	Vacuum Tubes and Electronics (5)	Staff
420	Vacuum Tubes and Electronics (4)	Staff
429	Field Theory I (3)	Staff
430	Individual Projects (2-5, maximum 10)	Staff
440	Vacuum-Tube Circuits (6)	Staff
450	Advanced Alternating Currents (6)	Staff
453	Electric Power Systems (3)	Robbins
457	Industrial Control (3)	Hoard
460, 461	Vacuum-Tube Circuits (5,5)	Staff
469	Field Theory II (4)	Staff
470	Communications Networks (5)	Staff
473	High-Frequency Circuits and Tubes (5)	Cochran
479	Radio Design (2) Must be preceded or accompanied by 461.	Cochran
510	Introductory Network Theory (5) Mathematical concepts applicable to network theory, including Fourier series and integrals. Transfer characteristics of networks, applicable to the transient and steady state. Elements of complex variables, including conformal transformations and complex potential applied to fields and networks. Network relations involving matrices and determinants. The Laplace transform and relations to Fourier integrals and frequency analysis. Prerequisites, graduate standing and Mathematics 421.	Lewis
511	Network Analysis (3) Network representation in the complex-frequency domain, stability criteria, realizability conditions, steady-state relations in closed-loop systems, optimum relations and design criteria in applications involving feedback. Prerequisite, 510.	Lewis
512	Network Synthesis (3) Frequency-domain synthesis of driving-point and transfer impedances, in active and passive systems. Canonical forms and network equivalents. Time-domain synthesis and considerations of pulsed-data systems. Prerequisite, 511.	Lewis
514	Power System Analysis (5) Methods of analysis of power systems, with emphasis on the interrelations between gen-	Bergseth

eration, 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.

- 515 Measurements and Circuit Components (3)** **Swarm**
Measurements of resistance, inductance, capacitance, and frequency at all frequencies from d-c to 10,000 megacycles; use of inductance bridges, r-f bridges, Twin-T circuits, Q meters, susceptance variation methods, frequency standards, and standing wave detectors. Prerequisite, 470.
- N520-N521-522 Seminar (0-0-2)** **Lewis**
Required for all graduate students.
- 541 Advanced Transients (5)** **Smith**
Transient phenomena in transmission lines and rotating machinery; lightning and corona characteristics and effects; insulation coordination and design; theory and use of impulse generator for insulation study and tests; precision use of oscillographs. Includes one four-hour laboratory per week. (Offered alternate years; offered 1956-57.) Prerequisite, 322.
- 545 Power Transmission (5)** **Bergsoth**
Circuit theory; lumped and distributed constants; power circle equations and power transmission diagrams; voltage control and line compensation. Surge impedance loading and loading for maximum economy; transmission line design; traveling waves. Prerequisite, 514.
- 547 Advanced Studies in Power Systems (5)** **Bergsoth**
Power flow in systems with two voltage sources. General network equations; synchronous-machine power-angle characteristics; composite systems. Equivalent reactance of synchronous machines; stability criteria, stability characteristics of turbo-generators; transmission-line electrical loadings and comparative economic study. System design; torque-angle characteristics, two-machine stability. Multi-machine problems. Prerequisite, 545.
- 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 on overvoltages. Prerequisite, 514.
- 560 Wave Phenomena (4)** **Rogers**
Solution of ordinary differential equations as applied to the vibrations of lumped systems; vector analysis and the solution of the partial differential equations of continuous systems; Fourier series, Bessel's functions, and orthogonality; solution of the field equations for wave guides and radiating systems. Prerequisite, 469.
- 562 Advanced Vacuum Tubes (4)** **Hill**
Energy distribution functions, emission theory; conformal transformation and solution of electric fields; current flow in diodes, triodes, and tetrodes; noise in vacuum tubes; analysis of problems in electron optics; high-intensity cathodes and beam formation. (Offered alternate years; offered 1956-57.) Prerequisites, 420 and 510, which may be taken concurrently with 562.
- 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, 460 and 470.
- 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. Includes occasional laboratory demonstrations. Prerequisite, 566 or permission.
- 570 Radiation and Propagation (4)** **Swarm**
Theory of radiation; impedance characteristics and radiation patterns of thin linear antenna elements; properties and synthesis of antenna arrays; field intensity calculations; theory of tropospheric and ionospheric propagation; propagation anomalies. Includes one four-hour laboratory on alternate weeks. Prerequisite, 560.
- 572 Microwave Network Theory (4)** **Held**
A brief review of transmission line theory and associated impedance concepts in light of applicability to uniform wave guides. Equivalent circuit for wave guide discontinuities will be developed on the basis of mode theory, linearity, reciprocity, and symmetry ideas. Application of general network theory to wave guides, cavity resonators, and antennas. Prerequisites, 469, 470, and 510.
- 574 Microwave Antennas (3)** **Held**
Fundamental principles underlying the design of microwave antennas. Radiation from current distributions. Scattering and diffraction of electromagnetic waves. Prerequisites, 572 and Mathematics 429, which may be taken concurrently, or permission.
- 580 Electroacoustics (5)** **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 per week. (Offered alternate years; offered 1955-56.) Prerequisite, 470.
- 582 Feedback Control Systems I (4)** **Fisher**
Function of feedback control systems, physical characteristics and transfer functions of typical components, analysis of transient and frequency response of linear systems, methods of graphical analysis, and system stability criteria. Prerequisite, 510.

- 583 Feedback Control Systems II (3)** **Fisher**
Design and analysis of multiple loop linear systems, experimental design and analysis procedures, control system synthesis, nonlinear control systems, describing functions and phase plane analysis. Prerequisite, 582.
- 586 Electrical Computing Methods (4)** **Staff**
Study of field models, analog and digital computers, and various special-purpose computers for solving electrical problems. Includes one three-hour laboratory per week. (Offered alternate years; offered 1955-56.) Prerequisite, 510.
- 600 Research (2-5)** **Staff**
Thesis (*) **Staff**

Electrical engineering courses offered through the University of Washington at the Graduate School of Nuclear Engineering, Richland, Washington.

- R590 Electric Transmission Problems I (5)**
R591 Electric Transmission Problems II (4)
R592 Servomechanisms (3)
R593 Analogs and Analog Computers (4)

MECHANICAL ENGINEERING

Executive Officer: BRYAN T. McMINN, 316 Guggenheim Hall

The Department of Mechanical Engineering offers courses leading to the degrees of Master of Science in Engineering (see page 121), and Master of Science in Mechanical Engineering.

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, air conditioning and refrigeration, and advanced engineering materials and design will find well-integrated programs available. Subject to the approval of the candidate's committee, work beyond bachelor requirements in physics, mathematics, and civil and electrical engineering is permitted, and sometimes required. The thesis is normally the equivalent of 9 credits, in which case 36 credits of course work are required for the master's degree. No foreign language is required.

COURSES

- | | |
|--|---|
| 305 Production Tooling (1) | Konecny, Zylstra |
| 306 Production Techniques (1) | Schaller, Snyder |
| 307 Production Planning (1) | Schaller, Snyder |
| 312 Machine Tool Fundamentals (3)
Not open to engineering students. | Konecny, Zylstra |
| 320 Thermodynamics (5) | Childs, McMinn, Nordquist |
| 322, 323 Experimental Engineering (3,3) | Crain, Frey, Krause, McIntyre |
| 325 Thermodynamics for Nonmajors (3) | Childs, McMinn, Nordquist, Waibler |
| 328 Elementary Thermodynamics (3)
Not open to engineering students. | Hendrickson |
| 329 Refrigeration (3)
Not open to engineering students. | Hendrickson |
| 340 Engineering Materials (3) | Baliso, Day, Mills |
| 341 Aircraft Materials (2) | Schaller |
| 342 Industrial Materials and Processes (3)
Not open to engineering students. | Mills |
| 361, 362 Machine Design (3,3) | Baliso, Crain, Day, Morrison |
| 367 Dynamics of Machines (3) | Baliso, Morrison, Nordquist |
| 368 Kinematics (3) | Day, Morrison |
| 403 Tool Design (3) | Konecny |
| 410 Engineering Administration (3) | Owens, Schaller |
| 411 Engineering Economy (3) | Konecny, Schaller |

- 414 Industrial Safety (2)** Zylstra
- 415 Quality Control (3)** Owens, Zylstra
- 417 Methods Analysis (3)** Konecny, Owens
- 418 Work Simplification (2)** Owens
- 424 Power Plants (5)** Waibler
- 425 Air Conditioning (3)** Crain, Hendrickson
- 426 Thermodynamics for Nonmajors (5)** Childs, Crain, Nordquist
- 428 Refrigeration (3)** Hendrickson, McMinn
- 433 Marine Engineering (3)** McMinn, Rowlands
- 443 Instrumentation (3)** Balise
- 466 Machine Design (4)** Balise, Day, Morrison
- 468 Machine Design (3)** Balise, Day, Morrison
- 469 Dynamics of Machines (3)** Balise, 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
- 490, 491, 492 Naval Architecture (3,3,3)** Rowlands
- 521 Thermodynamics (3)** McMinn, Nordquist, Waibler
A critical study of the fundamental concepts of thermodynamics; nonflow and steady-flow processes; enthalpy; point properties; reversibility; vapors vs. perfect gases. Prerequisites, 320 and graduate standing or permission.
- 526 Air Conditioning (3)** Hendrickson
Study at the graduate level of heat-transfer aspects of air-conditioning problems; special problems in humidifying and dehumidifying; automatic control and zoning; noise and vibration control; laboratory and field tests of air-conditioning installations. Prerequisites, 425 and graduate standing or permission.
- 529 Advanced Refrigeration (3)** Hendrickson
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.
- 531 Heat Transfer (3)** Childs
Study of conduction, convection, and radiation, separately and in combination; steady and unsteady states; mathematical treatments; dimensional analyses; graphical solutions; change-of-phase problems. Prerequisites, 320 and graduate standing or permission.
- 535 Reactor Engineering (3)** Mills
Review of pile theory; analysis of thermodynamic and heat-transfer problems of reactors; shielding and thermal stress factors; problems of instrumentation and control. Prerequisite, graduate standing in mechanical engineering or permission.
- 541 Advanced Engineering Materials (3)** Mills
A second course in the nature and behavior of engineering materials. Ferrous and non-ferrous alloys, plastics, and wood-fiber products. Corrosion, surface coatings, powdered metals, and investment casting. Laboratory studies of X-ray radiography, electron microscopy, hardenability, heat treatment, mechanical properties, wood-fiber utilization, and magnetic and fluorescent methods of defect detection. Lectures and laboratory. Prerequisites, 340 and graduate standing in engineering.
- 542 Topics in Engineering Materials (3)** Mills
Topics of current importance, including behavior of materials at high and low temperatures, developments in plastics and wood products, dynamic behavior of materials, significance of residual stresses, and engineering applications of radioisotopes. Prerequisite, 541 or permission.
- 544 Automatic Control (3)** Balise
Theory and practice of industrial process control; effects of system parameters on difficulty of control; modes of control; analysis of pneumatic components; advantages and limitations of equipment. Lectures and laboratory. Prerequisite, graduate standing in engineering or permission.
- 546 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. Lectures and laboratory. Prerequisite, graduate standing in engineering or permission.
- 547 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, 546.

- 564 Mechanical Engineering Analysis (3)** **Balise**
Development of solutions to mathematically analogous problems from various fields in mechanical engineering with emphasis on analytical thinking. Applications of linear differential equations to mechanical systems and electrical and mechanical analogs. Significance of steady-state and transient solutions. Distributed parameters in heat flow and dynamics problems. Prerequisite, graduate standing in mechanical engineering 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 (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.
- 584 Gas Turbines (3)** **Guidon**
Applications of the 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.
- 600 Research (2-5)** **Staff**
Thesis (*) **Staff**

Mechanical engineering courses offered through the University of Washington at the Graduate School of Nuclear Engineering, Richland, Washington.

R429 Heat-Power Cycles (5)

R523 Heat Transfer and Fluid Flow (5)

R568 Mechanical Vibrations (3)

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 121); 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.

Ceramic Engineering

MASTER OF SCIENCE IN CERAMIC ENGINEERING. Candidates for this degree select courses and research in accordance with their special interests and objectives. A study of advanced theory is usually part of the work. Courses may be selected in preparation for plant operation, production and management, sales engineering, or research and product development. Graduates of accredited ceramic engineering curricula and graduates of other accredited engineering curricula who complete the basic undergraduate courses in ceramic engineering may become candidates.

MASTER OF SCIENCE IN CERAMICS. Students with undergraduate majors in science, particularly chemistry or physics, may become candidates for this degree after completing basic undergraduate courses in ceramics.

COURSES

- 302 Process Ceramics: Forming (4)** **Staff**
303 Process Ceramics: Coatings (3) **E. E. Mueller**
304 Process Ceramics: Drying and Firing (4) **Staff**
N306, N307 Ceramic Engineering Excursion (0,0) **Staff**
311 Physical Ceramics: Structure and Reactions (3) **J. I. Mueller**
312 Physical Ceramics: Colloids and Rheology (3) **J. I. Mueller**

- 331 Ceramic Craftsmanship: Pottery Techniques (4)** Staff
- 332 Ceramic Craftsmanship: Elementary Glazes (4)** Staff
- 333 Ceramic Craftsmanship: Decoration (4)** Staff
- 402-403 Equipment and Plant Design (2-2)** E. E. Mueller
- 411 Physical Ceramics: Ceramic Equilibria (3)** J. I. Mueller
- 412J X-ray Analytical Techniques (2)** J. I. Mueller
Offered jointly with the Division of Metallurgical Engineering.
- 420 Abrasives (3)** E. E. Mueller
(Offered alternate years; offered 1956-57.)
- 421 Ceramic Bodies Laboratory (3)** Staff
- 422 Ceramic Petrography (2)** Kelly, Staff
- 440 Glass Technology (3)** E. E. Mueller
(Offered alternate years; offered 1955-56.)
- 450 Pyroprocessing of Nonmetallics (3)** Bauer, Staff
(Offered alternate years; offered 1956-57.)
- 460 Ceramic Coatings for Metals (3)** E. E. Mueller
(Offered alternate years; offered 1955-56.)
- 470 Refractories (3)** E. E. Mueller
- 500 Ceramic Vitrology (3)** E. E. Mueller
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)** J. I. Mueller
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)** E. E. Mueller
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)** E. E. Mueller
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.
- 510 Advanced Ceramic Equilibria (3)** E. E. Mueller
Deviation of phase equilibrium relations in ceramics, studies of crystalline solutions, and analytical treatment of multicomponent phase equilibrium systems.
- 511 Theoretical Physical Ceramics (3)** J. I. 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, 312.
- 512 Theoretical Physical Ceramics (3)** J. I. 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)** J. I. 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.
- 521 Identification of Ceramic Materials (3)** J. I. Mueller
Theory and use of X-ray diffraction techniques for qualitative identification. Prerequisite, Physics 355 or equivalent.
- 522 Structure and Analysis of Ceramic Materials (3)** J. I. Mueller
Theory and laboratory practice in use of X-ray diffraction for quantitative analysis; structure determinations. Prerequisite, 521 or equivalent.
- 523 Identification and Structure Problems (3, maximum 6)** J. I. Mueller
Laboratory practice in X-ray diffraction techniques applied to ceramic research. Prerequisite, 522 or equivalent.
- 590 Industrial Minerals Research (*)** Staff
- 600 Research (*)** Staff
Special problems investigated under staff direction; new products and processes; ceramic resources of the Pacific Northwest.
- Thesis (*)** Staff

Metallurgical Engineering

MASTER OF SCIENCE IN METALLURGICAL ENGINEERING. Candidates for this degree select courses in physical or extractive metallurgy in accordance with their particular interests and objectives. Special fields of study include metallurgical research, application metallurgy, chemical and extractive metallurgy, foundry metallurgy, and plant operation and management. Graduates of accredited metallurgical engineering curricula and graduates of other engineering curricula who complete the basic undergraduate courses in metallurgical engineering may become candidates.

MASTER OF SCIENCE IN METALLURGY. Students with undergraduate majors in science, particularly physics or chemistry, may become candidates for this degree after completing basic undergraduate courses in metallurgy.

COURSES

300 Assaying (3)	Gleason
301 Fire Assaying (3)	Gleason
306, 307 Metallurgy Excursion (1,1)	Staff
321 Process Metallurgy (4)	Gleason
322, 323 Process Metallurgy (3,3) 322 should be taken concurrently with 324.	Gleason
324 Metallurgical Laboratory (2) Should be taken concurrently with 322.	Gleason
325 Process Metallurgy: Plant Practices (2)	Gleason
361, 362, 363 Physical Metallurgy (4,4,4)	Roberts
412J X-ray Analytical Techniques (2) Offered jointly with the Division of Ceramic Engineering.	J. I. Mueller
441 Engineering Physical Metallurgy (3)	Roberts
442 Engineering Physical Metallurgy Laboratory (1) May be taken concurrently with 441.	Roberts, Staff
450 Modern Metals (3)	Roberts
455 Iron and Steel (3)	Gleason
461 Advanced Physical Metallurgy (3)	Roberts
465 Metallurgical Inspection of Metals (3)	Staff
466 Theory of Metals (3)	Roberts
467 Alloy Steels (2) (Not offered 1955-56.)	Staff
471 Fuel Technology (3) (Not offered 1955-56.)	Staff
472 Fuel Technology Laboratory (1) (Not offered 1955-56.)	Staff
481J Mineral Industry Economics (3) Offered jointly with the Division of Mining Engineering.	Pifer
520 Seminar (1, maximum 6) Review of research problems and recent literature. Required for all graduate students.	Staff
521 X-ray Metallography (3) Theory and use of the diffraction X ray in the study of metals; physical properties; generation and diffraction of X rays; diffraction equipment; diffraction crystallography; single crystals and powders; interpretation and qualitative analysis. Prerequisite, Physics 355 or equivalent.	J. I. Mueller
522 X-ray Metallography (3) Precision diffraction methods and their application to simple crystal structure and parameter determinations; chemical composition; grain size and distortion measurements; single-crystal orientation; determination of preferred orientation in polycrystalline metals; stress measurements. Prerequisite, 521 or equivalent.	J. I. Mueller
523 X-ray Metallography (3) Laboratory practice on specific problems; application technique studies; research methods. Prerequisite, 522.	J. I. Mueller
531 Advanced Metallurgy (*) Study of selected problems, with particular attention to recent publications and scientific applications in physical or extractive metallurgy.	Staff

- 561 Theory of Metals and Alloys (3)** **Roberts**
Phase transformations in solid metals and alloys. An advanced treatment of phase transformations from the standpoint of crystallography, reaction kinetics, and thermodynamics. Prerequisite, 363.
- 562 Theory of Metals and Alloys (3)** **Roberts**
Theories of nucleation and grain growth phenomena, recrystallization, precipitation hardening, and martensitic transformations. Prerequisite, 561.
- 563 Theory of Metals and Alloys (3)** **Roberts**
Diffusion theory, dislocations in metals, ternary phase diagrams. Prerequisite, 562.
- 600 Research (*)** **Staff**
- Thesis (*)** **Staff**

Metallurgical engineering courses offered through the University of Washington at the Graduate School of Nuclear Engineering, Richland, Washington.

R411 Engineering Metallurgy I (4)

R567 Advanced Physical Metallurgy (5)

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 and fuels technology in order to become candidates.

COURSES

- | | |
|--|-----------------|
| 306, 307 Mine Excursion (1,1) | Staff |
| 321 Drilling, Blasting, and Tunnelling (2) | Anderson |
| 322 Methods of Mining (4) | Anderson |
| 323 Methods of Mining (3) | Anderson |
| 425 Barodynamics (2) | Pifer |
| 426 Exploration and Development of Mineral Deposits (3) | Pifer |
| 430 Mine Surveying (2) | Anderson |
| 431 Mine Mapping (1) | Anderson |
| 432 Mine Engineering (5) | Anderson |
| 433 Mine Ventilation (3) | Anderson |
| 461 Mineral Dressing: Preparation (3) | Brien |
| 462 Mineral Dressing: Concentration (4) | Brien |
| 463 Mineral Dressing: Flotation (3) | Brien |
| 464 Mineral Dressing: Leaching (3) | Brien |
| 465 Mineral Dressing: Microscopy (2) | Brien |
| 466 Mineral Dressing Practices (2) | Brien |
| 467 Mineral Dressing Design (2) | Brien |

476	Coal Preparation (3)	Brien
478	Coal Preparation Machinery (2)	Brien
480	Mineral Land Valuation (2)	Anderson
481J	Mineral Industry Economics (3) Offered jointly with the Division of Metallurgical Engineering.	Pifer
482	Mineral Industry Management (3)	Pifer
483	Mining Laws (1)	Pifer
485	Industrial Minerals (3)	Brien
520	Seminar (1, maximum 6) Lectures and discussions; review of research problems and recent literature. Required for all graduate students.	Staff
521	Metal Mining (*) 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.	Anderson, Pifer
522	Mine Shafts (3) Location and design, surface plant, and collar preparation; sinking, support, stations and bottoms, and equipment and maintenance; safety and costs; rectangular, square, and circular shafts.	Pifer
523	Coal Mining (*) Studies in coal mining, preparation, or coking with particular reference to the Pacific Northwest. Prerequisite, graduate standing.	Pifer
560	Mineral Dressing (*) Special problems and research.	Brien
561	Advanced Mineral Dressing Preparation (*) Unit process studies in comminution, sizing, classifying, and auxiliary processes.	Brien
562	Advanced Mineral Dressing Laboratory (*) Experimental study of theoretical principles of preparation and concentration. Arranged concurrently with 561 and 563 or as required.	Brien
563	Advanced Mineral Dressing Theory (*) Physics and chemistry of beneficiation.	Brien
564	Advanced Mineral Dressing Design (*) Plant layout studies, economics, and equipment design.	Brien
571	Cooperative Research with United States Bureau of Mines (6)	Staff
600	Research (*)	Staff
	Thesis (*)	Staff

COLLEGE OF FORESTRY

Dean: GORDON D. MARCKWORTH, 206 Anderson Hall

The College of Forestry offers courses leading to the degrees of Master of Forestry, Master of Science in Forestry, and Doctor of Philosophy.

There are no foreign language requirements for the master's degrees, but two foreign languages are required for the doctorate.

COURSES

401	Safety Practices in Forest Industries (2)	Pearce
403	Timber Physics (3)	Bryant
404	Timber Physics (5)	Bryant
406	Microtechnique (3)	Thomas
407	Forest Economics (2)	Robertson
408	Forest Economics and Finance (5)	Robertson
409	Forest Policy and Administration (3)	Marckworth
410	Advanced Forest Soils (3)	Gessel
420	Artificial Regeneration (3)	Staff
423	Application of Silvicultural Methods (4)	Staff
424	Advanced Practices in Silviculture (3)	Staff

- 430 **Advanced Forest Fire Control (3)** Schaoffer
- 440 **Construction (4)** Pearce
- 441 **Forest Engineering (5)** Pearce
- 442 **Logging Engineering (5)** Pearce
- 446, 447, 448, 449 **Logging Engineering Field Studies (3,5,5,3)** Pearce
- 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 **Wood Pulp (6)** Grondal
- 478 **Advanced Wood Technology (5)** Bryant, Erickson
- 481 **Milling (5)** Thomas
- 482 **Manufacturing Problems (5)** Thomas
- 483 **Theory and Practice of Kiln Drying (3)** Grondal
- 484 **Forest Products Field Studies (2)** Thomas
- 485 **Forest Products Seminar (2)** Staff
- 495 **Research Methods Seminar (3)** Bryant
- 510 **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. Prerequisites, 410, Botany 114 and 471, Microbiology 301, and permission of instructor.
- 513 **Methods of Forest Soil Survey (5)** Gessel
A course of field studies to acquaint the student with methods of determining the productive capacity of forested lands from soil properties. Prerequisites, 512 and permission of instructor.
- 520 **Seminar (1, maximum 3)** Staff
Required of graduate students.
- 521 **Advanced Silvics (5)** Staff
A study of recent advances in the field of forest tree physiology and ecology, with special reference to the silviculture of western forest types. Prerequisites, 410, 423, and permission of instructor.
- 522 **Advanced Silviculture (5)** Staff
The use of ecological principles in controlling reproduction and growth of forests; the application of cultural methods to existing forests; a study of research methods and case histories. Prerequisites, 423 and permission.
- 540 **Advanced Forest Engineering (5)** Pearce
Logging organization and management; logging cost analysis and budgeting. Prerequisite, permission of instructor.
- 555 **Forest Influences (4)** Gessel, Staff
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 of instructor.
- 560 **Forest History and Policy (3)** Marckworth
Special studies in the development and administration of forest policies in the United States and/or in other countries. Prerequisites, 408, 409, and 460 or equivalent.
- 562 **Forest-Management Plans (3-5)** Robertson
Preparation of management plans for large areas of public and private forest lands. Discussion of current literature, principles, and new developments in forest management. Special study of assigned problems. Prerequisite, 469 or equivalent.
- 570 **Advanced Wood Preservation (3)** Erickson
Permeability of wood; theory of penetration; treating plants, their equipment and design. Prerequisites, 370 and 371.
- 590, 591, 592 **Graduate Studies (2-5 each quarter)** Staff
Study in fields for which there is not sufficient demand to warrant the organization of regular courses.
- 600 **Research (*)** Staff
- Thesis (*)** Staff

SCHOOL OF LIBRARIANSHIP

Director: 112 Library

FACULTY AND STAFF

BEVIS, LEURA DOROTHY, 1947.....	Assistant Professor of Librarianship
B.A., 1927, Pomona College; B.S. in L.S., 1947, Southern California; M.A., 1951, Washington	
PETERSON, MARION ELIZABETH, 1951 (1953).....	Assistant Professor
B.A., 1930, B.A. in Librarianship, 1941, Washington	of Librarianship
TURNER, MABEL ALEXANDRA, 1941 (1946).....	Assistant Professor
A.B., 1926, Oregon; B.S. in L.S., 1931, Columbia	of Librarianship
WHEELER, SARA H., 1955.....	Assistant Professor of Librarianship
B.A., 1936, Nebraska; B.S., 1940, Columbia; M.A., 1954, Chicago	
BAUER, HARRY C., 1945 (1947).....	Professor of Librarianship;
A.B., 1927, M.S., 1929, Washington University, St. Louis;	Director
Certificate of Librarianship, 1931, St. Louis Library School	of Libraries
GALLAGHER, MARIAN GOULD, 1944 (1953).....	Professor of Law;
B.A., 1935, LL.B., 1937, B.A. in L.S., 1939, Washington	Law Librarian
SMITH, CHARLES WESLEY, 1905 (1947).....	Librarian Emeritus; Professor Emeritus
B.A., 1903, B.L.S., 1905, Illinois	of Librarianship; Bibliographic Consultant
WHITAKER, JEANNE C.	Secretary

GENERAL INFORMATION

The University of Washington School of Librarianship was established in 1911 in response to the need for professionally trained librarians in the libraries of the Northwest.

The School was originally organized as an undergraduate department in the College of Liberal Arts. In autumn of 1933, it became a part of the Graduate School and offered a one-year curriculum in librarianship leading to the degree of Bachelor of Arts in Librarianship. In 1952, following a major curriculum revision, the bachelor's degree was discontinued, and a program leading to the degree of Master of Librarianship was inaugurated. The School of Librarianship is accredited by the Board of Education for Librarianship and is a member of the Association of American Library Schools.

LIBRARY FACILITIES

The School of Librarianship is in the south wing of the Henry Suzzallo Memorial 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 875,000 volumes. Students have access to the facilities of the Pacific Northwest Bibliographic Center and to the University's Film Center. The Seattle Public Library, the King County Public Library, and many school, college, and special libraries are available for observation and field work.

ADMISSION

Application for admission should be made to the School of Librarianship as early as possible before the opening of the quarter in which the student wishes to begin his study. When possible, applicants are urged to arrange a personal interview with the Director of the School. Only applicants who give evidence of personal and intellectual qualifications requisite for success in library work will

be accepted by the School. In general, applicants over thirty-five years of age will be accepted only if already engaged in library work or if special circumstances warrant.

The approval of both the Graduate School and the School of Librarianship is necessary for admission. A reading knowledge of one modern language other than English is required. This requirement may be met with 20 quarter credits in the language. Applicants for entrance to the law librarianship program must hold the Bachelor of Laws degree from an accredited American law school, and applications must be approved by the Dean of the University of Washington School of Law.

The character and quality of undergraduate preparation will affect admission. Students who expect to enter library work will benefit by planning toward that objective. The prospective librarian should assure himself of a broad cultural background and special competence in at least one field of knowledge. If he expects to enter a special area of library work, he should elect related subjects in his undergraduate studies. The student who plans to enter school library work should meet the requirements for a teaching certificate in the state in which he expects to work.

The Director of the School will be glad to confer with prospective students, either in person or by correspondence, in regard to their undergraduate programs.

SCHOLARSHIPS AND LOANS

The Oregon Library Association offers an annual scholarship of at least \$150 to an Oregon resident for study in the School of Librarianship. The scholarship is granted on the basis of academic record, need, and qualifications for library service. Further information and application blanks are furnished by the School. Applications must be completed by May 15, and the award is made by June 15.

The Washington Congress of Parents and Teachers offers a \$250 scholarship to a student preparing for school librarianship. The candidate must be a graduate of one of Washington's five public institutions of higher learning. Applications should be submitted to the Director, School of Librarianship.

The William E. Henry Scholarship, established by the graduating class of 1950, has been increased by additional gifts from alumni and friends. The first award was made in March, 1954.

A loan fund has been established by alumni of the School and the Puget Sound Library Club. Loans from this fund are made only after the student has completed one quarter of the librarianship program.

Students in the School may apply for University fellowships, scholarships, and loans. A booklet listing awards and loans available to all University students may be obtained from the Office of the Dean of Students.

PLACEMENT

The Seattle Public Library and the University of Washington Library provide employment opportunities for librarianship students. It is possible for a student who has some initial resources to earn the money for most of his expenses and to complete his professional training in two years through a work-study plan. A typical schedule would be made up of twenty hours of library work each week and a 6- to 8-credit load. Through this plan, the student also gains valuable experience.

The School of Librarianship maintains a placement service to handle employer requests for librarians and to assist graduates in obtaining beginning positions and in advancing their professional careers. In recent years, the requests by employers for graduates of the School have far exceeded the supply.

THE PROGRAMS IN LIBRARIANSHIP

The basic 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 Librarian-

ship. Undergraduate courses are also available to upper-division students who wish to qualify as teacher-librarians, to students in the College of Education who choose librarianship as a second area of concentration, and to students taking programs in other fields who elect librarianship as a minor.

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 for a degree in librarianship. In addition, the student elects courses which will prepare him for a special field of library service. Students who have a strong subject interest or who are preparing for special fields may elect up to 10 credits of graduate work in a subject field.

Each degree program comprises approximately 46 credits and normally requires four quarters for completion. The full program may be entered in either Autumn or Summer Quarter; a partial program may be started at the beginning of any quarter. The preferred starting period for the student who intends to pursue the full program, four consecutive quarters, is Autumn Quarter.

A thesis is generally required for the Master of Librarianship degree. A field project or other appropriate research activity may be recommended in lieu of a thesis if such a project better serves the need of the student. Law librarianship is a nonthesis program.

SUMMER PROGRAM

The full program is available to Summer Quarter students. Basic required courses for the Master of Librarianship degree 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.

Courses of special interest and value to school librarians are offered every summer. For students who have completed the 15-credit teacher-librarian credential before entering the Graduate School, the program will be adapted to meet individual needs.

MASTER OF LIBRARIANSHIP

GENERAL CURRICULUM

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS
Libr. 500 Libraries, Librarians, & Society	2	Libr. 502 Organization & Administration	3
Libr. 510 Evaluation of Materials	4	Libr. 511 Materials	3
Libr. 530 Organization of Materials	4	Libr. 531 Organization of Materials	4
Libr. 599 Methods of Research	2	Electives	2
	<hr/> 12		<hr/> 12
THIRD QUARTER	CREDITS	FOURTH QUARTER	CREDITS
Libr. 501 Libraries, Librarians, & Society	2	Libr. 513 Government Publications	2
Libr. 509 Field Work	4	Libr. 514 Audio-visual Materials	3
Libr. 512 Materials	3	Electives	5
Electives	3		<hr/> 10
	<hr/> 12		

CURRICULUM FOR LIBRARY WORK WITH CHILDREN AND YOUNG PEOPLE

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS
Libr. 500 Libraries, Librarians, & Society	2	Libr. 511 Materials	3
Libr. 510 Evaluation of Materials	4	Libr. 531 Organization of Materials	4
Libr. 530 Organization of Materials	4	Libr. 550 Service for Children	3
Libr. 599 Methods of Research	2	Libr. 553 Work with Children	2
	<hr/> 12		<hr/> 12

THIRD QUARTER	CREDITS
Libr. 452 Storytelling	3
Libr. 501 Libraries, Librarians, & Society	2
Libr. 509 Field Work	4
Libr. 554 Children's Literature	3
	<hr/>
	12

FOURTH QUARTER	CREDITS
Libr. 462 Reading of Young People	3
Libr. 514 Audio-visual Materials	3
Electives	4
	<hr/>
	10

CURRICULUM FOR SCHOOL LIBRARY WORK

FIRST QUARTER	CREDITS
Libr. 500 Libraries, Librarians, & Society	2
Libr. 510 Evaluation of Materials	4
Libr. 530 Organization of Materials	4
Libr. 599 Methods of Research	2
	<hr/>
	12

SECOND QUARTER	CREDITS
Libr. 511 Materials	3
Libr. 531 Organization of Materials	4
Libr. 550 Service for Children	3
Electives	2
	<hr/>
	12

THIRD QUARTER	CREDITS
Libr. 462 Reading of Young People	3
Libr. 501 Libraries, Librarians, & Society	2
Libr. 509 Field Work	4
Libr. 554 Children's Literature	3
	<hr/>
	12

FOURTH QUARTER	CREDITS
Libr. 460 School Library Admin.	3
Libr. 514 Audio-visual Materials	3
Electives	4
	<hr/>
	10

MASTER OF LAW LIBRARIANSHIP

These courses are given by the faculty of the School of Librarianship and the School of Law.

CURRICULUM FOR LAW LIBRARIANSHIP

FIRST QUARTER	CREDITS
Libr. 500 Libraries, Librarians, & Society	2
Libr. 510 Evaluation of Materials	4
Libr. 530 Organization of Materials	4
Libr. 540 Adv. Legal Bibliography	2
	<hr/>
	12

SECOND QUARTER	CREDITS
Libr. 511 Materials	3
Libr. 531 Organization of Materials ..	4
Libr. 542 Legal Reference & Research ..	5
	<hr/>
	12

THIRD QUARTER	CREDITS
Libr. 501 Libraries, Librarians, & Society	2
Libr. 509 Field Work	4
Libr. 513 Government Publications	2
Libr. 532 Organization of Materials	2
	<hr/>
	10

FOURTH QUARTER	CREDITS
Libr. 541 Law Library Materials	4
Libr. 543 Law Library Administration ..	5
Electives	3
	<hr/>
	12

COURSES

- 451 Children's Books (3)** Peterson, Wheeler
Introduction to the field of children's books, with special emphasis on their selection and application to the school curriculum and to the child's recreational reading interests.
- 452 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 undergraduates and nonlibrary school students Autumn Quarter only; for School of Librarianship students Spring Quarter.
- 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; care and circulation of materials.
- 461 School Library Materials (3)** Turner
Study of reference materials and basic books in subject fields, with special attention to their use in correlation with the school curriculum. Primarily for teacher-librarians.
- 462 Reading of Young People (3)** 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)** Turner
Simple cataloging techniques suitable for the school or small library.
- 464 Elements of Technical Processes (3)** Turner
Techniques of acquisition, processing, and circulation of library materials; practice in cataloging. Prerequisite, 463.

- 470 History of the Book (3)** **Bevis**
History of the written and printed book from earliest times to the present, including a survey of modern presses and publishing.
- 500 Libraries, Librarians, and Society (2)** **Bevis**
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)** **Bauer**
Study of public and academic library service, including a consideration of legal structure; finance and statistics; buildings and equipment; personnel; public relations; and other phases of library management. The extension of library service is also considered.
- 509 Directed Field Work (2-4)** **Staff**
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**
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.
- 514 The Library and Audio-visual Materials (3)** **Bevis**
Types, cost, utility, and characteristics of modern sensory aids employed in communicating ideas; organization for handling films, film-strips, recordings and transcriptions, slides, pictures, exhibits, and similar materials in the library; experience in operating various types of equipment; techniques in extending the use of audio-visual materials by community groups; sources of information about materials and equipment.
- 530 Organization of Library Materials: Theory and Principles (4)** **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)** **Staff**
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.
- 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. (Offered Summer Quarter only.)
- 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, 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.
- Thesis (*)** **Staff**

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 *Schools of Medicine and Dentistry Bulletin* contains more complete descriptions of courses numbered below 500.

ANATOMY

Executive Officer: **H. STANLEY BENNETT, 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) | Oder |
| 328-329 Gross Anatomy (6-4) | Blandau, Everett |
| 330 Microscopic Anatomy (4) | Roosen-Runge |
| 331 Neuroanatomy (2) | Everett |
| 350-351 Human Function and Structure (6-6) (See Conjoint Courses, page 149.) | |
| 401-402-403 Gross Anatomy (8-4-4) | Johnson |
| 404 Human Embryology (3) | Blandau |
| 405-406 Microscopic and Submicroscopic Anatomy (4-4) | Bennett |
| 407 Basis of Neurology (3,5, or 8) (See Conjoint Courses, page 149.) | |
| 510 Cytochemistry (4) | Bennett |
| 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. | |
| 521 Seminar in Molecular and Submicroscopic Anatomy (2) | Bennett |
| 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 (4) | Everett |
| Techniques of using radioactive isotopes as tracers in biological research. Prerequisite, permission. | |
| 535 Histogenesis and Organogenesis (2) | Blandau |
| Laboratory study and conferences dealing with the ontogenetic maturation of tissues and organs during fetal life. Prerequisite, permission. | |

- 540 Prenatal Anatomy I (4)** **Johnson**
The study and dissection of the fetus and the newborn, emphasizing the thoracic cavity. Primarily intended for pediatricians and surgeons. Prerequisite, permission.
- 541 Prenatal Anatomy II (4)** **Johnson**
The study and dissection of the fetus and the newborn, emphasizing the spine and extremities. Primarily intended for orthopedists. Prerequisite, permission.
- 542 Prenatal Anatomy III (4)** **Johnson**
The study and dissection of the fetus and the newborn, emphasizing the head and neck. Primarily intended for practitioners of otorhinolaryngology, ophthalmology, neurology, and pediatrics. Prerequisite, permission.
- 543 Prenatal Anatomy IV (4)** **Johnson**
The study and dissection of the fetus and the newborn, emphasizing the abdomino-pelvic cavities. Primarily intended for pediatricians and surgeons.
- 550 Biological Polarization Microscopy (4)** **Bennett**
Theory, technique, and application of polarization microscopy in biological studies. Prerequisite, permission.
- 555 Mammalian Reproduction (3)** **Blandau**
Fundamental processes of reproductive anatomy and physiology of laboratory animals. Prerequisite, permission.
- 557 Seminar (1-3, maximum 9)** **Staff**
Prerequisite, permission.
- 560 Quantitative Optical Methods in Cytology (3)** **Thornburg**
Quantitative studies of cell structure and function using light microscope, phase microscope, polarizing microscope and microspectrograph. Prerequisite, permission
- 581, 582, 583, 584 Surgical Anatomy I, II, III, IV (4,4,4,4) (See Conjoint Courses, page 149.)**
- 600 Research (*)** **Staff**
Prerequisite, permission.
- 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 academic teaching and research institutions, in hospitals, and in industry and government laboratories.

The Department offers courses in basic biochemistry for students in various areas of study in the University, including the natural sciences, medicine, dentistry, and others. Students who intend to work toward 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 (6,6)** **Staff**
- 481, 482 Biochemistry (5,2)** **Staff**
- 483 Biochemistry Laboratory (3)** **Staff**
- 520 Seminar (1-3, maximum 9)** **Staff**
Prerequisite, permission.
- 562 Physical Biochemistry (2)** **Dandliker**
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. (Not offered 1955-56.) Prerequisites, 482 and Chemistry 357 or permission.
- 563, 564 Proteins (2,2)** **Dandliker, 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. (563 not offered 1955-56; 564 offered Autumn Quarter, 1955.) Prerequisites, 562 or permission, 563 for 564.

- 565, 566 Enzymes and Enzyme Action (3,3)** **Fischer, Huennekens, Krebs**
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 Winter and Spring Quarters, 1956.) Prerequisites, 482 and Chemistry 357, or permission, for 565; 565 for 566.
- 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, 1956.) Prerequisite, 402 or 482 or permission.
- 569 Topics in Bio-organic Chemistry (2)** **Huennekens, Wilcox**
Application of organic chemistry to selected problems in biochemistry, illustrated by the determination of structure, total synthesis, and mechanism of action of such compounds as nucleotides and peptides. (Offered Winter Quarter, 1956.) Prerequisite, 482 or permission.
- 570 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, 1957.) Prerequisite, 482 or 402 or permission.
- 583 Advanced Biochemistry Laboratory (3)** **Staff**
Biochemical preparations and investigations of physical and chemical properties by special techniques, including spectrophotometry, polarimetry, manometric method, electrophoresis, isotope tracer applications, etc. Prerequisites, 483 and permission.
- 600 Research (*)** **Staff**
Prerequisite, permission.
- Thesis (*)** **Staff**

MICROBIOLOGY

Executive Officer: CHARLES A. EVANS, G305 Health Sciences Building

The Department of Microbiology offers programs leading to the degrees of Master of Science and Doctor of Philosophy. Candidates for these degrees may specialize in general bacteriology, immunology, parasitology, medical mycology, virology, or physiology of bacteria. Course requirements vary according to the field chosen.

COURSES

- 300 Fundamentals of Bacteriology (*, maximum 6)** **Douglas, Ordal**
- 301 General Microbiology (5)** **Staff**
- 320 Media Preparation (*, maximum 5)** **Duchow**
- 322 Applied Bacteriology (5)** **Staff**
- 430 Industrial Microbiology (3 or 5)** **Douglas**
- 441-442 Medical Bacteriology, Virology, and Immunology (*-, maximum 5-, -*, maximum 5-)**
Evans, Groman, Henry, Weiser
- 443 Medical Mycology (*, maximum 2)** **Henry**
- 444 Medical Parasitology (*, maximum 4)** **Groman**
- 510 Physiology of Bacteria (3)** **Douglas, Groman, Ordal, Whiteley**
Fundamental physiological and metabolic processes of bacteria. Prerequisite, permission of instructor.
- 520 Seminar (1)** **Staff**
- 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, Chlamydoxales, Caryophanaeae, and Borrelomycetaceae. (Offered alternate years; offered 1955-56.) Prerequisite, permission.
- 540 Filterable Viruses (*, maximum 4)** **Evans**
Consideration of the physical, chemical, and biological properties of viruses and methods of working with them. (Offered alternate years; offered 1955-56.) Prerequisites, -442 and permission; histology is recommended.
- 550 Advanced Immunology (*, maximum 4)** **Weiser**
(Offered alternate years; offered 1956-57.) Prerequisites, 441- and permission.
- 600 Research (*)** **Staff**
- Thesis (*)** **Staff**

PATHOLOGY

Acting Executive Officer: LESTER D. ELLERBROOK, D509 Health Sciences Building

COURSES

- 321, 322-323-324-325, 326 Medical Technology (5,6-6-6-6,16) Ellerbrook, Erikson, Reiff, Staff**
441-442-443 General and Special Pathology (5-5-5) Staff
 Prerequisite for graduate students, permission.
- 445-446-447 Laboratory Procedures (*-*-*) (See Conjoint Courses, page 149.)**
 Prerequisite for graduate students, permission.
- 460 Autopsy Technique (*) Staff**
 Prerequisite for graduate students, permission.
- 470 Surgical Pathology (*) Staff**
 Prerequisite for graduate students, permission.
- 476 Clinical Pathological Conference (*) Staff**
 Prerequisite for graduate students, permission.
- 483 Oncology (2-5, maximum 20) Staff**
 Prerequisite for graduate students, permission.
- 500 Principles of Pathology (5) 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 basic sciences.
- 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. The objective is to teach the individual to perform an experiment properly. Problems may be concerned with animal experimentation or with specimens obtained from human beings. Special techniques and usage of specialized equipment are utilized when indicated. Methods of keeping data and statistics are considered. Open only to graduate students and fellows who are assigned to work with senior members of the staff. Prerequisite, permission of Executive Officer.
- 552 Clinical Pathology (2-5, maximum 20) Ellerbrook, Erikson, Reiff**
 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) Creighton, 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.

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**
 Prerequisite for graduate students, a major or a minor in pharmacology.
- 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.
- 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.
- 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 degrees 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 clinical physiology, (2) biophysics, for which undergraduate mathematics and physics are prerequisite, (3) physiology of behavior, in which undergraduate psychological training is a prerequisite, and (4) applied physiology, with emphasis on environmental stresses and human engineering.

The basic advanced course in physiology includes Conjoint 407 (Basis of Neurology) and Physiology 401-402.

Many graduate students in physiology and biophysics have a medical degree, and their curricula are adjusted in accordance with their training.

COURSES

- 350-351 Human Function and Structure (6-6)** (See Conjoint Courses, page 149.)
- 401-402 Advanced Human Physiology (7-7)** **Ruch, Staff**
Prerequisite for graduate students, permission.
- 407 Basis of Neurology (3, 5, or 8)** (See Conjoint Courses, page 149.)
- 416 Biophysics (5)** **Woodbury, Young**
- 421 Instrumental Analysis of Cardiac Function (2)** **Rushmer**
- 481 Pathological Physiology of Pain (*)** **Amassian, Ruch**
Prerequisite for graduate students, permission.
- 482 Cardiopulmonary Interrelations (*)** **Carlson, Rushmer**
Prerequisite for graduate students, permission.
- 483 Neurology of Emotional Behavior (*)** **Patton, Ruch**
Prerequisite for graduate students, permission.
- 484 Endocrinological Reaction to Stress (*)** **Carlson, Patton**
Prerequisite for graduate students, permission.
- 497 Medical Students' Elective (*)** **Staff**
Short intensive courses in special aspects of physiology. Prerequisite for graduate students, permission.
- 520 Seminar (2-5)** **Staff**
Selected topics in physiology.
- 521 Biophysics Seminar (2-5)** **Young**
Selected topics in biophysics.
- 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.

- 532 Basic Principles of Physiological Instrumentation (2-5)** **Woodbury, 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.
- 533 Applied Physiological Instrumentation (2-5)** **Amassian, Carlson, Rushmer, Scher**
Study and use of research instruments applicable to the nervous system (stimulators, amplifiers, and oscilloscopes), the cardiovascular system (cinefluorograph, electro- and stetho-cardiograph, oximeter, strain gauge manometers, etc.), and respiratory and metabolic activity (flow meters, minute volume integrator, infrared and paramagnetic gas analyzers, cardiograph, thermocouples, gradient calorimeter). Prerequisites, 532 and permission.
- 535 Operative Techniques in Neurophysiology (2-5)** **Patton, Ruch**
Deafferentation, decerebration, and Sherrington reflex preparation; osteoplastic bone flap, Horsley-Clarke apparatus, and reconstruction of lesions; primate colony and operating room management. Prerequisite, permission.
- 600 Research (*)** **Staff**
Prerequisite, permission.
- Thesis (*)** **Staff**

PUBLIC HEALTH AND PREVENTIVE MEDICINE

Executive Officer: **WILLIAM E. REYNOLDS, B506 Health Sciences Building**

COURSES

- 301 Causes and Control of Communicable Diseases (3)** **Staff**
- 330 Introduction to Environmental Sanitation (3)** **Hatlen**
- 402 Communicable Disease Control (3)** **Staff**
- 409 Biostatistics (2)** **Bennett**
- 412 Public Health Organizations and Services (3)** **Staff**
- 425 Epidemiology of Communicable Diseases (1)** **Staff**
- 432 Food Sanitation (3)** **Hatlen**
- 434 Milk Sanitation (3)** **Hatlen**
- 435 Vector Control (3)** **Hatlen**
- 438 Sanitation Facility Design (3)** **Dunn**
- 439 Environmental Utilities (2)** **Dunn**
- 451 Industrial Hygiene (3)** **McGill**
- 453 Industrial Hygiene Techniques (3)** **Kusian, Staff**
- 460J Field Training in Health Education (5)** **Vavra**
Offered jointly with the College of Education.
- 461 School and Community Health Programs (5)** **Mills, Vavra**
- 463 Community Organization for Health Education (3)** **Vavra**
- 464 Community Health Education Techniques (3)** **Vavra**
- 470 Introduction to Public Health Statistics (2)** **Bennett**
- 472 Applied Statistics in Health Sciences (4)** **Bennett**
- 475 Clerkships and Seminar (*)** **Houghton, Mykut, Wilkey**
- 476 Advanced Public Health Statistics (5)** **Bennett**
(Offered when demand is sufficient.)
- 477 Statistical Methods in Biological Assay (3)** **Bennett**
(Offered when demand is sufficient.)
- 480 Public Health Problems (2-6)** **Staff**
(Offered by arrangement in health education, statistics, sanitation, or administration.)
- 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**
- 492J Problems in International Health (2)** **Leahy**
Offered jointly with the School of Nursing.
- 496 Concept of the Child (3) (See Conjoint Courses, page 149.)**
- 502J Applied Group Development Principles (3)** **Burke, 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, permission, Speech 332 or equivalent, graduate standing, and background in health field.

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.
- 407 Basis of Neurology (3,5, or 8)** **Everett, Patton, Ruch**
Offered by the Departments of Anatomy and Physiology. Prerequisite for graduate students, permission.
- 445-446-447 Laboratory Procedures (*-*.*)** **Ellerbrook, Scribner, Staff**
Offered by the Departments of Pathology and Medicine. Prerequisite for graduate students, permission.
- 496 Concept of the Child (3)** **Deisher, Baldwin, Staff**
Offered by the Departments of Pediatrics and Public Health and Preventive Medicine. For nonmedical students. Prerequisite, permission.
- 581, 582, 583, 584 Surgical Anatomy I, II, III, IV (4,4,4,4)** **R. Johnson**
An intensive course of lectures and dissection devoted to one region of the body each quarter, i.e., thorax, abdomen, upper extremity, head and neck. Offered by the Departments of Surgery and Anatomy. Prerequisite for nonmedical students, permission.

PEDIATRICS

Executive Officer: WALTER B. SEELYE, C520 Health Sciences Building

COURSES

- 496 Concept of the Child (3) (See Conjoint Courses above.)**
- 505 Physical Growth of the Well Child (2)** **Moll, Staff**
Weekly seminars, eighteen hours. The correlation between growth and development and diseases in the child as pertaining to dental health. For graduate students in dentistry. Prerequisite, permission.

PSYCHIATRY

Executive Officer: HERBERT S. RIPLEY, B516 Health Sciences Building

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**
- 451 Principles of Personality Development (2)** **Heilbrunn**
- 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.
- 557 Clinical Psychiatry (2)** **Staff**
Discussion of clinical psychiatry considering causation, prevention, treatment, and rehabilitation. Not open to students who have taken 457. Prerequisite, 267 or 451 or permission.

- 558 Seminar: Interviewing (2)** **Voorhees**
Case studies are presented by individual students for discussion of the psychodynamics and methods of dealing with personality problems.
- 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 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 Seminar (5)** **Harkins, Merendino**
Conferences, seminars, and round-table discussions of advanced surgical topics and recent literature in the field.
- 581, 582, 583, 584 Surgical Anatomy I, II, III, IV (4,4,4,4)** (See Conjoint Courses, page 149.)
- 590 Surgical Experimental Techniques (5)** **Harkins, Merendino**
Basis for graduate research and advanced thesis work.
- 591 Applied Basic Sciences in Orthopedic Surgery (*)** **Ray, Staff**
Lectures, demonstrations, and laboratory periods devoted to the application of anatomy, physiology, and pathology to clinical problems in orthopedic surgery.
- 594 Seminar in Orthopedic Surgery (*)** **Ray, Staff**
Discussions of recent literature, experimental work, related clinical problems.
- 598 Seminar in Urology (*)** **McDonald, Staff**
Problems in the field of urology discussed by various visiting members of the faculty of urology and of other departments, to provide a well-rounded basic scientific and clinical presentation.
- 600 Research (*)** **Foltz, Harkins, Kanar, McDonald, Merendino, Morris, Mosiman, Payne, Ray, Ward, Staff**
- Thesis (*)** **Staff**

SCHOOL OF NURSING

Dean: MARY S. TSCHUDIN, C303 Health Sciences Building

Curricula are offered leading to the following advanced degrees in nursing: Master of Arts and Master of Nursing. These curricula provide for graduate study and advanced professional preparation and research in teaching in various clinical

specialties or in administration in schools of nursing, or nursing services in hospitals, or public health nursing agencies. They are designed to develop research ability and superior professional competence and to prepare the graduate for positions of administrative, teaching, or advanced clinical responsibility and for assumption of leadership in nursing.

Each student's background is considered individually in the planning of her program.

The patterns outlined below are the usual ones for the master's degrees. Candidates for the Master of Arts are encouraged to take a minor which will serve as the basis for a doctoral degree.

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 from fields 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 a field such as sociology, business administration, journalism, or anthropology.

There is no foreign language requirement for this degree.

COURSES

430 Advanced Nursing Field Work (3)	Staff
431 Advanced Nursing Field Work (2)	Staff
432 Principles of Advanced Nursing (2)	Lucas, Wasson
435 Practice Supervision in Nursing (3)	Smith, Staff
436 Practice Teaching in Nursing (3)	Wasson, Staff
441 Advanced Field Practice in Public Health Nursing (12)	J. Anderson, Staff
454 Administration in Nursing (2)	Smith
455 Administration of Schools of Nursing (3)	Hoffman
456 Nursing Service Administration (3)	Smith
459 Current Literature in Nursing (2)	Staff
462 Teaching in Schools of Nursing (3)	Wasson
463 Personnel Guidance Programs in Nursing (3)	Lucas
464 The Role of the Nurse in Mental Hygiene (2-3)	Kinney
466 In-Service Education in Nursing (3)	Smith
467 Evaluation of Performance in Nursing (3)	Olcott
492J Problems in International Health (2)	Loahy
Offered jointly with the Department of Public Health and Preventive Medicine.	
493 Public Health Nursing Aspects of Adult Hygiene (3)	Kinney
498 Methods of Supervision in Public Health Nursing (3)	Loahy
501 Development of Nursing Procedures (2)	Wasson
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.	

- 502J Applied Group Development Principles (3)** **Burke, 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 Department of Public Health and Preventive Medicine. Prerequisites, permission, Speech 332 or equivalent, graduate standing, and background in the health field.
- 505 Seminar in Administration of Schools of Nursing (3)** **Hoffman, Tschudin**
Discussion, analysis of situations in administration of schools of nursing. Prerequisite, 455 or equivalent.
- 506 Seminar in Nursing Service Administration (3)** **Smith**
Includes over-all planning for the nursing department with study of administrative problems; policy making, budget planning, control, and other administrative practices. Prerequisite, 456 or equivalent.
- 507 Seminar in Nursing Problems in Mental Hygiene (2)** **Kinney**
Nursing case material analyzed to provide a working concept of the principles of mental hygiene and to clarify the functions of the nurse in this area. Prerequisite, permission.
- 508 Seminar in Advanced Psychiatric Nursing (2)** **Lewis, Lucas**
Weekly two-hour seminar in exploration of interpersonal relations and the complex system of forces affecting these relationships in a psychiatric setting. Emphasis is placed upon the nurse's role in the total therapeutic milieu and upon identification and development of interpersonal experiences to promote emotional growth of the individual psychiatric patient. Case material is drawn from student experiences in current advanced psychiatric nursing practice.
- 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 Nursing and Psychosomatic Conditions (3)** **Ely**
Attention will be focused on the solution of nursing problems in the care of patients whose problems are primarily psychophysiologic in nature. Three hours of conference and four hours of clinical laboratory experience weekly. Prerequisites, basic course in psychiatric nursing and permission.
- 512 Advanced Fields in Psychiatric Nursing (3)** **Lucas**
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.
- 515 Special Fields in Public Health Nursing (3)** **J. Anderson**
Investigation of public health nursing responsibilities in special fields such as rheumatic fever and cerebral palsy. 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.
- 600 Research (*)** **Hoffman, Staff**
Thesis (*) **Hoffman, Staff**

COLLEGE OF PHARMACY

Dean: FOREST J. GOODRICH, 102 Bagley Hall

The College of Pharmacy is accredited by the American Council on Pharmaceutical Education as a Class A college and is a member of the American Association of Colleges of Pharmacy. The degrees of Master of Science and Doctor of Philosophy are offered.

MASTER OF SCIENCE. Candidates must have the degree of Bachelor of Science in Pharmacy 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 45 credits in course work and thesis must be presented, including not less than 27 credits of course work exclusive of nonthesis research.

DOCTOR OF PHILOSOPHY. Candidates must complete at least two years of graduate study in addition to the work done for the master's degree, as well as a research problem that yields comprehensive results and is a definite contribution to knowledge. Specialization is offered in pharmacy, pharmaceutical chemistry, and pharmacognosy.

A total of not less than 135 credits in course work and thesis must be presented, including not less than 56 credits in course work exclusive of nonthesis research. This rule does not apply to those graduate students enrolled before January 1, 1955. The credits earned for the master's degree may be applied toward the doctor's degree.

COURSES**PHARMACY**

- 473 **Cosmetic Manufacturing (3)** Rising
 483 **Hospital Pharmacy (3-5)** Plein
 520 **Seminar (1, maximum 3)** Staff
 Graduate students attend seminars every quarter while in residence, but a maximum of 1 credit per year is allowed.
 540 **Pharmaceutical Emulsions (2)** Rising
 Problems in the preparation of emulsions in pharmaceutical manufacturing. Prerequisites, Chemistry 239 and either Chemistry 351, 352, or equivalent.
 550 **Solvents and Solvent Extraction (2)** Plein
 Theories of solvent extraction and the use of solvents applied to pharmaceutical manufacturing. Prerequisite, permission.
 600 **Research (*)** Plein, Rising
 Thesis (*) Staff

PHARMACEUTICAL CHEMISTRY

- 497 **Pharmaceutical Chemistry and Toxicology (5)** 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 1955-56.)
 520 **Seminar (1, maximum 3)** Staff
 Graduate students attend seminars every quarter while in residence, but a maximum of 1 credit per year is allowed.
 521, 522, 523 **Advanced Organic Medicinal Products (3,3,3)** Staff
 (Offered every third year; offered 1957-58.)
 526, 527, 528 **Advanced Organic Medicinal Products Laboratory (2,2,2)** Staff
 (Offered every third year; offered 1957-58.)
 531 **Plant Chemistry (3)** Staff
 Alkaloids, including methods of isolation, degradation studies, proof of structure, and synthesis of alkaloids, with emphasis on pharmaceutical compounds. (Offered every third year; offered 1956-57.)
 532 **Plant Chemistry (3)** Staff
 Production, isolation, and chemistry of the volatile oils and of sterols, with emphasis on pharmaceutical compounds. (Offered every third year; offered 1956-57.)
 533 **Plant Chemistry (3)** McCarthy
 Glycosides and related compounds, including methods of isolation, proof of structure, synthesis, and activity, with emphasis on pharmaceutical compounds. (Offered every third year; offered 1956-57.)
 600 **Research (*)** Staff
 Thesis (*) Staff

PHARMACOGNOSY

- 405 **Advanced Pharmacognosy (3)** Staff
 406 **Medicinal Plants (2)** Youngken
 411 **Hormones and Glandular Products (3)** Youngken
 412 **Serums, Vaccines, and Allergens (2)** Staff
 520 **Seminar (1, maximum 3)** Staff
 Graduate students attend seminars every quarter while in residence, but a maximum of 1 credit per year is allowed.
 600 **Research (*)** Goodrich, Youngken
 Thesis (*) Staff

GRADUATE SCHOOL OF SOCIAL WORK

Director: VICTOR I. HOWERY, 103 Social Work Hall

FACULTY

BREUL, FRANK R., 1951 (1953).....Associate Professor of Social Work
 B.A., 1938, Amherst College; M.A., 1941, Chicago; Ph.D., 1951, McGill

FERGUSON, GRACE BEALS, 1941 (1945)	<i>Professor of Social Work</i>
B.A., 1917, Minnesota; M.A., 1930, Indiana	
GRONEWOLD, DAVID H., 1954	<i>Assistant Professor of Social Work</i>
B.A., 1929, North Central College; M.A., 1952, Chicago	
HOWERY, VICTOR I., 1952 (1953)	<i>Professor of Social Work; Director of</i>
B.S., 1936, Wisconsin State College, Platteville;	<i>the Graduate School</i>
Ph.M., 1946, M.S.W., 1948, Ph.D., 1949, Wisconsin	<i>of Social Work</i>
HUNT, MARGUERITE, 1949 (1950)	<i>Associate Professor of Social Work</i>
A.B., 1929, Brown; M.S., 1936, Western Reserve	
MACDONALD, CATHERINE J., 1945	<i>Assistant Professor of Social Work</i>
B.A., 1936, Washington	
MURASE, KENNETH K., 1953	<i>Assistant Professor of Social Work</i>
B.A., 1944, Temple; M.S.W., 1947, Columbia	
PARSONS, JACK R., 1955	<i>Assistant Professor of Social Work</i>
B.A., 1935, M.A., 1940, College of the Pacific; M.S., 1943, Columbia	
REISS, GRACE DEWEY, 1947 (1954)	<i>Assistant Professor of Social Work</i>
B.A., 1932, Iowa; M.A., 1940, Minnesota	
SESSIONS, PERCY M., 1955	<i>Assistant Professor of Social Work</i>
B.A., 1938, Mississippi College; M.S.W., 1953, Louisiana State	
WALTER, EDWARD D., 1953	<i>Assistant Professor of Social Work</i>
B.A., 1940, Carleton College; M.S.W., 1951, Southern California	

GENERAL INFORMATION

The Graduate School of Social Work provides training for positions of professional responsibility in public and private social agencies. The two-year program leads to the degree of Master of Social Work.

FACILITIES

The following agencies cooperate with the School by providing field work placements: American Red Cross; Associated Lutheran Welfare; Atlantic Street Center; Catholic Children's Bureau; Children's Orthopedic Hospital; Family Society of Seattle; Family and Child Service, Tacoma; Firland Sanatorium; Florence Crittenton Home; Health and Welfare Council; Jackson Street Community Council; Jewish Family and Child Service; Juvenile Court; King County Hospital; King County Office, State Department of Public Assistance; Madigan Army Hospital; Northwest Regional Respiratory Center; Ryther Child Center; Seattle Children's Home; State Board of Health; Tacoma-Pierce County Health Department; Tacoma Public Schools; Travelers' Aid Society; Tuberculosis Clinic, Seattle-King County Department of Public Health; United States Public Health Hospital; University of Washington Child Health Center, Psychiatric Clinic for Children, Psychiatric Clinic for Students; Veterans Administration Medical and Psychiatric Clinics; Washington Children's Home Society; and Young Women's Christian Association.

ADMISSION

Admission is by approved application only. The student must be eligible for admission to the Graduate School and should have completed a well-rounded undergraduate program in the social sciences, including some work in each of the following: anthropology, economics, political science, psychology, and sociology. It is recommended that a course in statistical method and one in physiology be included in the undergraduate preparation.

Admission procedure includes filing of application materials and a personal interview. Students living at some distance will be interviewed by a representative of the School.

Applications should be made before June 1 for admission in Autumn Quarter. All inquiries and applications should be sent to the Director of the Graduate School of Social Work.

THE PROGRAM IN SOCIAL WORK

The Graduate School of Social Work offers a two-year, six-quarter program leading to the degree of Master of Social Work. During the second year, students may specialize in social case work, community organization, or social group work. Among the types of positions to which this training may lead are case work in family and children's agencies, in psychiatric clinics, in hospitals, and in courts; research positions in social agencies; leadership positions in group work agencies; and work in community organization and agency administration. The student program includes a supervised field work assignment in a qualified social agency for two or three days a week in both the first and second years.

Students are encouraged to plan toward the full curriculum, but those unable to study longer than one year can complete in that time the necessary training for certain positions. Undergraduate courses are available for students who expect to enter employment in a social agency without graduate work and for students who have a general interest in the study of social welfare services. Students who register for these undergraduate courses should have a well-rounded preparation in the social sciences.

MASTER OF SOCIAL WORK. The curriculum for the two-year program leading to the master's degree includes courses in psychiatry and medical information; the theory and practice of social case work, social group work, social welfare administration, and community organization; field practice; the philosophy and history of the social work profession; and research.

Requirements include: completion of the prescribed curriculum; a minimum of three quarters in residence at this School; field work in all six quarters; a comprehensive examination; and completion of either an individual thesis or a group research project. The research requirement is generally met by the completion of a three-quarter research course. Instruction includes material on the philosophy and methods of social work research and field practice in social work research through group research projects. Field practice includes the collection and analysis of data and the preparation of a report. The degree is awarded on the basis of the student's competence in both theory and practice. The comprehensive examination and the field work performance are tests of competence. There is no foreign language requirement.

COURSES

- | | | |
|------------|--|--------------------------------------|
| 300 | Field of Social Work (3)
Principles and practices in the field of social work, with a comprehensive picture of available services and future needs. Prerequisite, upper-division standing. | Macdonald, Parsons, Lecturers |
| 302 | Introduction to Child Welfare (2)
A survey of social welfare programs relating to the well-being of children, including standards and objectives of foster-home care, adoption, day care, institutional care, and special services for the exceptional child. Prerequisite, upper-division standing. | Parsons |
| 303 | Introduction to Case Work in Public Assistance (3)
Application of principles and policies in effective public assistance practice. Prerequisite, upper-division standing. | Staff |
| 304 | Case Work Interviewing (2)
The interview as a basic method in helping people. Analysis of interviews from case records with the objective of identifying the processes and techniques of skillful interviewing; ways in which the purpose and setting of the interview influence its nature and course. Prerequisite, upper-division standing. | Reiss |
| 305 | Health Aspects of Social Work (2)
The role of social work in collaboration with medicine in the approach to problems of illness from the physical, emotional, and social aspects. Emphasis is on social factors in health problems and the social worker's responsibility. Prerequisite, upper-division standing. | Ferguson |
| 306 | Public Welfare Programs in the United States (3)
Origins, development, and present status of public welfare programs enacted by state and federal government since 1900. Prerequisite, upper-division standing. | Breul |
| 502 | Development of Social Service Programs (2)
A study of social service programs developed to meet individual, group, and community needs. The relationship of such programs to social, familial, and economic patterns of society. Prerequisite, permission. | Howery |

- 505 History of Social Work (3)** **Breul, Ferguson**
Social work since the sixteenth century, with special attention to nineteenth-century movements and their influence upon present methods, purposes, and tendencies. Prerequisite, permission.
- 506 Social Work as a Profession (2)** **Ferguson, Gronewold, Howery, Walter**
The origin and nature of social work as a profession; its relation to other professions such as law and medicine; the history and status of its major professional associations; and its relation to the philosophy of human rights as clarified through religions and great documents of the past. Prerequisite, permission.
- 509 Readings in Social Work (*, maximum 6)** **Staff**
Prerequisite, permission.
- 510 Social Case Work (2)** **Gronewold, Murase, 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)** **Gronewold, Murase, Reiss**
Continuation of generic case-work theory, with emphasis on diagnosis and case-work treatment. Prerequisite, 510.
- 512 Social Case Work (2)** **Gronewold, Murase, Reiss**
Elaboration and intensification of basic case-work concepts and their application in practice to various types of agencies. Prerequisite, 511.
- 515 Field Work (4, maximum 16)** **Macdonald, Staff**
Prerequisite, permission.
- 520 Seminar (*, maximum 6)** **Staff**
Prerequisite, permission.
- 521 Social Group Work (2)** **Walter**
Professional group work as a method and process within the whole field of social work; objectives, techniques, skills and media of group work, and criteria for evaluation of results. Prerequisite, permission.
- 530 Advanced Case Work (2)** **Hunt, Murase**
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 Case Work (2)** **Hunt, Murase**
Continuation of intensive study of case material, with emphasis on sound direction in case-work treatment. Prerequisite, 530.
- 532 Advanced Case Work (2)** **Hunt, Murase**
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)** **Hunt, Murase**
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)** **Hunt, Murase**
Continuation of 533. Prerequisite, permission.
- 535 Advanced Field Work (4, maximum 12)** **Macdonald, Staff**
Prerequisite, 515.
- 536 Seminar: Supervision (3)** **Staff**
Functions of the supervisor in case-work agencies, as teacher, case consultant, and administrative officer; review of literature; study of supervisory processes and techniques through analysis of case material illustrating the three functions of the supervisors; the supervisory relationship—transference and counter-transference in supervision; management of supervisory load. Prerequisite, permission.
- 546 Emotional Disturbances in Children (2)** **Staff**
Psychiatric problems of children; a discussion of the therapeutic process; the role of the social work therapist; the child's participation in treatment; types of play material used; interpretations and evaluations of progress. Prerequisite, permission.
- 556 Medical Information for Social Work (2)** **Ferguson, Medical Lecturers**
Physical growth and change of the individual as correlated with factors of emotional and social development; consideration of specific medical problems. Prerequisite, permission.
- 557 Medical Information for Social Work (2)** **Ferguson, Medical Lecturers**
Continuation of 556. Prerequisite, 556.
- 570 Administration of Social Agencies (2)** **Howery**
Problems of administration that confront the administrator and his staff in any public or private agency; relations with board and staff; problems of finance and budget making, office management. Emphasis on dynamic principles of the administrative process. Prerequisite, permission.
- 572 Community Organization for Social Welfare (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.

- 580 Introduction to Public Welfare (2)** **Breul**
Care of needy under poor laws, emergency relief and modern public assistance programs; characteristics of state assistance plans; administration of work relief; federal grants-in-aid; adult probation and parole; vocational rehabilitation services. Prerequisite, permission.
- 581 The Child and the State (2)** **Staff**
The development of the rights of the child in relation to those of parents; the responsibility of the state in safeguarding children's rights through laws and their administration by agencies; the significance of these rights to family and children's social agencies. Prerequisite, 510.
- 582 Administration of Social Insurances (3)** **Staff**
The social insurance movement in the United States and selected countries, present legislation and administrative problems in unemployment compensation and the insurances for the aged, survivors, disabled, and sick. Prerequisite, 580.
- 583 Public Welfare Administration (3)** **Staff**
Administrative structure at federal, state, and local levels; federal and state responsibilities in supervision; financing welfare services; research and reporting by welfare departments. Prerequisite, 580.
- 584 Public Assistance Policy and Method (3)** **Staff**
Administrative aspects of a public welfare agency program as related to case-work services; the development and effective use of policy in agency planning and provision of individualized service as applied to practice. 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 Work (2)** **Breul**
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)** **Breul, Howery, Staff**
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.

Thesis (*)

Staff

URBAN PLANNING

Chairman: DONALD H. WEBSTER, 266 Smith Hall

Coordinating Committee: Donald H. Webster, Professor of Political Science; Myer R. Wolfe, Associate Professor of City Planning, School of Architecture; Bayard O. Wheeler, Professor of Business Administration; Edgar M. Horwood, Assistant Professor of Civil Engineering; John C. Sherman, Associate Professor of Geography; Calvin F. Schmid, Professor of Sociology.

Advisers: Edgar M. Horwood, Program Adviser; Myer R. Wolfe, Thesis Adviser.

Field Coordinator: Floyd M. Jennings, Planning Consultant, Bureau of Governmental Research and Services.

An interdepartmental curriculum leading to the degree of Master of Arts in Urban Planning is offered by the School of Architecture; the Colleges of Business Administration and Engineering; and the Departments of Geography, Political Science, and Sociology. The curriculum is supervised by an interdepartmental Coordinating Committee, under the Graduate School, which is composed of representatives from the participating academic divisions.

The program for the degree in urban planning is designed to prepare students to meet the growing demand for professionally trained administrators and technicians in city and urban planning, especially in Washington State and the Pacific Northwest.

Candidates are admitted to the curriculum on application approved by the Coordinating Committee. All inquiries about the program should be addressed to the Chairman of the Committee.

A limited number of compensated internships are available through arrangements with municipalities in the state. If approved by the Coordinating Committee, an internship project may be used as source material for a thesis.

The total requirement in the urban planning program is 60 credits, including at least 45 credits completed after admission to the graduate curriculum. Up to 9 credits are allowed for the thesis. The total must include all required courses or approved substitutes. Participation in an interdepartmental seminar may be required with or without credit. The varying backgrounds of training and experience found among candidates for the degree permit the adjustment of programs to meet individual needs and objectives. No foreign language is required.

The curriculum includes, but is not limited to, the courses listed below. *Prerequisite* courses are those suggested as part of the undergraduate preparation for entrance to the curriculum. Some deficiencies in prerequisite courses may be removed after admission to graduate study. *Required* courses are the core of the graduate program. Candidates take all required courses except those previously completed and those for which substitutions are approved by the Committee. *Recommended* courses are those from which students may choose electives to supplement the core courses.

PREREQUISITES:

Architecture 380 Introduction to City Planning (3) or Civil Engineering 403 Principles of Urban Planning (3)

General Business 101 Introduction to Business (5) or Economics 200 Introduction to Economics (5)

Geography 360 Introductory Cartography (5)

Geography 402 United States (5) or 202 Anglo-America (3)

Political Science 376 State and Local Government and Administration (5) or 475 Problems of Municipal Government and Administration (5)

Sociology 110 Survey of Sociology (5) or 310 General Sociology (5)

Sociology 223 Social Statistics (5) or Mathematics 281 Elements of Statistical Method (5)

REQUIRED:

Architecture 480 City Planning Practice (3)

Architecture 490, 491, 492 City Planning Problems (7,7,7)

Civil Engineering 595 Advanced Professional Design and/or Analysis (2-5)

Geography 477 Urban Geography (3 or 5) or 464 Map Reproduction (3)

Political Science 581 Seminar in Public Policy in Planning (5)

Real Estate 301 Principles of Urban Real Estate (5)

Sociology 331 Population Problems (5) or 430 Human Ecology (5)

Thesis (*)

RECOMMENDED:

Civil Engineering 315 Photogrammetry (3)

Civil Engineering 350 Introduction to Sanitary Engineering (3)

Civil Engineering 428 Highway Economics and Administration (3)

Civil Engineering 429 Urban Traffic (3)

Geography 441 Industrial Geography (3 or 5)

Geography 442 Commercial Geography (3 or 5)

Geography 444 Water Resources in the Pacific Northwest (3 or 5)

Political Science 470 Introduction to Public Administration (5)

Sociology 255 American Housing Problems (5)

Sociology 365 Urban Community (5)

- Sociology 420 Methods of Sociological Research (5)**
Sociology 425J Graphic Techniques in the Social Sciences (5)
Offered jointly with the Department of Geography.
Sociology 530 Advanced Human Ecology (3)
Sociology 531 Demography (3)
Transportation 301 Principles of Transportation (5)

BULLETIN • UNIVERSITY OF WASHINGTON



SCHOOL OF LAW

1956-1958

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes two general bulletins; bulletins of the colleges and schools; two Summer Quarter announcements; and publications of the Division of Adult Education and Extension Services, the correspondence study and extension class announcements.

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 REGULATIONS**, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as students.

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

UNIVERSITY REGULATIONS (FOR REGISTERED STUDENTS ONLY)

INTRODUCTION TO THE UNIVERSITY

Bulletins of the Colleges and Schools

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF BUSINESS ADMINISTRATION

COLLEGE OF EDUCATION

COLLEGE OF ENGINEERING

COLLEGE OF FORESTRY

GRADUATE SCHOOL

SCHOOL OF LAW

SCHOOLS OF MEDICINE AND DENTISTRY

SCHOOL OF NURSING

COLLEGE OF PHARMACY

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT

SUMMER QUARTER ANNOUNCEMENT

CORRESPONDENCE STUDY

EXTENSION CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 901
May, 1956

Published monthly at Seattle, Washington, by the University of Washington from October to July, inclusive. No issues in August and September. Entered as second-class matter December 18, 1947, at the post office at Seattle, Washington, under the Act of August 24, 1912.

CONTENTS

CALENDAR 4

ADMINISTRATION 6

 Board of Regents

 Officers of Administration

 School of Law Faculty

GENERAL INFORMATION 11

 Facilities

 Student Activities and Services

 Admission

 World War I and II Veterans

 Korean Veterans

 Study Programs Offered

 Tuition and Fees

 Estimate of Yearly Expenses

 Awards, Scholarships, and Loans

THE PROGRAM IN LAW 25

 Grading

 Objectives and Methods of Instruction

 Curriculum

 LL.B. Degrees Conferred, 1953-54; 1954-55

 Honors, Prizes, Scholarships, and Awards, 1953-54; 1954-55

CALENDAR

All fees must be paid at the time of registration.

SUMMER QUARTER, 1956

REGISTRATION PERIOD

JUNE 11—JUNE 15 Registration for Summer Quarter

ACADEMIC PERIOD

JUNE 18—MONDAY	Instruction begins
JUNE 22—FRIDAY	Last day to add a course for the full quarter
JULY 4—WEDNESDAY	Independence Day holiday
JULY 25—WEDNESDAY	First term ends
JULY 26—THURSDAY	Second term begins
AUG. 31—FRIDAY	Instruction ends

AUTUMN QUARTER, 1956

REGISTRATION PERIOD

SEPT. 25—SEPT. 27	Registration for Autumn Quarter
SEPT. 28—OCT. 2	Orientation program for first-year students

ACADEMIC PERIOD

OCT. 3—WEDNESDAY	Instruction begins (8 a.m.)
OCT. 9—TUESDAY	Last day to add a course
NOV. 12—MONDAY	State Admission Day holiday
NOV. 21—NOV. 26	Thanksgiving recess (6 p.m. to 8 a.m.)
DEC. 21—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1957

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. 22—FRIDAY	Instruction ends

SPRING QUARTER, 1957

ACADEMIC PERIOD

APR. 1—MONDAY	Instruction begins
APR. 5—FRIDAY	Last day to add a course
MAY 24—FRIDAY	Governor's Day
MAY 30—THURSDAY	Memorial Day holiday
JUNE 9—SUNDAY	Baccalaureate Sunday
JUNE 14—FRIDAY	Instruction ends
JUNE 15—SATURDAY	Commencement

SUMMER QUARTER, 1957

REGISTRATION PERIOD

JUNE 17—JUNE 21 Registration for Summer Quarter

ACADEMIC PERIOD

JUNE 19—WEDNESDAY	Instruction begins
JUNE 28—FRIDAY	Last day to add a course for the full quarter
JULY 4—THURSDAY	Independence Day holiday
JULY 30—TUESDAY	First term ends
JULY 31—WEDNESDAY	Second term begins
AUG. 30—FRIDAY	Instruction ends

AUTUMN QUARTER, 1957

REGISTRATION PERIOD

SEPT. 24—SEPT. 26	Registration for Autumn Quarter
SEPT. 27—OCT. 1	Orientation program for first-year students

ACADEMIC PERIOD

OCT. 2—WEDNESDAY	Instruction begins (8 a.m.)
OCT. 8—TUESDAY	Last day to add a course
NOV. 11—MONDAY	State Admission Day holiday
NOV. 27—DEC. 2	Thanksgiving recess (6 p.m. to 8 a.m.)
DEC. 20—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1958

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—FRIDAY	Instruction ends

SPRING QUARTER, 1958

ACADEMIC PERIOD

MAR. 31—MONDAY	Instruction begins
APR. 4—FRIDAY	Last day to add a course
MAY 23—FRIDAY	Governor's Day
MAY 30—FRIDAY	Memorial Day holiday
JUNE 8—SUNDAY	Baccalaureate Sunday
JUNE 13—FRIDAY	Instruction ends
JUNE 14—SATURDAY	Commencement

ADMINISTRATION

BOARD OF REGENTS

CHARLES M. HARRIS, <i>President</i>	Entiat
WINLOCK W. MILLER, <i>Vice-President</i>	Seattle
GRANT ARMSTRONG	Chehalis
THOMAS BALMER	Seattle
DONALD G. CORBETT	Spokane
CHARLES F. FRANKLAND	Seattle
MRS. J. HERBERT GARDNER	La Conner
HELEN HOAGLAND, <i>Secretary</i>	

OFFICERS OF ADMINISTRATION

HENRY SCHMITZ, Ph.D.	<i>President of the University</i>
HAROLD P. EVEREST, M.A.	<i>Vice-President of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
NELSON A. WAHLSTROM, B.B.A.	<i>Comptroller and Business Manager</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>
ARVAL MORRIS, LL.B.	<i>Assistant to the Dean</i>
DOROTHY L. TAMMINEN	<i>Administrative Assistant to the Dean</i>

SCHOOL OF LAW FACULTY

The single 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.

CROSS, HARRY M., 1943 (1949)	<i>Professor of Law</i>
(Real Property, Equity, Land Transactions, Community Property)	
B.A., 1936, Washington State College; LL.B., 1940, Washington. Admitted to practice in Washington.	
FLETCHER, ROBERT, 1956	<i>Assistant Professor of Law</i>
(Criminal Law, Code Pleading, Constitutional Law)	
A.B., 1939, LL.B., 1947, Stanford. Admitted to practice in Washington.	
GALLAGHER, MARIAN GOULD, 1944 (1953)	<i>Professor of Law;</i>
(Legal Bibliograph, 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)	<i>Professor of Law</i>
(Business Associations, Wills and Administration, Corporation Finance)	
A.B., 1926, Whitman College; LL.B., 1929, Washington. Admitted to practice in Washington.	
HARSCH, ALFRED, 1930 (1940)	<i>Professor of Law</i>
(Taxation, Estate Planning, Legislation, State and Local Taxes)	
A.B., 1926, LL.B., 1928, Washington; LL.M., 1940, Columbia. Admitted to practice in Washington.	
HAWLEY, JOSEPH W., 1949 (1953)	<i>Professor of Law</i>
(Real Property, Estate Planning, Wills and Administration, Conflict of Laws)	
B.A., 1940, LL.B., 1942, Colorado. Admitted to practice in Colorado.	
JOHNSON, RALPH W., 1955 (1956)	<i>Assistant Professor of Law</i>
(Criminal Law, Agency, Commercial Transactions, Natural Resources)	
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*
(Business Associations, Evidence, Code Pleading, Creditors' Rights)
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 (1956).....*Assistant to the Dean; Assistant Professor of Law*
(Personal Property, Taxation)
B.A., 1951, M.A., 1952, Colorado College; LL.B., 1955, Colorado. Admitted to practice in Colorado.
- NOTTELMANN, RUDOLPH H., 1927.....*Professor of Law*
(Equity, Trusts and Fiduciary Administration, Comparative Law, Restitution)
B.A., 1912, LL.D., 1952, Monmouth College; M.A., 1913, Illinois; LL.B., 1922, Yale.
- PECK, CORNELIUS J., 1954 (1956).....*Associate Professor of Law*
(Torts, Personal Property, Administrative Law)
B.S., 1944, Harvard; Certificate, 1945, Harvard Business School; LL.B., 1949, Harvard. Admitted to practice in Massachusetts and Washington.
- REAUGH, DAN, 1945.....*Lecturer in Law*
(Trial and Appellate Practice, Office Management, and Professional Responsibility)
A.B., 1932, Washington State College; J.D., 1936, Washington; J.S.D., 1940, Yale. Admitted to practice in Washington and Colorado.
- RICHARDS, JOHN W., 1931 (1937).....*Professor of Law*
(Torts, Evidence, Admiralty)
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., 1948, Washington; LL.M., 1953, Chicago. Admitted to practice in Washington.
- SHEFELMAN, HAROLD S., 1930.....*Lecturer in Law*
(Local Government Law)
Ph.B., 1920, Brown; LL.B., 1925, Yale. Admitted to practice in Washington.
- STEVENS, GEORGE NEFF, 1952.....*Dean of the School of Law; Professor of Law*
(Legal Administration, 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*
(Commercial Transactions, Agency, Insurance, Corporation Finance)
B.A., 1927, Yale; J.D., 1930, Northwestern. Admitted to practice in Illinois.
- WOLLETT, DONALD H., 1946 (1955).....*Professor of Law*
(Labor Law, Labor Relations, Constitutional Law, Social Legislation, Problems in Constitutional Law)
B.A., 1941, Chicago; LL.B., 1942, Indiana. Admitted to practice in Indiana, Illinois, and Washington.

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 M.....Judge, King County Superior Court, Seattle
- HODSON, JAMES W.....Judge, King County Superior Court, Seattle

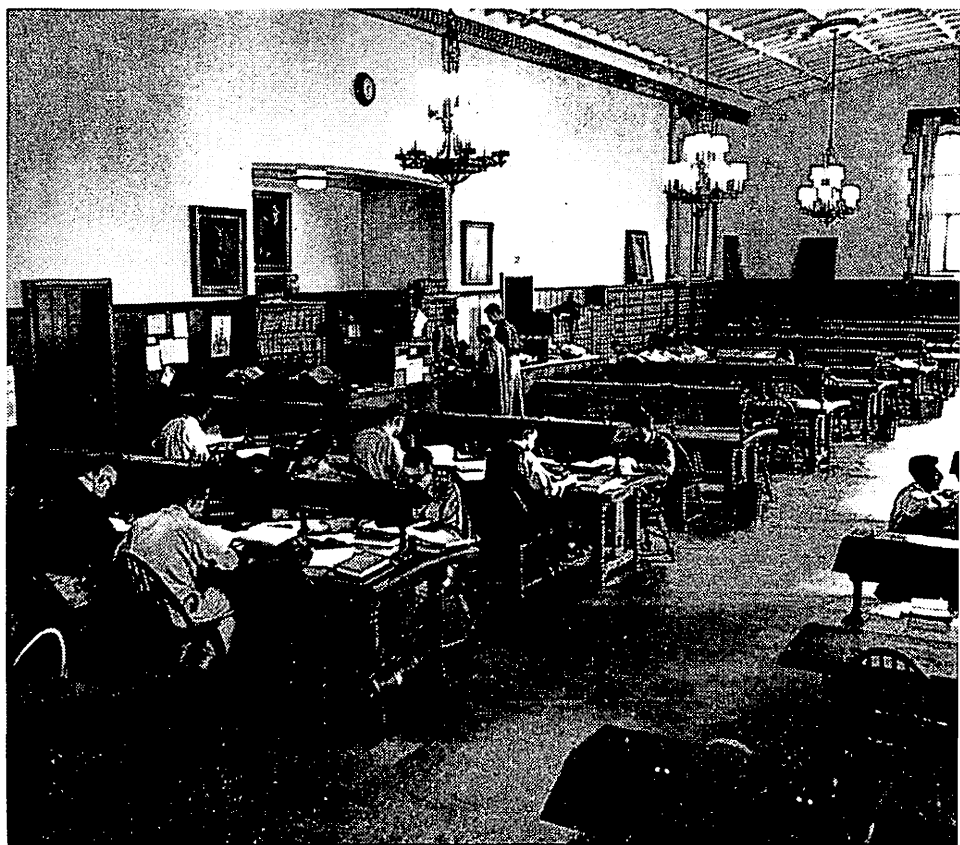
JAMES, FRANK D.....Judge, King County Superior Court, Seattle
 MEAKIM, ROGER J.....Judge, King County Superior Court, Seattle
 NOLLMAYER, EDWARD M.....Judge, Snohomish County Superior Court, Everett
 REVELLE, GEORGE H.Judge, King County Superior Court, Seattle
 RONEY, WARD W.....Judge, King County Superior Court, Seattle
 SHORETT, LLOYD W.....Judge, King County Superior Court, Seattle
 STEINERT, WILLIAMJudge, Washington State Supreme Court, Retired
 WILKINS, WILLIAM J.Judge, King County Superior Court, Seattle
 WRIGHT, EUGENEJudge, King County Superior Court, Seattle

ASSOCIATE LECTURERS IN ESTATE PLANNING

ALKIRE, DURWARDAccountant (Touche, Niven, Bailey, and Smart), Seattle
 ALLISON, LAWRENCE L.....Trust Officer, Bank of California, Seattle
 BERNBAUM, SANFORD M.....Penn Mutual Life Insurance Company, Seattle
 COOPER, JOHN M.....Attorney, National Bank of Commerce, Seattle
 CROSBY, GORDON E., JR.....General Agent, New England Mutual Life Insurance,
 Seattle
 GRAVES, VICTOR.....Trust Officer, People's National Bank, Seattle
 HARDING, JOHN.....Trust Officer, Seattle Trust & Savings Bank
 JUDSON, HENRY HAMMONDVice-President and Trust Officer, Seattle Trust &
 Savings Bank
 KEHOE, ADLORE R.....Attorney (Jones and Grey), Seattle
 OSBORN, CHARLES F.....Attorney (Bogle, Bogle, and Gates), Seattle
 PALMER, HARVARD E.....Vice-President and Trust Officer, Seattle-First
 National Bank
 RANSOM, RENO PAULVice-President and Trust Officer, Seattle-First
 National Bank
 SPRAGUE, ROBERT WYATT.....Chairman of Trust Committee, National Bank of
 Commerce, Seattle
 STONE, CHARLES I.....Attorney (Holman, Mickelwait, Marion, Black, and
 Perkins), Seattle
 WILLIAMS, DEWITT.....Attorney (Eggerman, Rosling, and Williams), Seattle

CHANGES IN UNIVERSITY REGULATIONS

The University and its colleges and schools reserve the right to change the rules regulating admission to, instruction in, and graduation from the University and its various divisions, and to change any other regulations affecting the student body. 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 and change fees at any time.



GENERAL INFORMATION

GENERAL INFORMATION

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 Legal Education and Admission to the Bar of the American Bar Association.

FACILITIES

LAW LIBRARY

The Law School Library contains 132,000 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. The Library is the largest law school library west of the Mississippi.

STATE AND FEDERAL COURTS

The School of Law is convenient to 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 autumn. The superior court for King County, the justice courts, the municipal police 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.

STUDENT ACTIVITIES AND SERVICES

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 and a Law School annual, conducts the School's moot court competition, and aids in the operation of the Legal Aid and United States Attorney's programs.

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 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.

UNITED STATES ATTORNEY'S PROGRAM

Each year the United States Attorney for the Western District of Washington, whose offices are in Seattle, selects a limited number of third-year students of unusual ability to work as volunteer law clerks in his office. Each student is assigned work with an Assistant United States Attorney on both civil and criminal cases. Student law clerks may be present at interviews with prospective witnesses; they assist in the research necessary for preparation of the government's briefs, memoranda, and pleadings; and they observe at first hand the processes of formulation of trial strategy and litigation. The experience obtained under the close supervision of the Assistant United States Attorneys is a valuable supplement to a student's education.

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.

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* (which has been combined with the *Washington State Bar Journal*) 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. Funds are provided by the Washington State Bar Association and the University. 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 recent court decisions and topics of concern and interest to members of the profession are included. A place on the student editorial board, one of the goals of law students, is an invaluable experience for professional life.

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.

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 twenty-nine hundred 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 1955-56 are: Larry W. Thayer, '39, Spokane, president; James Gay, '43, Seattle, treasurer; and Luvern V. Rieke, '49, Seattle, executive secretary. Trustees newly elected were E. Lawrence White, '51, Spokane, for the fifth district; James B. Ramsdell, '34, Tacoma, for the sixth district; and Harry M. Cross, '40, as faculty representative. Trustees continuing in office for the first four congressional districts are: James Arthur, '40, Bremerton, first district; Les Cooper, '37, Everett, second district; Frank Hallett, '40, Castle Rock, third district; John Tuttle, '39, Walla Walla, fourth district.

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.

HOUSING

A limited number of accommodations are available to men in the Men's Residence Hall, 1101 Campus Parkway, Seattle 5, Washington. Interested students should write to the Manager, the Men's Residence Hall. Housing is available to women in the Women's Residence Halls. For further information write to Manager, Women's Residence Halls, University of Washington, Seattle 5, Washington. The Students' Cooperative Association, 1114 East Forty-fifth Street, operated independently from the University, has low-cost accommodations for both men and women. 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, students' cooperatives, and church-sponsored living groups. Other types of living arrangements must be approved by the Office of the Dean of Students.

Veterans of World War II or Korea who are married and have children are eligible to apply to the Office of Student Residences for accommodations in Union Bay Village, the University's family housing project. Because there is a long waiting list, new students should not rely on the possibility of immediate housing there.

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 center and infirmary which help to 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.

ADMISSION

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 assist in program planning.

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.

COMBINED-DEGREE PROGRAM

At the University of Washington, the College of Arts and Sciences offers combined-degree programs in arts-law and science-law, and the College of Business Administration offers a combined-degree program in business-law, under which the appropriate undergraduate degree is awarded by the college upon the successful completion of the first-year program in the School of Law. The preprofessional programs are described in the bulletins of the two colleges, which may be obtained from the University Registrar.

Students at other institutions should consult their prelegal advisers concerning combined-degree programs in their schools.

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:

1. Be of good moral character and at least eighteen years of age.
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.
3. Take the Law School Admission Test administered by the Educational Testing Service. The tests are given at many points throughout the United States on dates set in November, February, April, and August. Applicants are expected to take this test prior to September 1 of the year in which they intend to enter school. *If possible, applicants should take the February test.* Application forms and brochures can be obtained by writing to the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey, or may be picked up at the School of Law. The charge for this examination is \$10.00. Completed applications must be in the hands of the Educational Testing Service at least ten days prior to the date set for any particular test.

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.

4. a. The prospective student must submit an application for admission on a form obtained from the University of Washington School of Law, 205 Condon Hall.

b. Two official transcripts of all college work must be sent by the student's college or university *directly* to the School of Law. 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.

c. Each applicant must submit *two permanent* passport-size facial photographs (approximately 2x2 inches).

Students may begin the study of law only in the Autumn or Summer Quarters. Applications and transcripts for students enrolling in the Autumn Quarter must be received at the School of Law by 5 p.m. September 1. *Applications and transcripts received after that time and date will be considered for the following year only.*

For students who wish to begin the study of law in the Summer Quarter, applications and transcripts of all college work completed at the time of application must be received by 5 p.m. June 11. Applications received after that time and date will be considered for Autumn Quarter enrollment only. Final transcripts for all students who have uncompleted work at the time of application should be submitted as soon as they are available, but in any case they must be submitted by 5 p.m. June 30. If no notification is received by the June 30 deadline, or if the student

has not by that time fulfilled the academic requirements for admission, he will not be permitted to continue in the School of Law.

The importance of advance application for admission cannot be over-stressed. Applicants 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

To qualify for admission with advanced standing, an applicant must meet the following minimum requirements.

1. Meet all the requirements for admission to the first-year class in this Law School. If the applicant has not yet taken the Law School Admission Test (see section 3, page 15), 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.

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.

INTERPRETATION OF SCHOLASTIC ADMISSION REQUIREMENTS

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. *Scholastic-average requirement.* A student's prelegal work must have been passed with a scholastic average at least equal to the average required for graduation in the institutions attended. An applicant who holds a bachelor's degree from an accredited college or university, as defined above, will be treated as satisfying the aforesaid scholastic average requirement.

If the applicant does not present a bachelor's degree as the basis of admission, he must have obtained the required 2.50 (on 4.00) scholarship average on (1) *all* work undertaken in his prelegal curriculum, and, in addition, on (2) *all* work undertaken, exclusive of nontheory courses as defined in 3 below.

3. *Nontheory courses.* Not more than 10 per cent of the credit 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.

4. *Work done in residence.* Work done in residence as applied to the Law School admission requirements shall mean work done in class in an approved college. If done off the campus of the college, it shall mean 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 an approved college. A limited amount

of correspondence work acceptable by a recognized college or university may be counted when the applicant is a degree candidate, but *no correspondence work will be accepted in the case of nondegree candidates.*

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.

Applicants whose records are incomplete and who must take summer work or finish work in progress to complete their requirements will, if otherwise satisfactory, be accepted subject to the successful completion of this work within a time limit to be determined by the facts of the case.

A health examination, including chest X ray, under the supervision of the University Health Center, is a required part of registration for all new students and all former students who have not attended the University within the last calendar year. An annual chest X ray is required of all students.

Before a new out-of-state student will be given a notice of admission, he must submit a medical report on a medical questionnaire form supplied by the Registrar and completed by a physician at the time of the application for admission. This form will be mailed to prospective law students during the processing of their applications.

WORLD WAR I AND 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 19).

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. Veterans Administration regulations specify that the veteran's ultimate goal must be stated on his application for a certificate. Only one change of course is allowed on the Korean Bill. If the veteran has any questions regarding application for certificate, he should contact the Veterans Division, 1B Administration 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 registration for the quarter the veteran wishes to enter the University. If the veteran is eligible, the Veterans Administration will issue him a certificate for education and training which should be filed in the Veterans Division, 1B Administration Building, during registration or the first week of instruction. 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.

INITIATION OF TRAINING

An *eligible* Korean veteran who entered and/or served in the Armed Forces between June 27, 1950, and January 31, 1955, must initiate his training under the Korean Bill, Public Law 550, prior to August 20, 1954, or the date *three* years after his release from active service, whichever is later.

Veterans Administration regulations provide that after initiating his training a Korean veteran may discontinue training at any time as long as his interruption is not in excess of twelve consecutive calendar months.

TERMINATION OF TRAINING

A veteran *eligible* under Public Law 550 must complete his training by *eight* years after his release from active service.

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.

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 six months by completing successfully a full program of study during two successive summers. For example, under this program a student who enters the School of Law in the Summer or Autumn of 1956 will be able to graduate in December, 1958, and thus be eligible for the state bar examination in January, 1959. To accelerate, a student must have the approval of the Dean's Office. The School policy is to permit only those students whose grades 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 PROGRAM

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 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 hour load per quarter will average slightly less than nine instead of the normal fifteen hours 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.

SUMMER SCHOOL

The Law School offers a limited number of courses for (1) its own students who are qualified and who desire to accelerate, or who are following a prescribed part-time program, or who seek to lighten their load in succeeding years, or who desire to take additional subject-matter; for (2) 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; and for (3) beginning students who desire to commence their study of the law in the summer rather than in the autumn. Several of the courses offered deal with subjects in which local law is of unusual significance. This will be of particular interest to students from other schools who plan to practice in this state. The Summer Session courses also afford opportunity for further study by practicing lawyers who desire systematic instruction in specialized areas of expanding significance.

Students seeking a degree from this Law School who apply for admission in the

Summer Quarter must comply with the admission procedures set forth on pages 14-17.

Summer Quarter courses are listed on page 27.

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 Announcement*.

Tuition

Resident students, per quarter \$25.00

A resident student is one who has been domiciled in Washington or Alaska for at least a year immediately before registration. The domicile of a minor is that of his parents.

Nonresident students, per quarter 75.00

Prospective students are classified as nonresident when their credentials come from schools outside Washington and Alaska. If they believe they are residents, they may petition the Nonresident Tuition Office for a change of classification.

Auditors, per quarter 12.00

Veterans of World War I and 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, University Comptroller's Office. Nonresident students who meet one of these requirements pay one-half the nonresident tuition. This exemption is not granted to Summer Quarter students.

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) 3.00-5.00

Ticket for Autumn, Winter, and Spring Quarters, \$5.00; for Winter and Spring Quarters only, \$3.00; for Spring Quarter only, \$3.00.

Law Library Fee, per quarter 10.00

Grade Sheet Fee .25

One grade sheet is furnished each quarter without charge; the fee is charged for each additional copy.

Transcript Fee .50

One transcript is furnished without charge; the fee is charged for each additional copy. Supplementary transcripts are .25 each.

Graduation Fee 10.00

SPECIAL FEES

From \$2.00 to \$5.00 is charged for late registration; \$2.00 for each change of registration; \$5.00 for a late medical examination; and \$1.00 for a late X ray. The fee for a special examination is \$1.00; for an advanced-credit examination, \$2.00 per credit; and for removal of an Incomplete, \$2.00.

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*Tuition, Incidental, and ASUW Membership Fees*

Resident students	\$183.00
Nonresident students	408.00

Law Library Fees

30.00

Athletic Admission Ticket (optional)

3.00-5.00

Accident Insurance (optional)

4.35

Books and Supplies

115.00

Board and Room

Double room and meals in Men's Residence Hall	600.00
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Room and meals in Women's Residence Halls	540.00-630.00
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Room and meals in student cooperative house	510.00
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Room and meals in fraternity or sorority house	660.00-700.00
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Initial cost of joining a fraternity or sorority is not included; this information may be obtained from the Interfraternity or Panhellenic Councils.

Personal Expenses

200.00

AWARDS, SCHOLARSHIPS, AND LOANS

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 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. Applications must be submitted to the Dean of the Law School not later than July 15 of each year on forms obtained from the Dean's Office.

THE W. G. McLAREN PRIZE. An award of \$100 is made annually to the first-year student submitting the best solution to a problem in legal draftsmanship. The award is presented by W. G. McLaren, a senior Seattle citizen and lawyer.

THE SEATTLE LIFE INSURANCE AND TRUST COUNCIL WILL CONTEST. During each academic year awards are made to the three law students who, in the opinion of the judges, draft the best will based on a stipulated set of facts. The prizes are \$250, \$150, and \$75.

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 \$500. Prospective first-year students are eligible for consideration. Applications must be submitted to the Dean of the School of Law not later than July 15 of each year on forms obtained from the Dean's Office.

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.

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. No interest will be charged on any portion of the loan repaid within three years after the student's anticipated graduation date. Interest will be charged on principal payments thereafter.

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.

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 Security Transactions may receive a copy of the problem and appropriate instructions in the Office of the Assistant to the Dean. The award is made by Ivor Lusty, a graduate of the School.

JAMES M. BAILEY MEMORIAL SCHOLARSHIP. Awards to "outstanding students in law" are made during the summer for the following academic year from a sum of \$500 administered by the trustees of Consolidated Charities. The awards are made on the basis of scholastic promise and achievement and financial need.

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.

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.



THE PROGRAM IN LAW

THE PROGRAM IN LAW

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 on an honor system administered by the Student Bar Association.

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.

OBJECTIVES AND METHODS OF INSTRUCTION

The curriculum of the Law School is designed to prepare young men and women not only for the practice of law but also for professional responsibility as attorneys. Emphasis during the first year is on legal reasoning, with the case system as the norm. Small-group and individual training in the use of law books, in legal writing, and in appellate advocacy, under the guidance of three instructors, also starts in the first year. A course in legal administration acquaints students with the nature and sources of law, the nature of the legal profession, and the machinery of adjudication. All courses during this year are required. They are for the most part the basic, fundamental subjects with which all lawyers must be familiar and upon which the later courses in the curriculum are built.

The second-year courses are also required. Built upon the first year, they carry the student into the detailed problem of procedural law, with equity, pleading, and evidence, and into business and government law, with commercial transactions, business associations, constitutional law, and taxation. Although stress during this period remains on legal reasoning, the "know-how" approach is also emphasized. Drafting and legal writing are component parts of several of these courses, and statutes and materials other than cases are employed. To facilitate effectiveness of classroom presentations and to encourage student discussion and participation, most of the course offerings during the first two years are divided into two sections.

During the third year the emphasis is on the techniques of problem solving, counseling, and advocacy. Small-group, problem, and seminar courses are widely employed. In these courses, students are given problems which call for application of skill in legal reasoning, in problem spotting, in research, and in memorandum writing, and in counseling or advocacy. The student must investigate not only the legal but also the business, social, political, or economic aspects of his problem before giving his advice. Finally, the student must draft the legal documents necessary to put his solution into operation.

On the procedural side, a practice court is employed to train each student in preparing and trying a case before a judge according to court procedure.

The curriculum during the third year calls for the successful completion of 42 credits of work, almost all of which is elective. The particular objectives of this year's work are to develop broad familiarity with different types of legal situations and to provide the opportunity for concentration in a field of primary interest.

CURRICULUM

The first and second years of law study are composed of a program of required courses. Except for Law 341, Office Management and Professional Responsibility, the third-year program is entirely elective.

FIRST YEAR

100 Contracts (3-4-3)	Rieke, Shattuck
110 Legal Administration (3)	Stevens
120 Personal Property (4)	Morris, Peck
121 Real Property (3-3)	Cross, Hawley
132 Criminal Law and Procedure (2-3)	Fletcher, Johnson
140 Torts (2-4-4)	Peck, Richards
141 Agency (3)	Johnson, Taylor
160, 161, 162 Legal Research and Writing (1,2,1)	Gallagher, Morris, Staff

SECOND YEAR

200 Commercial Transactions (4-3)	Johnson, Taylor
201 Business Associations (3-3)	Gose, Meisenholder
210 Evidence (3-3)	Meisenholder, Richards
212 Equity (3-3)	Cross, Nottelmann
213 Jurisdiction, Venue, and Code Pleading (4)	Fletcher, Meisenholder
230 Constitutional Law (2-2-3)	Fletcher, Wollett
231 Taxation (2-3)	Harsch, Morris
234 Administrative Law (4)	Peck, Staff

THIRD YEAR

Property

320 Trusts and Fiduciary Administration (3-3)	Nottelmann
*321 Land Transactions (2-3)	Cross
*322 Future Interests (3)	Staff

* Will not be offered 1956-57.

323 Community Property (2)	Cross
*324 Landlord and Tenant (3)	Staff
325 Estate Planning (2-2)	Harsch
328 Conveyancing (4)	Staff
329 Natural Resources (3)	Johnson

Commerce

300 Credit Transactions (2-4)	Shattuck
301 Corporation Finance and Related Tax Problems (2-2)	Gose, Taylor
302 Creditors' Rights (3)	Meisenholder
307 Insurance (3)	Taylor

Public

331 Legislation (2-2)	Harsch
332 State and Local Taxes (3)	Harsch
334 Labor Law (3)	Wollett
335 Local Government Law (3)	Shefelman
336 Government Regulation of Business (2-2)	Rieke
339 Labor Relations (3)	Wollett
*340 World Law (3)	Staff
350 Social Legislation (3)	Wollett
354 Problems in Constitutional Law (2)	Wollett

Miscellaneous

310 Trial and Appellate Practice (3-2)	Reaugh
312 Damages (2)	Staff
313 Restitution (3)	Nottelmann
†341 Office Management and Professional Responsibility (0)	Stevens
342 Admiralty (3)	Richards
343 Conflict of Laws (4)	Hawley
344 Domestic Relations (2)	Rieke
348 Wills and Administration (4)	Gose
352 Comparative Law (3)	Nottelmann
398 Research Problems in Law (1-3)	Staff

SUMMER, 1956

‡120a Personal Property (3)	Hawley
†§132a-b Criminal Law and Procedure (2-3)	Peck
‡141b Agency (3)	Gose
307a Insurance (3)	Wollett
309a Suretyship (3)	Meisenholder
312a Damages (2)	Rieke
313b Restitution (3)	Rieke
§324a-b Landlord and Tenant (2-1)	Peck
§328a-b Conveyancing (1-3)	Hawley
334b Labor Law (3)	Wollett

SUMMER, 1957 (Tentative)

‡120a Personal Property (4)	Staff
†§132a-b Criminal Law and Procedure (2-3)	Staff
‡141b Agency (3)	Staff
302 Creditors' Rights (3)	Staff
308 Mortgages (3)	Staff
323 Community Property (2)	Staff
327 Trusts (3)	Staff
§336 Government Regulation of Business (2-2)	Staff

* Will not be offered 1956-57.

† Required.

‡ Available to first-year entering students.

§ Both terms must be taken to receive credit.

LL.B. DEGREES CONFERRED, 1953-54

Arney, Pat W.
 Austin, Alan F.
 Bailey, Joanne
 Berrier, Billy G.
 Black, David S.
 Blackburn, John R.
 Box, Gary D.
 Brachtenbach, Robert F.
 Brazier, Donald H., Jr.
 Bruhn, Stanley K.
 Byrholdt, Gordon M.
 Callaghan, James R.
 Carlson, Myron J.
 Cassidy, Charles K.
 Cavanagh, William W., Jr.
 Cook, James R.
 Creighton, Gordon L.
 Dotson, Newman L.
 Draper, Frank W.
 Duff, Ronald B.
 Dunlop, William N.
 Epstein, Maurice M.
 Faler, George K.
 Ferris, Irene R.
 Fox, Richard A.
 Freedman, Robert W.
 Fuller, Carol R.
 Fuller, Herbert H.
 Furnia, Ernest M.
 Gese, Leo J.
 Gilbert, Warren J., Jr.
 Gouge, Harry D.
 Greenway, Eugene A.
 Hageman, Walter H., Jr.
 Hall, Jerald C.
 Hamilton, William M., Jr.
 Horn, Raymond L.
 Jacobson, Douglas A.
 Jaynes, Gordon L.
 Jonsson, Jon M.
 Kershner, Daniel T.
 Knapp, Eugene H., Jr.
 Kostakos, Gustav G.
 Lane, Edward M.
 Lewis, Roger I.
 Longstreth, Robert M.

Looyesen, Morris C.
 Lowry, Thomas C.
 Luke, Wing C.
 Lukins, Scott B.
 Lusty, Ivor
 Lynch, Levin M.
 McArthur, Donna Lee
 McAteer, James F.
 McGee, Craig H.
 McGough, Hugh R.
 Miller, Jacob H.
 Mines, Michael
 Mucklestone, Robert S.
 Munson, Ray E.
 Olson, Dan R.
 Prescott, Loren D.
 Radliff, Duane S.
 Raymond, Edward M.
 Redman, M. Chandler
 Riach, James G.
 Ridgway, Hugh R.
 Riveland, Dale
 Robinson, Bruce O.
 Rupp, G. Wellington
 Satterberg, Richard A.
 Scraggin, Gordon A.
 Shay, William M.
 Sherfy, Donal D.
 Smail, Thomas E., Jr.
 Stinnette, William S.
 Swayze, Thomas A., Jr.
 Taylor, Don P. W.
 Taylor, Edward W.
 Taylor, Lowell W.
 Thoreson, Donald L.
 Thorsness, David H.
 Thrower, Wilfred L.
 Tracy, Philip S.
 Trautman, Philip A.
 Tulin, Charles E.
 Utter, Robert F.
 Wall, William E.
 Ward, John H.
 Weber, John R.
 Whitaker, Ronald F.

LL.B. DEGREES CONFERRED, 1954-55

Alexander, Daniel W.
 Alferis, George S.
 Barker, Stuart D., Jr.
 Berst, Robert A.
 Brennan, Thomas J.
 Brooks, Joseph A.
 Browder, Elbert R.

Burtch, Jack L.
 Campbell, Sally M.
 Canfield, Constance
 Damis, Spirro G.
 Dimoff, Roderick D.
 Dippolito, William F.
 Donnelly, Patrick J.

Dore, James J.
 Dorsey, David J.
 Eisert, Edward C.
 Emory, Lane B.
 Fosso, Harold C.
 Frank, Leo M.
 Gadbrow, Vincent L.
 Gose, John A.
 Gubbins, George C., Jr.
 Gustafson, Richard I.
 Hamack, Robert A.
 Hedges, Donald H.
 Henke, Harry, III
 Horne, Ardith M.
 Johnson, Alice H.
 Kafer, Howard C.
 Kight, Milburn D.
 Kirkpatrick, Henry K.
 Kroetch, Richard F.
 Lanthorn, William R.
 Ledakis, Gust A.
 Lindskog, Vernon L.
 Loerch, George D.
 Long, Alva C.
 Magnuson, Charles H.
 Marshall, William Q.
 Maxwell, John W.
 Michelson, Herman

Milliman, Constance S.
 Moore, Laurence S.
 Mullavey, Charles N.
 Offenbacher, Phillip
 Panchot, Dudley B.
 Parker, Lester T., Jr.
 Patterson, Douglas W.
 Pearce, Samuel F.
 Piper, John T.
 Quinn, Richard K.
 Rabideau, Clarence J.
 Rindal, Joel A.
 Rosenblume, Theodore M.
 Ruegg, Jack R.
 Sage, Eugene H.
 Savage, Anthony, Jr.
 Simon, Manfred
 Small, Hollis B.
 Smith, Clarence Z.
 Sullivan, Daniel F.
 Tanner, Jack E.
 Thonn, Paul
 Tobin, Gordon R.
 Tomlinson, John R.
 Turner, James S.
 Uziel, Leon A.
 Westmoreland, Benjamin L.

HONORS, PRIZES, SCHOLARSHIPS, AND AWARDS, 1953-54

Honor Graduate in Law

Philip A. Trautman

With Highest Honors in Law

Philip A. Trautman

With High Honors in Law

George K. Faler

With Honors in Law

Dale Riveland

Order of the Coif

Philip A. Trautman

George K. Faler

Dale Riveland

Hugh R. McGough

James F. McAteer

William S. Stinnette

Law Class of 1939 Scholarship

Michael Mines

Law Week Award

Raymond L. Horn

Vivian M. Carkeek Prize

Hugh R. McGough

W. G. McLaren Prize

William D. Cameron

Nathan Burkan Memorial Competition

Joanne Bailey

Moot Appellate Court Competition

First—Dudley B. Panchot

Second—Hugh R. McGough

Third—Arlis W. Johnson

Fourth—Myron J. Carlson

Seattle Life Insurance and Trust

Council Will Drafting Contest

First—Edward M. Lane

Second—Robert F. Utter

Third—Edward M. Raymond

Honorable Mention—

Raymond L. Horn

William Wallace Wilshire Memorial Scholarship

Robert F. Brachtenbach

Stanley K. Bruhn

Sally M. Campbell

Gordon L. Creighton

Vincent L. Gadbrow

Leo J. Gese

Harry D. Gouge

Gordon L. Jaynes

Constance A. Stanton

Philip A. Trautman

HONORS, PRIZES, SCHOLARSHIPS, AND AWARDS, 1954-55**Honor Graduate in Law**

Eugene H. Sage

With Honors in Law

Sally M. Campbell

Richard K. Quinn

Eugene H. Sage

Order of the Coif

Sally M. Campbell

John A. Gose

Gust A. Ledakis

Richard K. Quinn

Eugene H. Sage

Law Class of 1939 Scholarship

Robert A. Berst

Law Week Award

Laurence S. Moore

Vivian M. Carkeek Prize

Thomas J. Brennan

Vivian M. Carkeek Scholarships

Richard K. Quinn

Eugene H. Sage

W. G. McLaren Prize

Eugene C. Anderson

Ivor Lusty Award

Alice H. Johnson

Moot Appellate Court Competition

First—Thomas D. Loftus

Second—Anthony Savage, Jr.

Third—Malcolm L. Edwards

Fourth—Eugene C. Anderson

Seattle Life Insurance and Trust**Council Will Drafting Contest**

First—Sally M. Campbell

Second—Eugene H. Sage

Third—Lester T. Parker, Jr.

**William Wallace Wilshire Memorial
Scholarship**

Richard Bartke

Jack L. Burtch

Sally M. Campbell

Edward C. Eisert

Malcolm L. Edwards

Vincent L. Gadbow

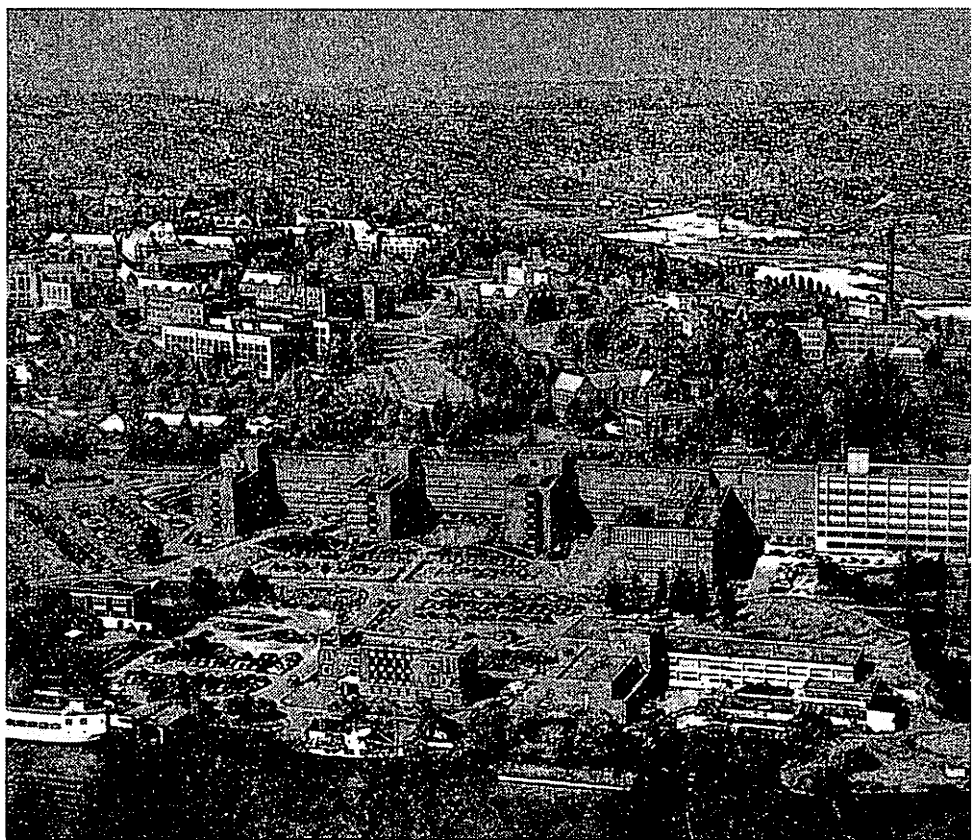
William R. Hunt

Gust A. Ledakis

Laurence S. Moore

Jack R. Ruegg

BULLETIN • UNIVERSITY OF WASHINGTON



SCHOOLS OF
MEDICINE AND DENTISTRY
1956-1958

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes two general bulletins; bulletins of the colleges and schools; two Summer Quarter announcements; and publications of the Division of Adult Education and Extension Services, the correspondence study and extension class announcements.

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 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.

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

UNIVERSITY REGULATIONS (FOR REGISTERED STUDENTS ONLY)
INTRODUCTION TO THE UNIVERSITY

Bulletins of the Colleges and Schools

COLLEGE OF ARTS AND SCIENCES
COLLEGE OF BUSINESS ADMINISTRATION
COLLEGE OF EDUCATION
COLLEGE OF ENGINEERING
COLLEGE OF FORESTRY
GRADUATE SCHOOL
SCHOOL OF LAW
SCHOOLS OF MEDICINE AND DENTISTRY
SCHOOL OF NURSING
COLLEGE OF PHARMACY

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT
SUMMER QUARTER ANNOUNCEMENT
CORRESPONDENCE STUDY
EXTENSION CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 902
June, 1956

Published monthly at Seattle, Washington, by the University of Washington from October to July, inclusive. No issues in August and September. Entered as second-class matter December 18, 1947, at the post office at Seattle, Washington, under the Act of August 24, 1912.

CONTENTS

CALENDAR	4
ADMINISTRATION	7
Board of Regents	
Officers of Administration	
School of Medicine Faculty	
School of Dentistry Faculty	
Committees	
THE DIVISION OF HEALTH SCIENCES	37
THE SCHOOL OF MEDICINE	43
Basic Medical Sciences	
Conjoint Courses and Medical Practice	
Clinical Medical Sciences	
Roster of Students	
THE SCHOOL OF DENTISTRY	87
Dentistry	
Dental Hygiene	
Roster of Students	

CALENDAR

All fees must be paid at the time of registration.

AUTUMN QUARTER, 1956

SEPT. 24—MONDAY	Instruction begins, Medicine III and IV, Term 1 (8 a.m.)
OCT. 3—WEDNESDAY	Instruction begins, Medicine I, II, and Dentistry (8 a.m.)
NOV. 10—SATURDAY	Instruction ends, Medicine IV (1 p.m.)
NOV. 12—MONDAY	State Admission Day holiday
NOV. 13—TUESDAY	Instruction begins, Medicine IV, Term 2 (8 a.m.)
NOV. 21—NOV. 26	Thanksgiving recess, Medicine I, II, and Dentistry (6 p.m. to 8 a.m.)
NOV. 22—THURSDAY	Thanksgiving Day holiday, Medicine III and IV
NOV. 24—SATURDAY	Instruction ends, Medicine III (1 p.m.)
NOV. 26—MONDAY	Instruction begins, Medicine III, Term 2 (8 a.m.)
DEC. 21—FRIDAY	Instruction ends, Medicine I, II, and Dentistry (6 p.m.) Christmas recess begins, Medicine III and IV (5 p.m.)
JAN. 2—WEDNESDAY	Christmas recess ends, Medicine III and IV (8 a.m.)

WINTER QUARTER, 1957

JAN. 7—MONDAY	Instruction begins, Medicine I, II, and Dentistry (8 a.m.)
JAN. 12—SATURDAY	Instruction ends, Medicine IV (1 p.m.)
JAN. 14—MONDAY	Instruction begins, Medicine IV, Term 3 (8 a.m.)
FEB. 2—SATURDAY	Instruction ends, Medicine III (1 p.m.)
FEB. 4—MONDAY	Instruction begins, Medicine III, Term 3 (8 a.m.)
FEB. 22—FRIDAY	Washington's Birthday and Founder's Day holiday
MAR. 2—SATURDAY	Instruction ends, Medicine IV (1 p.m.)
MAR. 4—MONDAY	Instruction begins, Medicine IV, Term 4 (8 a.m.)
MAR. 22—FRIDAY	Instruction ends, Medicine I, II, and Dentistry (6 p.m.)

SPRING QUARTER, 1957

APR. 1—MONDAY	Instruction begins, Medicine I, II, and Dentistry (8 a.m.)
APR. 6—SATURDAY	Instruction ends, Medicine III (1 p.m.)
APR. 8—MONDAY	Instruction begins, Medicine III, Term 4 (8 a.m.)
APR. 20—SATURDAY	Instruction ends, Medicine IV (1 p.m.)
APR. 22—MONDAY	Instruction begins, Medicine IV, Term 5 (8 a.m.)
MAY 30—THURSDAY	Memorial Day holiday
JUNE 8—SATURDAY	Instruction ends, Medicine IV (1 p.m.)
JUNE 14—FRIDAY	Instruction ends, Medicine I, II, III, and Dentistry (6 p.m.)
JUNE 15—SATURDAY	Commencement

REGISTRATION DATES FOR SCHOOL OF MEDICINE (1956-57)

FIRST YEAR

OCT. 1	Autumn Quarter, 1956 (Oct. 3-Dec. 21)
NOV. 26-27	Winter Quarter, 1957 (Jan. 7-Mar. 22)
FEB. 11-12	Spring Quarter, 1957 (Apr. 1-June 14)

SECOND YEAR

OCT. 2	Autumn Quarter, 1956 (Oct. 3-Dec. 21)
NOV. 28-29	Winter Quarter, 1957 (Jan. 7-Mar. 22)
FEB. 13-14	Spring Quarter, 1957 (Apr. 1-June 14)

THIRD YEAR

SEPT. 18-19	Term 1, 1956 (Sept. 24-Nov. 24)
NOV. 19-20	Term 2, 1956 (Nov. 26-Feb. 2)
JAN. 29-30	Term 3, 1957 (Feb. 4-Apr. 6)
APR. 3-4	Term 4, 1957 (Apr. 8-June 14)
JUNE 10-14	Examination week

FOURTH YEAR

SEPT. 20-21	Term 1, 1956 (Sept. 24-Nov. 10)
NOV. 8-9	Term 2, 1956 (Nov. 13-Jan. 12)
JAN. 10-11	Term 3, 1957 (Jan. 14-Mar. 2)
FEB. 28-MAR. 1	Term 4, 1957 (Mar. 4-Apr. 20)
APR. 18-19	Term 5, 1957 (Apr. 22-June 8)
JUNE 15	Commencement

AUTUMN QUARTER, 1957

SEPT. 23—MONDAY	Instruction begins, Medicine III and IV, Term 1 (8 a.m.)
OCT. 2—WEDNESDAY	Instruction begins, Medicine I, II, and Dentistry (8 a.m.)
NOV. 9—SATURDAY	Instruction ends, Medicine IV (1 p.m.)
NOV. 11—MONDAY	State Admission Day holiday
NOV. 12—TUESDAY	Instruction begins, Medicine IV, Term 2 (8 a.m.)
NOV. 23—SATURDAY	Instruction ends, Medicine III (1 p.m.)
NOV. 25—MONDAY	Instruction begins, Medicine III, Term 2 (8 a.m.)
NOV. 27-DEC. 2	Thanksgiving recess, Medicine I, II, and Dentistry (6 p.m. to 8 a.m.)
NOV. 28—THURSDAY	Thanksgiving Day holiday, Medicine III and IV
DEC. 20—FRIDAY	Instruction ends, Medicine I, II, and Dentistry (6 p.m.) Christmas recess begins, Medicine III and IV (5 p.m.)
JAN. 2—THURSDAY	Christmas recess ends, Medicine III and IV (8 a.m.)

WINTER QUARTER, 1958

JAN. 6—MONDAY	Instruction begins, Medicine I, II, and Dentistry (8 a.m.)
JAN. 11—SATURDAY	Instruction ends, Medicine IV (1 p.m.)
JAN. 13—MONDAY	Instruction begins, Medicine IV, Term 3 (8 a.m.)
FEB. 1—SATURDAY	Instruction ends, Medicine III (1 p.m.)
FEB. 3—MONDAY	Instruction begins, Medicine III, Term 3 (8 a.m.)
FEB. 22—SATURDAY	Washington's Birthday and Founder's Day holiday
MAR. 1—SATURDAY	Instruction ends, Medicine IV (1 p.m.)
MAR. 3—MONDAY	Instruction begins, Medicine IV, Term 4 (8 a.m.)
MAR. 21—FRIDAY	Instruction ends, Medicine I, II, and Dentistry (6 p.m.)

SPRING QUARTER, 1958

MAR. 31—MONDAY	Instruction begins, Medicine I, II, and Dentistry (8 a.m.)
APR. 5—SATURDAY	Instruction ends, Medicine III (1 p.m.)

APR. 7—MONDAY	Instruction begins, Medicine III, Term 4 (8 a.m.)
APR. 19—SATURDAY	Instruction ends, Medicine IV (1 p.m.)
APR. 21—MONDAY	Instruction begins, Medicine IV, Term 5 (8 a.m.)
MAY 30—FRIDAY	Memorial Day holiday
JUNE 7—SATURDAY	Instruction ends, Medicine IV (1 p.m.)
JUNE 13—FRIDAY	Instruction ends, Medicine I, II, III, and Dentistry (6 p.m.)
JUNE 14—SATURDAY	Commencement

REGISTRATION DATES FOR SCHOOL OF MEDICINE (1957-58)

FIRST YEAR

SEPT. 30	Autumn Quarter, 1957 (Oct. 2-Dec. 20)
NOV. 18-19	Winter Quarter, 1958 (Jan. 6-Mar. 21)
FEB. 10-11	Spring Quarter, 1958 (Mar. 31-June 13)

SECOND YEAR

OCT. 1	Autumn Quarter, 1957 (Oct. 2-Dec. 20)
NOV. 20-21	Winter Quarter, 1958 (Jan. 6-Mar. 21)
FEB. 12-13	Spring Quarter, 1958 (Mar. 31-June 13)

THIRD YEAR

SEPT. 17-18	Term 1, 1957 (Sept. 23-Nov. 23)
NOV. 18-19	Term 2, 1957 (Nov. 25-Feb. 1)
JAN. 28-29	Term 3, 1958 (Feb. 3-Apr. 5)
APR. 2-3	Term 4, 1958 (Apr. 7-June 13)
JUNE 9-13	Examination week

FOURTH YEAR

SEPT. 19-20	Term 1, 1957 (Sept. 23-Nov. 9)
NOV. 7-8	Term 2, 1957 (Nov. 12-Jan. 11)
JAN. 9-10	Term 3, 1958 (Jan. 13-Mar. 1)
FEB. 27-28	Term 4, 1958 (Mar. 3-Apr. 19)
APR. 17-18	Term 5, 1958 (Apr. 21-June 7)
JUNE 14	Commencement

ADMINISTRATION

BOARD OF REGENTS

CHARLES M. HARRIS, <i>President</i>	Entiat
WINLOCK W. MILLER, <i>Vice-President</i>	Seattle
GRANT ARMSTRONG	Chehalis
THOMAS BALMER	Seattle
DONALD G. CORBETT	Spokane
CHARLES F. FRANKLAND	Seattle
MRS. J. HERBERT GARDNER	La Conner
Helen Hoagland, <i>Secretary</i>	

OFFICERS OF ADMINISTRATION

HENRY SCHMITZ, Ph.D.	<i>President of the University</i>
HAROLD P. EVEREST, M.A.	<i>Vice-President of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
NELSON A. WAHLSTROM, B.B.A.	<i>Comptroller and Business Manager</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>

BOARD OF HEALTH SCIENCES

HENRY SCHMITZ, 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>
BERTON E. ANDERSON, D.M.D.	<i>Acting Dean of the School of Dentistry</i>
HENRY A. BURD, Ph.D.	<i>Acting Dean of the Graduate School</i>
PAUL C. CROSS, Ph.D.	<i>Professor of Chemistry; Executive Officer of the Department of Chemistry</i>
FOREST J. GOODRICH, Ph.D.	<i>Dean of the College of Pharmacy</i>
WILLIAM E. REYNOLDS	<i>University Health Officer</i>
MARY S. TSCHUDIN, R.N., M.S.	<i>Dean of the School of Nursing</i>
LLOYD S. WOODBURN, Ph.D.	<i>Dean of the College of Arts and Sciences</i>
MARY ADAMS, <i>Secretary</i>	

SCHOOL OF MEDICINE

GEORGE N. AAGAARD, M.D.	<i>Dean of the School of Medicine</i>
RICHARD J. BLANDAU, M.D., Ph.D.	<i>Assistant Dean of the School of Medicine</i>
JAMES W. HAVILAND, M.D.	<i>Assistant Dean of the School of Medicine</i>

SCHOOL OF DENTISTRY

BERTON E. ANDERSON, D.M.D.	<i>Acting Dean of the School of Dentistry; Director of Postgraduate Education</i>
ALTON W. MOORE, D.D.S., M.S.	<i>Acting Assistant Dean of the School of Dentistry; Director of Graduate Education</i>

OTHER ADMINISTRATIVE OFFICERS

MARY ADAMS, B.A.	<i>Assistant to the Dean, School of Medicine</i>
JEAN ASHFORD, B.A.	<i>Acting Librarian, Division of Health Sciences</i>
ROBERT BRADLEY	<i>Manager of Medical Supplies</i>
DERVIN R. DE MERS	<i>Assistant Business Manager, Division of Health Sciences</i>
JOHN M. FLETT	<i>Manager of Dental Supplies</i>

DONALD HISCOX, B.F.A.	.....	<i>Administrative Assistant, Division of Health Sciences</i>
RICHARD JOHNSON	.....	<i>Hospital Buyer</i>
DOROTHY D. KIPPLE	.....	<i>Administrative Assistant, School of Dentistry</i>
T. W. PENFOLD, D.V.M.	.....	<i>Veterinarian</i>
JESSIE PHILLIPS, B.F.A.	.....	<i>Director of Medical Illustration, Division of Health Sciences</i>
LEROY S. RAMBECK, B.A.	.....	<i>Hospital Administrator</i>
SEYMOUR M. STANDISH	.....	<i>Assistant to the Chairman, Division of Health Sciences</i>

FACULTY, SCHOOL OF MEDICINE

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
Assistant Dean of the School of Medicine
A.B., 1935, Linfield College; Ph.D., 1939,
Brown; M.D., 1948, Rochester
- HAVILAND, James W., 1947
Assistant Dean of the School of Medicine
A.B., 1932, Union College (New York);
M.D., 1936, Johns Hopkins
- 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
- EMMEL, Harry Elwin, 1948
Clinical Associate in Anatomy
B.A., 1936, Willamette; M.D., 1940,
Oregon
- EVERETT, Newton B., 1946 (1948)
Associate Professor of Anatomy
B.S., 1937, M.S., 1938, North Texas State
College; Ph.D., 1942, Michigan
- EVOY, Matthew H., 1948 (1955)
Clinical Associate in Anatomy
M.D., 1941, St. Louis
- FINLAYSON, Bliss L., 1948
Clinical Associate in Anatomy
B.A., 1928, Brigham Young; M.D., 1933,
Jefferson Medical College
- FITZMAURICE, Bertrand T., 1946
Clinical Associate in Anatomy
B.S., 1930, Washington; M.D., 1934,
Northwestern
- GRIFFITH, Charles A., 1956
Clinical Associate in Anatomy
B.A., 1942, Harvard; M.D., 1945,
M.S., 1955, Washington
- HAFFLY, Gilbert N., 1948
Clinical Associate in Anatomy
B.M., 1932, M.D., 1936, Northwestern
- HEATH, Sherburne W., 1952 (1953)
Clinical Associate in Anatomy
A.B., 1941, Whitman College; M.D., 1945,
Marquette
- HENRY, Frank C., 1949
Clinical Associate in Anatomy
A.B., 1934, James Millikin (Illinois);
M.D., 1940, Illinois
- HILLMAN, Van Kirk, 1956
Clinical Associate in Anatomy
B.S., 1937, B.M., 1941, M.D., 1942,
Northwestern
- JENSEN, Lyle H., 1949
Assistant Professor of Anatomy
B.A., 1939, Walla Walla College; Ph.D.,
1943, Washington
- JESSEPII, John E., 1956
Clinical Associate in Anatomy
A.B., 1949, Whitman; M.D., 1953,
Washington
- JOHNSON, Robert J., 1946 (1951)
Associate Professor of Anatomy
M.D., 1943, Iowa
- KAUTZ, Betty J., 1953
Research Associate in Anatomy
B.A., 1948, Whitman College; M.A., 1951,
Washington

BASIC MEDICAL SCIENCES

ANATOMY

- ANDERSON, Kirk J., 1949
Clinical Associate in Anatomy
B.A., 1942, College of Idaho; M.D., 1944,
Oregon
- BENNETT, Henry Stanley, 1948
*Professor of Anatomy; Executive Officer
of the Department of Anatomy*
A.B., 1932, Oberlin College; M.D., 1936,
Harvard
- BLANDAU, Richard J., 1949 (1951)
Professor of Anatomy
A.B., 1935, Linfield College; Ph.D., 1939,
Brown; M.D., 1948, Rochester
- BOGARDUS, George M., 1956
Clinical Associate in Anatomy
M.D., 1938, Duke
- BONICA, John J., 1950
Clinical Associate in Anatomy
M.D., 1942, Marquette
- BOYDEN, Edward A., 1955 (1956)
Research Professor of Anatomy
A.B., 1909, A.M., 1911, Ph.D., 1916,
Harvard
- DEMARSH, Quin B., 1947 (1955)
Clinical Associate Professor of Anatomy
B.S., 1935, Washington; M.S., 1937,
M.B., 1939, M.D., 1940, Northwestern

- KELLOGG, Howard B., 1946 (1948)
Clinical Associate Professor of Anatomy
B.S., 1922, Washington; M.S., 1925,
Ph.D., 1927, M.B., 1929, M.D., 1930,
Northwestern
- KLEMPERER, Wolfgang, 1948
Clinical Associate in Anatomy
M.D., 1936, Cornell
- 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 College;
M.D., 1938, Northwestern
- LUFT, John H., 1956
Instructor in Anatomy
B.S., 1949, M.D., 1953, Washington
- McELMEEL, Eugene F., 1947
Clinical Associate in Anatomy
B.A., 1930, College of St. Thomas
(Minnesota); B.S., 1933, M.D., 1934,
Minnesota
- NORGORE, Martin, 1946 (1955)
Clinical Instructor in Anatomy
B.S., 1921, Washington; M.D., 1926,
Oregon
- ODLAND, George F., 1955
Clinical Instructor in Anatomy
M.D., 1946, Harvard
- OSMUN, Paul M., 1949 (1955)
Clinical Instructor in Anatomy
B.A., 1932, Brown; M.D., 1938, McGill
(Canada)
- ROOSEN-RUNGE, Edward C., 1952 (1955)
Associate Professor of Anatomy
M.D., 1936, Hamburg (Germany)
- RUMERY, Ruth E., 1955 (1956)
Research Instructor in Anatomy
B.S., 1943, New Hampshire; M.S., 1947,
Ph.D., 1952, Rochester
- SIMMONS, Barbara S., 1953
Research Associate in Anatomy
B.S., 1944, California
- SKAHEN, Julia G., 1946
Assistant Professor of Anatomy
B.S., 1926, M.S., 1928, Washington;
Ph.D., 1940, Chicago
- STEVENSON, John K., 1956
Clinical Associate in Anatomy
M.D., 1949, Rochester; M.S., 1956,
Washington
- SWARTZ, Edgar, 1950 (1955)
Clinical Instructor in Anatomy
A.B., 1942, Ohio; M.D., 1945, Cincinnati
- THORNBURG, Wayne, 1951
Instructor in Anatomy
B.A., 1940, Yankton College; M.S., 1948,
Ph.D., 1952, Illinois
- TOWE, Arnold L., 1953 (1954)
Instructor in Anatomy
B.A., 1948, Pacific Lutheran College;
Ph.D., 1953, Washington
- WATSON, Wilbur E., 1946 (1955)
Clinical Instructor in Anatomy
B.S., 1930, Washington; M.D., 1935,
McGill (Canada)
- WATTS, Ruth M., 1951 (1953)
Research Associate in Anatomy
B.S., 1921, Washington; M.S., 1925,
Yale; Ph.D., 1930, Chicago
- DIXON, Gordon H., 1954 (1956)
Research Instructor in Biochemistry
A.B., 1951, Cambridge (England); Ph.D.,
1954, Toronto (Canada)
- FISCHER, Edmond H., 1953 (1956)
Associate Professor of Biochemistry
Ph.D., 1947, Geneva (Switzerland)
- HANAHAN, Donald James, 1950 (1953)
Associate Professor of Biochemistry
B.S., 1941, Ph.D., 1944, Illinois
- HUENNEKENS, Frank M., Jr., 1951
(1954)
Associate Professor of Biochemistry
B.S., 1943, Ph.D., 1948, California
- KELLER, Patricia J., 1955 (1956)
Research Instructor in Biochemistry
B.S., 1945, Detroit; Ph.D., 1953,
Washington University
- KREBS, Edwin G., 1948 (1952)
Associate Professor of Biochemistry
A.B., 1940, Illinois; M.D., 1943,
Washington University
- MEINHART, Josephine O., 1954 (1956)
Research Instructor in Biochemistry
A.B., 1950, Vassar; Ph.D., 1954, Yale
- NEURATH, Hans, 1950
*Professor of Biochemistry; Executive
Officer of the Department of
Biochemistry*
Ph.D., 1933, Vienna (Austria)
- PECHERE, Jean-Francois, 1955
Research Associate in Biochemistry
D.Sc., 1955, Louvain (Belgium)
- STEIN, Eric A., 1954
Research Associate in Biochemistry
Ph.D., 1954, Geneva (Switzerland)
- TALBERT, Preston, 1955 (1956)
Research Instructor in Biochemistry
B.S., 1950, M.S., 1951, Howard
University; Ph.D., 1955, Washington
University
- WILCOX, Philip E., 1952
Assistant Professor of Biochemistry
B.S., 1943, California Institute of
Technology; Ph.D., 1949, Wisconsin

MICROBIOLOGY

- CHAMBERS, Velma C., 1954 (1956)
Research Instructor in Microbiology
R.N., 1937, Mercy Hospital; B.S., 1942,
M.S., 1948, Ph.D., 1954, Washington
- DOUGLAS, Howard Clark, 1941 (1950)
Associate Professor of Microbiology
A.B., 1936, Ph.D., 1949, California
- DUCHOW, Esther, 1940 (1954)
Instructor in Microbiology
B.S., 1934, M.S., 1952, Washington
- EVANS, Charles A., 1946
*Professor of Microbiology; Executive
Officer of the Department of
Microbiology*
B.S., 1935, B.M., 1936, M.D., 1937,
Ph.D., 1942, Minnesota
- GROMAN, Neal B., 1950 (1953)
Assistant 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
- ORDAL, Erling J., 1937 (1943)
Associate Professor of Microbiology
A.B., 1927, Luther College (Iowa);
Ph.D., 1936, Minnesota
- RICKENBERG, Howard V., 1956
Instructor in Microbiology
B.S., 1950, Cornell; Ph.D., 1954, Yale

BIOCHEMISTRY

- DANDLIKER, Walter B., 1951 (1955)
Associate Professor of Biochemistry
B.S., 1940, Rollins College; Ph.D., 1945,
California Institute of Technology

- RIDGWAY, George, 1956
Research Instructor in Microbiology
B.S., 1949, M.S., 1951, Ph.D., 1954,
Washington
- VENNESLAND, Kirsten, 1954
Clinical Instructor in Microbiology
B.S., 1934, M.D., 1942, Chicago
- WEISER, Russell S., 1934 (1949)
Professor of Microbiology (Immunology)
B.S., 1930, M.S., 1931, North Dakota
State; Ph.D., 1934, Washington
- WOOD, Edward M., 1956
Research Instructor in Microbiology
B.S., 1949, Oregon State College;
Ph.D., 1952, Cornell
- ZAHLER, Stanley A., 1954
Instructor in Microbiology
A.B., 1948, New York University; S.M.,
1949, Ph.D., 1952, Chicago

PATHOLOGY

- ALEXANDER, John W., 1954
Assistant in Pathology
B.S., 1948, M.D., 1950, Washington
- BENNETT, James G., 1951
Clinical Instructor in Pathology
B.A., 1935, Central College; M.D., 1939,
Harvard
- BITAR, Emmanuel, 1949
Clinical Instructor in Pathology
B.S., 1935, Washington; M.D., 1939,
Oregon
- BROWN, David V., 1951 (1952)
Clinical Assistant Professor of Pathology
B.A., 1935, Reed College; M.D., 1939,
Oregon
- CREIGHTON, S. Allison, 1949 (1952)
Coordinator and Instructor in Pathology
B.S., 1930, New Brunswick; M.D., C.M.,
1935, McGill (Canada)
- ELLERBROOK, Lester D., 1946 (1955)
*Associate Professor of Pathology; Acting
Executive Officer of the Department of
Pathology*
A.B., 1932, Hope College;
Ph.D., 1936, New York
- ERIKSEN, Nils, 1949 (1952)
Assistant Professor of Pathology
B.S., 1939, Ph.D., 1944, Washington
- GRIFFITH, Paul C., 1953
Assistant Professor of Pathology
A.B., 1941, M.D., 1943, Nebraska
- HABERMAN, Clayton R., 1954
Assistant in Pathology
B.S., 1947, M.D., 1949, Wisconsin
- HAIR, Raymond, 1951 (1952)
Assistant Professor of Pathology
B.S., 1942, Albright College;
M.D., 1945, Jefferson Medical College
- HOLYOKE, John B., 1955
Clinical Assistant Professor of Pathology
B.S., 1937, M.D., 1940, Nebraska
- JENSEN, Clyde Reynolds, 1947
Clinical Assistant Professor of Pathology
A.B., 1923, Dartmouth; M.D., 1925,
Rush Medical College
- JONES, Hugh Warren, 1949
Clinical Instructor in Pathology
B.S., 1934, M.D., 1938, Arkansas
- KNUDTSON, Kenneth P., 1953
Clinical Assistant Professor of Pathology
B.S., 1938, M.D., 1941, Wisconsin
- KRAUEL, Louis H., 1948 (1953)
Instructor in Pathology
M.D., 1940, Iowa
- LARSON, Charles P., 1947 (1948)
Clinical Assistant Professor of Pathology
B.A., 1931, Gonzaga; M.D., C.M., 1936,
McGill (Canada)
- LUND, Paul K., 1947
Clinical Assistant Professor of Pathology
B.A., 1934, Carleton College; M.D., C.M.,
1940, McGill (Canada)
- MASON, David G., 1947 (1949)
Clinical Assistant Professor of Pathology
B.A., 1930, M.D., 1935, Oregon
- POWELL, Clermont S., 1954
Clinical Instructor in Pathology
M.D., 1948, Jefferson Medical College
- REIFF, Robert H., 1952
Instructor in Pathology
A.B., 1939, Whitman College; Ph.D.,
1944, Minnesota; M.D., 1949,
Tennessee
- RICKER, Walter A., 1946 (1954)
Clinical Associate Professor of Pathology
M.D., 1939, Marquette
- SCHULDBERG, Irving I., 1953
Instructor in Pathology
B.A., 1937, M.D., 1940, Southern
California
- TOOLEY, George E., 1948
Clinical Instructor in Pathology
A.B., 1933, M.D., 1937, Kansas
- WIEGENSTEIN, Louise, 1948 (1953)
Instructor in Pathology
B.S., 1938, Simmons College; M.D.,
1946, Tufts

PHARMACOLOGY

- CLAUNCH, Joseph M., 1955
Research Instructor in Pharmacology
B.S., 1950, Ohio; M.D., 1953, Ohio State
- DILLE, James Madison, 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
- FALK, Gertrude, 1954
Instructor in Pharmacology
B.S., 1947, Antioch College; Ph.D., 1952,
Rochester
- FREDERICKSON, Evan L., 1956
Assistant Professor of Pharmacology
B.S., 1947, M.D., 1950, Wisconsin;
M.S., 1953, Iowa
- HORITA, Akira, 1954
Instructor in Pharmacology
A.B., 1950, M.S., 1951, Ph.D., 1954,
Washington
- LOOMIS, Ted Albert, 1947 (1955)
*State Toxicologist; Associate Professor of
Pharmacology*
B.S., 1939, Washington; M.S., 1941,
Ph.D., 1943, Buffalo; M.D., 1946, Yale
- MAGEE, Donald F., 1951
Assistant Professor of Pharmacology
B.A., 1944, Oxford (England); M.A.,
B.M., B.Ch., 1948, Oxford (England);
Ph.D., 1952, Illinois
- RICHARDSON, Howard L., 1955
*Clinical Assistant Professor of
Pharmacology*
M.A., 1940, M.D., 1940, Oregon
- THIERSCH, John B., 1950 (1954)
*Research Associate Professor of
Pharmacology*
M.D., 1935, Bern (Switzerland); M.D.,
1935, Freiburg (Germany); M.D.,
1938, Adelaide (Australia); M.D.,
1951, Washington
- WEST, Theodore C., 1949 (1955)
Assistant Professor of Pharmacology
B.S., 1948, M.S., 1949, Ph.D., 1952,
Washington

PHYSIOLOGY AND BIOPHYSICS

- AMASSIAN, Vahe E., 1949 (1953)
Associate Professor of Physiology and Biophysics
B.A., 1945, M.B., B.Ch., 1948, Cambridge (England)
- BRAND, Edmund H., 1953 (1956)
Research Instructor in Physiology and Biophysics
B.S., 1947, Pacific
- CARLSON, Loren D., 1945 (1955)
Professor of Physiology and Biophysics
B.S., 1937, St. Ambrose; Ph.D., 1941, Iowa
- CRYSTAL, Dean K., 1947
Clinical Associate in Physiology and Biophysics
B.S., 1936, Washington; B.A., 1938, Oxford (England); M.D., 1941, Johns Hopkins
- DE VITO, June L., 1955
Acting Instructor in Physiology and Biophysics
B.A., 1947, British Columbia (Canada); M.A., 1949, Ph.D., 1954, Washington
- ISAAC, Walter, 1954 (1956)
Research Instructor in Physiology and Biophysics
B.S., 1949, Western Reserve; M.A., 1950, Ph.D., 1953, Ohio State
- JONES, F. Nowell, 1955
Research Associate in Physiology and Biophysics
A.B., 1934, M.A., 1937, U.C.L.A.; Ph.D., 1939, Cornell
- KRNJEVIC, Kresimir, 1954 (1955)
Acting Assistant Professor of Physiology and Biophysics
M.B., Ch.B., 1949, B.Sc., 1951, Ph.D., 1953, Edinburgh (Scotland)
- MAIRE, Frederick W., 1953 (1956)
Research Instructor in Physiology and Biophysics
B.S., 1944, B.M., M.D., 1948, Northwestern; M.S., 1954, Washington
- MCCREA, L. Katherine, 1953
Clinical Assistant in Physiology and Biophysics
B.S., 1927, M.S., 1931, Washington
- NAKAO, Hiroyuki, 1955
Research Associate in Physiology and Biophysics
M.D., 1949, Kyushu (Japan)
- PATTON, Harry D., 1947 (1956)
Professor of Physiology and Biophysics
B.A., 1939, Arkansas; Ph.D., 1943, M.D., 1946, Yale
- RUCH, Theodore C., 1946
Professor of Physiology and Biophysics; 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 F., 1947 (1956)
Professor of Physiology and Biophysics
B.S., 1936, Chicago; M.D., 1939, Rush Medical College
- SCHER, Allen M., 1950 (1953)
Assistant Professor of Physiology and Biophysics
B.A., 1942, Ph.D., 1951, Yale
- SKAHEN, Julia G., 1946
Assistant Professor of Physiology and Biophysics
B.S., 1926, M.S., 1928, Washington; Ph.D., 1940, Chicago

- SWANSON, Heidi H., 1954
Research Associate in Physiology and Biophysics
B.S., 1948, M.S., 1951, Ph.D., 1953, McGill (Canada)
- TOWE, Arnold L., 1953 (1954)
Instructor in Physiology and Biophysics
B.A., 1948, Pacific Lutheran College; Ph.D., 1953, Washington
- WOODBURY, J. Walter, 1950 (1953)
Assistant Professor of Physiology and Biophysics
B.S., 1943, M.S., 1947, Ph.D., 1950, Utah
- YOUNG, Allan C., 1949 (1955)
Associate Professor of Physiology and Biophysics
B.A., 1930, M.A., 1932, British Columbia (Canada); Ph.D., 1934, Toronto (Canada)

PUBLIC HEALTH AND PREVENTIVE MEDICINE

- BENNETT, Blair M., 1950 (1953)
Assistant Professor of Public Health and Preventive Medicine
A.B., 1938, Georgetown; M.A., 1941, Columbia; Ph.D., 1950, California
- BOVEE, Harley H., 1953 (1955)
Research Instructor in Public Health and Preventive Medicine
B.S., 1948, Washington
- BRYSON, Sylvia, 1949 (1956)
Clinical Associate in Public Health and Preventive Medicine
B.S., 1942, George Peabody College
- DEISHER, Robert W., 1954
Clinical Assistant Professor of Public Health and Preventive Medicine
A.B., 1941, Knox College (Illinois); M.D., 1944, Washington University
- DUNN, Walter L., 1954
Assistant Professor of Public Health and Preventive Medicine; Campus Sanitary Engineer
B.S., 1949, Montana State; M.P.H., 1953, California
- FARNER, Lloyd M., 1947 (1949)
Clinical Assistant Professor of Public Health and Preventive Medicine
A.B., 1930, M.D., 1936, C.P.H., 1937, California
- FOUNTAIN, John H., 1949
Clinical Instructor in Public Health and Preventive Medicine
B.S., 1927, M.D., 1929, Georgetown; M.P.H., 1942, Harvard
- GIEDT, Walvin R., 1948
Clinical Instructor in Public Health and Preventive Medicine
B.S., 1933, South Dakota; M.D., 1937, Rush Medical College; M.P.H., 1941, Johns Hopkins
- HALL, Nora Page, 1950 (1954)
Clinical Associate in Public Health and Preventive Medicine
B.S., 1937, Washington State College; M.P.H., 1950, California
- HANDSCHIN, Richard, 1955
Clinical Associate in Public Health and Preventive Medicine
A.B., 1942, Illinois; M.D., 1953, Rochester
- HANKS, Thrift G., 1952
Clinical Instructor in Public Health and Preventive Medicine
B.S., 1934, M.S., M.D., 1939, Illinois
- HATLEN, Jack B., Jr., 1952
Lecturer in Public Health; Campus Sanitarian
B.S., 1949, Washington

- HOFFMAN, Olin Eber, 1953
Clinical Instructor in Public Health and Preventive Medicine
D.D.S., 1921, Iowa; M.P.H., 1943, Michigan
- HOUGHTON, Benjamin C., 1951 (1953)
Associate Professor of Public Health and Preventive Medicine; Director of the Health Center
B.S., 1930, Dartmouth; M.D., 1934, Iowa
- JENSEN, Emil C., 1946
Clinical Instructor in Public Health and Preventive Medicine
B.S. in C.E., 1936, Washington; M.S., 1938, Harvard
- KAHL, John A., 1946
Clinical Assistant Professor of Public Health and Preventive Medicine
B.S., 1933, M.D., 1935, Nebraska; M.P.H., 1940, Johns Hopkins
- KUSIAN, Ross N., 1952 (1953)
Director Environmental Research; Clinical Assistant Professor of Public Health and Preventive Medicine
B.S. in M.E., 1949, Washington; M.S. in M.E., 1952, Utah
- LEHMAN, Sanford P., 1951
Clinical Assistant Professor of Public Health and Preventive Medicine
B.S., 1928, Wooster College; M.D., 1934, Cincinnati; M.P.H., 1941, Michigan
- McGILL, Charles M., 1950
Clinical Assistant Professor of Public Health and Preventive Medicine
B.S., 1931, Washington; M.D., 1935, Vanderbilt; M.P.H., 1945, Harvard
- MILLS, Caswell A., 1954
Assistant Professor of Public Health and Preventive Medicine and Men's Physical Education
B.A., 1935, Minot State Teachers College; M.A., 1943, Washington
- MYKUT, Margaret, 1951 (1954)
Clinical Instructor in Public Health and Preventive Medicine
B.S., 1938, Oregon; M.A., 1944, Washington
- NORTHROP, Cedric, 1947 (1954)
Clinical Assistant Professor in Public Health and Preventive Medicine
B.A., 1930, M.D., 1936, Oregon
- O'BRIEN, Joseph F., 1953 (1956)
Clinical Associate in Public Health and Preventive Medicine
A.B., 1936, St. Anselms; M.P.H., 1949, Michigan
- ORMROD, George H., 1954
Clinical Associate in Public Health and Preventive Medicine
B.A., 1943, M.A., 1949, Iowa
- PATE, John B., 1954
Research Associate in Public Health and Preventive Medicine
B.S., 1952, Washington
- REED, Samuel I., 1949 (1954)
Clinical Associate in Public Health and Preventive Medicine
B.S., 1940, Washington
- REEVES, G. Spencer, 1950
Associate Professor of Public Health and Preventive Medicine
B.S., 1933, M.S., 1937, Oregon; M.P.H., 1951, California
- REYNOLDS, William E., 1955
Professor of Public Health and Preventive Medicine; Executive Officer of the Department of Public Health and Preventive Medicine; University Health Officer
B.S., 1940, College of Puget Sound; M.D., 1943, Chicago; M.P.H., 1949, Harvard
- RUPPERT, Edwin L., 1954 (1956)
Clinical Associate in Public Health and Preventive Medicine
B.S. in C.E., 1936, Maryland; M.S., 1950, Johns Hopkins
- SEARING, Lyall D., 1950
Clinical Associate in Public Health and Preventive Medicine
B.S., 1928, M.S., 1932, Oregon State College
- SIMS, Wayne W. C., 1948
Clinical Assistant Professor of Public Health and Preventive Medicine
M.D., 1929, Colorado; M.P.H., 1940, Johns Hopkins
- STANDISH, Seymour Myles, Jr., 1956
Lecturer in Public Health and Preventive Medicine
B.A., 1942, Washington
- VAN AMBURGH, J. E., 1951 (1954)
Clinical Associate in Public Health and Preventive Medicine
B.S., 1935, Washington State College
- VAVRA, Catherine E., 1950 (1956)
Lecturer in Public Health and Preventive Medicine
R.N., 1930, St. Mary's Hospital (Minneapolis); B.S., 1935, M.P.H., 1946, Minnesota
- WILKEY, John R., 1949 (1952)
Clinical Assistant Professor of Public Health and Preventive Medicine
B.A., 1926, Western Ontario (Canada); M.D., C.M., 1931, McGill (Canada); D.P.H., 1940, Toronto (Canada)
- WRIGHT, Charles V., Jr., 1955
Clinical Associate in Public Health and Preventive Medicine
B.S., 1948, M.S., 1950, Texas A & M; M.P.H., 1955, California

CLINICAL MEDICAL SCIENCES

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
- 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
- BICKLE, John A., 1959
Affiliate in General Practice
M.D., 1929, McGill (Canada)
- BRILL, John P., Jr., 1949 (1953)
Lecturer in Forensic and Legal Medicine
- BRYANT, Maurice E., 1949
Affiliate in General Practice
B.S., 1937, Washington State College; M.D., 1940, Louisville

- BUSSABARGER, Robert A., 1953
Affiliate in General Practice
B.S., 1932, Washington; M.S., 1935,
M.B., 1936, Ph.D., M.D., 1937,
Northwestern
- CALDWELL, J. Presley, 1952
Affiliate in General Practice
B.S., 1930, South Dakota State; B.M.,
M.D., 1933, Northwestern
- CANNING, Charles M., 1952
Affiliate in General Practice
M.D., 1925, Oregon
- CHING, Ernest F., 1950
Affiliate in General Practice
B.S., 1935, Hawaii; M.D., 1939, College
of Medical Evangelists
- CHRISTOFFERSEN, Olaf H., 1949
Affiliate in General Practice
M.D., 1917, Rush Medical College
- COLLIER, Boy N., 1955
Affiliate in General Practice
A.B., 1921, Northwestern; M.D., 1925,
Louisville
- CONNER, Charles E., 1953
Affiliate in General Practice
B.S., 1934, Washington; M.D., 1938,
Colorado
- CORPRON, Douglas S., 1953
Affiliate in General Practice
M.D., 1921, Cincinnati
- DAY, Charles G., 1949
Affiliate in General Practice
B.A., 1935, M.D., 1938, Oregon
- DODSON, Alfred E., Jr., 1953
Affiliate in General Practice
B.A., 1945, M.D., 1947, Oregon
- DOUGLASS, Charles W., 1953
Affiliate in General Practice
B.S.M., 1939, M.D., 1941, Creighton
- DREWELOW, Kenneth R., 1949
Affiliate in General Practice
B.S., 1932, M.D., 1935, Nebraska
- DUMOUCHEL, M. L., 1949
Affiliate in General Practice
M.D., 1932, Alberta (Canada)
- EBELING, Walter W., 1949
Affiliate in General Practice
B.S., 1924, Washington; M.D., 1928,
Pennsylvania
- EDDY, Howard C., 1949
Affiliate in General Practice
A.B., 1946, M.D., 1929, Western Reserve
- FRICK, Wesley V., 1949
Affiliate in General Practice
B.S., 1929, M.S., M.D., 1931, Oregon
- FRITZ, Harold D., 1949
Affiliate in General Practice
M.D., 1924, Cincinnati
- GAHRINGER, John E.
Affiliate in General Practice
B.S., 1923, M.S., 1924, M.D., 1925,
Chicago
- 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
- GREENWELL, Joseph L., 1949
Affiliate in General Practice
B.S., 1929, Washington; M.D., 1933,
Pennsylvania
- GUDGE, Kenneth E., 1951
Affiliate in General Practice
B.S., 1945, M.D., 1948, Iowa
- GUTTEAU, Judson A., 1955
Affiliate in General Practice
B.S., 1940, M.D., 1950, Washington
- HAGGLAND, Paul B., 1949
Affiliate in General Practice
M.D., 1935, Virginia
- 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
- HARRISON, Harmon G., 1953
Affiliate in General Practice
B.S., 1949, Seattle; M.D., 1951, St. Louis
- HARRISON, John H., 1949
Affiliate in General Practice
A.B., 1932, M.A., 1933, Gonzaga; M.D.,
1938, Chicago
- HICKS, W. W., 1952
Affiliate in General Practice
M.D., 1920, Virginia
- HIGHMILLER, Ralph H., 1949
Affiliate in General Practice
B.A., 1928, M.D., 1935, Oregon
- HUBER, Dale G., 1955
Affiliate in General Practice
B.S., 1941, Washington; M.D., 1945,
Northwestern
- JARED, M. Shelby, 1947
*Lecturer in Medical Ethics and Medical
Economics*
B.S., 1923, M.D., 1924, Northwestern
- JOHNSON, A. Holmes, 1949
Affiliate in General Practice
B.A., 1918, Morningside College; B.S.,
1949, 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
- KLAAREN, C. J., 1950
Affiliate in General Practice
B.S., 1927, William Penn College; M.D.,
1931, Iowa
- KRETZLER, Harry H., 1949
Affiliate in General Practice
B.S., 1921, M.D., 1923, Nebraska
- LEIBOLD, Edwin F., 1952
Affiliate in General Practice
B.S., 1938, College of St. Thomas
(Minnesota); M.D., 1942, Marquette
- LINGENFELTER, John S., 1949
Affiliate in General Practice
A.B., 1921, Washington State College;
M.S., 1923, Wisconsin; M.D., 1925,
Washington University
- 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
- McCLENNY, L. E., 1951
Affiliate in General Practice
B.S., 1943, Washington; B.M., 1947, M.D., 1948, Northwestern
- McCONNELL, Graham S., 1951
Affiliate in General Practice
A.B., 1936, Columbia; B.S., 1940, Washington State College; M.D., 1942, Oregon
- MILLIGAN, John O., 1954
Affiliate in General Practice
B.S., 1934, M.D., 1936, Nebraska
- MUNGER, Irvia C., Jr., 1949
Affiliate in General Practice
A.B., 1923, Wyoming; B.S. in Medicine, 1924, M.D., 1925, Nebraska
- NORRIS, J. L., 1949
Affiliate in General Practice
M.D., 1910, Loyola University School of Medicine, Chicago College of Medicine and Surgery
- PROFFITT, J. Claude, 1953
Affiliate in General Practice
A.B., 1924, M.D., 1932, Oregon
- RAWSON, Erol W., 1949
Affiliate in General Practice
B.S., 1919, Washington; M.D., 1925, Rush Medical College
- RESCHKE, Alfred W., 1955
Affiliate in General Practice
B.S., 1952, M.D., 1953, Illinois
- ROSENBLADT, L. M., 1953
Affiliate in General Practice
M.D., 1932, Nebraska
- ROWE, Perry E., 1952
Affiliate in General Practice
B.S., 1935, Washington; M.D., 1941, Oregon
- SCHAIBLE, Arthur J., 1942
Affiliate in General Practice
B.S., 1930, Valparaiso (Indiana); M.S., M.B., 1934, M.D., 1935, Northwestern
- SCHEYER, Carl J., 1949
Affiliate in General Practice
B.S., 1932, College of Puget Sound; M.D., 1936, Louisville
- SCHEYER, Frederick L., 1946 (1951)
Senior Consultant in General Practice; Director General Practice Externships
M.D., 1928, Temple
- SCHUSTER, Boris, 1952
Affiliate in General Practice
B.S., 1933, Wisconsin; M.D., 1937, Rush Medical College
- SLIND, Ole, 1953
Affiliate in General Practice
B.S., 1938, Washington State College; M.D., 1942, Washington University
- STIMPSON, Edward K., 1949
Affiliate in General Practice
A.B., 1927, Stanford; M.D., 1932, Harvard
- SULKOSKY, Leo F., 1951
Affiliate in General Practice
B.A., 1935, Washington; M.D., 1944, Oregon
- SWEET, Ralph L., 1953
Affiliate in General Practice
M.D., 1941, Marquette
- STORRS, Henry G., 1955
Affiliate in General Practice
B.A., 1942, Amherst; M.D., 1945, Pennsylvania
- TAIT, Arnold G., 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 College; M.D., 1931, Louisville
- TURNER, Mary K., 1949
Affiliate in General Practice
M.D., 1935, Oregon
- 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
- WILSON, Gale E., 1948
Lecturer in Forensic and Legal Medicine
B.S., 1926, Washington; M.D., 1930, Harvard
- WOOD, Joseph G., 1953
Affiliate in General Practice
B.S., 1933, M.D., 1937, Oregon
- YOUNG, Alvia Gordon, 1949
Affiliate in General Practice
M.D., 1925, Oregon
- ZIMMERMAN, James E., 1947
Affiliate in General Practice
B.S., 1942, Washington State College; M.D., 1945, Oregon

MEDICINE

- AAGAARD, George N., 1954
Professor of Medicine
B.S., 1934, M.D., 1936, M.D., 1937, Minnesota
- AHERN, James, 1951 (1954)
Clinical Instructor in Medicine
B.S., 1938, Washington; M.D., 1945, Chicago
- ALLEN, John D., 1956
Assistant in Medicine
M.D., 1955, Harvard
- ALTOSE, Alexander R., 1947
Clinical Instructor in Medicine
M.B., 1937, M.D., 1938, Northwestern
- ANDRUS, William W., 1955
Assistant in Medicine
M.D., 1953, Harvard
- ARCESE, Norman, 1956
Clinical Associate in Medicine
B.S., 1943, Alabama; M.B., M.D., 1946, Northwestern
- ARONSON, Samuel F., 1947 (1952)
Clinical Assistant Professor of Medicine
B.S., 1931, Washington; M.D., 1936, Northwestern
- ARST, Daniel B., 1955
Clinical Associate in Medicine
A.B., 1939, Municipal University of Wichita; M.D., 1944, Kansas
- BAILEY, Richard J., 1954
Clinical Affiliate in Medicine
M.S., 1926, M.D., 1927, Minnesota
- BAKKE, John L., 1951 (1956)
Assistant Professor of Medicine
B.S., 1943, Washington State College; M.D., 1945, Harvard

- BAKKEN, Elsie L., 1952
Clinical Assistant in Medicine
B.A., 1947, Santa Barbara College; M.S., 1951, Ohio
- BANNICK, Edwin G., 1947
Clinical Professor of Medicine
B.S., 1918, M.D., 1920, Iowa
- BARNES, Robert H., Jr., 1950 (1952)
Clinical Instructor in Medicine
B.S., 1940, Virginia Military Institute; M.D., 1943, Virginia
- BARRETT, Beach, 1955
Assistant in Medicine; Research Fellow
M.E., 1940, Cornell; M.D., 1952, Washington
- BENDER, Charles E., 1947
Clinical Instructor in Medicine
Ph.G., 1925, Ohio Northern; A.B., 1931, Ohio State; M.D., 1935, Jefferson Medical College
- BINGHAM, James B., 1947 (1952)
Clinical Assistant 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
- BOTHWELL, Thomas H., 1955
Assistant in Medicine; Research Fellow
M.D., 1953, Witwatersrand (Johannesburg, South Africa)
- BOWERS, James M., 1947
Clinical Assistant Professor of Medicine
A.B., 1922, M.D., 1925, Michigan
- BOWLIN, Paul F., 1956
Assistant in Medicine
B.A., 1950, B.S., 1951, M.D., 1953, University of Minnesota
- BRANDBORG, Lloyd L., 1956
Assistant in Medicine
B.A., 1950, California; M.D., 1955, Chicago
- BRIDGES, William C., 1948
Clinical Instructor in Medicine
B.S., 1938, Washington; M.D., 1940, Yale
- BRIGGS, Natalie Maria, 1950
Clinical Instructor in Medicine
B.A., 1936, College of New Rochelle (New York); M.D., 1940, Long Island College (New York); M.S., 1946, Minnesota
- BRUCE, Robert A., 1950 (1954)
Associate Professor of Medicine
B.S., 1938, Boston; M.S., 1940, M.D., 1943, Rochester
- BRUENNER, Bertram F., 1947 (1955)
Clinical Assistant Professor of Medicine
B.S., 1926, M.D., 1929, Minnesota
- BRYER, William B., 1953
Clinical Associate in Medicine
M.D., 1925, Budapest (Hungary)
- BURNELL, James M., 1950 (1954)
Clinical Instructor in Medicine
M.D., 1949, Stanford
- BURNETT, William H., Jr., 1954
Clinical Associate in Medicine
A.B., 1945, Kenyon College; M.D., 1947, Pittsburgh
- BURROUGHS, Robert W., 1952 (1955)
Clinical Associate in Medicine
A.B., 1947, Bowdoin College; M.D., 1951, Cornell
- CALTA, Edward C., 1955
Assistant in Medicine
B.M., 1949, M.D., 1950, Northwestern
- CAMPBELL, Alexander D., 1947 (1955)
Clinical Assistant Professor of Medicine
B.A., 1930, Whitman College; M.D., 1934, Johns Hopkins
- CAPACCIO, George D., 1947
Clinical Assistant Professor of Medicine
M.D., 1931, Virginia
- CASSERD, Fredrick, 1955
Assistant in Medicine; Research Fellow
B.S., 1947, Washington; M.D., 1950, Oregon
- CHEW, Eric MacMillan, 1947
Clinical Assistant Professor of Medicine
B.S., 1929, Washington; M.D., 1933, Pennsylvania; M.S., 1938, Minnesota
- CLARKE, Edmund R., Jr., 1950
Clinical Associate in Medicine
B.A., 1940, Denver; M.D., 1943, Colorado
- CLEVELAND, Fred Edward, 1951 (1954)
Clinical Instructor in Medicine; Lecturer in Nursing
B.S., 1937, M.D., 1941, Virginia
- COHEN, Benjamin, 1956
Assistant in Medicine
B.A., 1950, Washington University; M.D., 1955, Chicago
- COLEMAN, Daniel, 1950 (1953)
Clinical Instructor in Medicine
M.D., 1945, Jefferson Medical College
- COLLINS, John D., 1947 (1956)
Clinical Assistant Professor of Medicine
B.S., 1933, Washington; M.D., 1937, Northwestern
- COOK, William, 1956
Assistant in Medicine
M.D., 1955, Pennsylvania
- CRAMPTON, Joseph H., 1955 (1956)
Clinical Associate Professor of Medicine
B.S., 1938, Idaho; M.D., 1941, Vanderbilt
- CROCKETT, Wayne A., 1956
Assistant in Medicine and Research Fellow
B.S., 1949, Indiana State Teachers College; M.D., 1953, Indiana
- CROSBIE, James, 1952 (1954)
Clinical Instructor in Medicine
M.D., 1945, Chicago
- DAVIDSON, Robert, 1956
Assistant in Medicine
M.D., 1953, Washington
- DEMARSH, Quin, 1947 (1952)
Clinical Assistant Professor of Medicine
B.S., 1935, Washington; M.S., 1937, B.M., 1939, M.D., 1940, Northwestern
- DONOHUE, Dennis M., 1952 (1955)
Clinical Associate in Medicine
M.D., 1951, Washington
- DUNNING, Marcelle F., 1952 (1955)
Instructor in Medicine
B.A., 1935, Hunter College; M.A., 1936, Columbia; M.D., 1940, New York College of Medicine
- EGGERS, Rolf van Kervall, 1947 (1954)
Clinical Assistant Professor of Medicine
B.A., B.S., 1930, North Dakota; M.D., 1933, Chicago
- EVANS, Ernest M., 1949
Clinical Instructor in Medicine
A.B., 1935, Haverford College; M.D., 1939, Pennsylvania
- EVANS, Robert S., 1951
Associate Professor of Medicine
B.S., 1934, Washington; M.D., 1938, Harvard
- FEIN, Sherwood B., 1954 (1955)
Clinical Associate in Medicine
B.S., 1948, M.D., 1951, Western Reserve
- FELLER, David D., 1952 (1956)
Research Assistant Professor of Medicine
A.B., 1944, Ph.D., 1950, California
- FHEY, Louis D., 1947
Clinical Instructor in Medicine
B.S., 1934, Washington; M.B., 1938, M.D., 1939, Northwestern
- FINCH, Clement A., 1949 (1955)
Professor of Medicine
B.S., 1936, Union College; M.D., 1941, Rochester

- FODOR, Oscar A., 1950
Clinical Associate 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., 1929, M.D., 1930, Northwestern
- FRANCIS, Byron F., 1947
Clinical Professor of Medicine
B.S., 1922, Washington; M.D., 1926, Washington University
- FRANKLIN, Abby, 1955 (1956)
Clinical Instructor in Medicine
M.D., 1948, Ohio State
- FRAYSER, Lois, 1950
Clinical Instructor in Medicine
B.A., 1928, Richmond; M.S., 1935, M.D., 1943, Michigan
- GEORGES, James W., 1954
Clinical Associate in Medicine
B.S.M., 1945, B.M., 1947, M.D., 1948, Northwestern
- GIBBONS, Thomas B., 1953
Clinical Associate in Medicine
B.S., 1944, M.B., M.D., 1946, M.S., 1951, Minnesota
- GIBLETT, Eloise R., 1952 (1956)
Clinical Associate in Medicine
B.S., 1942, M.S., 1947, M.D., 1951, Washington
- GOLDSWORTHY, Patrick D., 1952 (1955)
Research Instructor in Medicine
A.B., 1941, M.A., 1947, Ph.D., 1952, California
- GOSS, Clark C., 1951
Clinical Assistant Professor of Medicine
B.S., M.D., 1923, Kansas
- GREENLEAF, Richard Cranch, 1950
Clinical Instructor in Medicine
B.S., 1939, Yale; M.D., 1942, Columbia
- GRIFFITH, Robert L., 1948
Clinical Instructor in Medicine
B.A., 1932, Alabama; M.D., 1936, Harvard
- HACKEDORN, Howard M., 1953
Clinical Associate in Medicine
B.S., 1935, Washington State College; M.D., 1940, Harvard; M.S., 1951, Oregon
- HAGEN, John M. V., 1952 (1956)
Clinical Instructor in Medicine
B.A., 1942, Wyoming; M.D., 1950, Rochester
- HALLETT, Wilbur Y., 1954
Assistant in Medicine
M.D., 1953, Rochester
- HALSEY, Yadviga D., 1952 (1954)
Research Associate in Medicine
B.S., 1948, Chicago; Ph.D., 1952, Yale
- HAVILAND, James W., 1947 (1956)
Clinical Professor of Medicine; Lecturer in Nursing
A.B., 1932, Union College; M.D., 1936, Johns Hopkins
- HEGSTROM, Robert, 1956
Assistant in Medicine
M.D., 1955, Washington
- HENLEY, Elaine D., 1956
Assistant in Medicine
B.A., 1947, U.C.L.A.; M.D., 1951, California
- HILDEBRAND, Alice Grace, 1947
Clinical Assistant Professor of Medicine; Lecturer in Nursing
B.S., 1934, M.D., 1936, Nebraska; M.S., 1940, Minnesota
- HOGNESS, John R., 1951 (1956)
Clinical Assistant Professor of Medicine
B.S., 1943, M.D., 1946, Chicago
- HOGUE, Philip Nichols, 1949
Clinical Instructor in Medicine
B.S., 1936, Washington; M.B., 1940, M.D., 1941, Northwestern
- HOSKINS, Lansing C., 1955
Assistant in Medicine; Research Fellow
B.A., 1950, Princeton; M.D., 1954, Rochester
- HOUGHTON, Benjamin C., 1951 (1956)
Clinical Associate Professor of Medicine
M.D., 1934, Iowa
- HUFF, Rex L., 1951 (1956)
Associate Professor of Medicine
B.S., 1941, Purdue; M.D., 1944, Indiana
- HURTADO, Arnold V., 1955
Assistant in Medicine
B.A., 1948, Oberlin; M.D., 1952, Tufts College
- HYDE, Paul M., 1953 (1955)
Research Instructor in Medicine
B.S., 1947, San Francisco; M.S., 1950, California; Ph.D., 1953, St. Louis
- HYNES, Kyrán E., 1948
Clinical Assistant Professor of Medicine
B.M., 1935, Creighton; B.S., 1933, M.D., 1935, Louisiana
- JOBB, Emil, 1947
Clinical Instructor in Medicine
B.S., 1941, M.D., 1942, Wayne
- JOFFE, Joy Ruth, 1952
Clinical Associate in Medicine
M.D., 1945, Women's Medical College of Pennsylvania
- JOHN, Gregory G., 1953 (1955)
Assistant in Medicine; Research Fellow
B.S., 1948, Washington; M.D., 1952, Oregon
- JOHNSON, Arthur Dean, 1947 (1954)
Clinical Assistant Professor of Medicine
B.A., 1934, Iowa; M.D., 1939, Northwestern
- JONES, Richard F., 1955
Clinical Associate in Medicine
B.A., 1943, M.D., 1946, Oregon
- KATSMAN, Alvin, 1955
Clinical Associate in Medicine
B.S., 1944, Washington; M.D., 1948, Nebraska; M.S., 1950, Iowa
- KELLER, Marcia M., 1956
Assistant in Medicine
B.S., 1950, State College of Washington; M.D., 1954, Washington
- KELLY, William J., 1954
Clinical Associate in Medicine
B.S., 1941, Seattle; M.D., 1945, Temple
- KING, Robert L., 1947 (1954)
Clinical Associate Professor of Medicine; Lecturer in Nursing
M.D., 1928, B.S., 1931, Virginia
- KIRBY, William M. M., 1949 (1955)
Professor of Medicine
B.S., 1936, Trinity College; M.D., 1940, Cornell
- KOHLI, Daniel Robert, 1951 (1954)
Clinical Instructor in Medicine
B.A., 1938, Wisconsin; M.B., 1941, M.D., 1942, Northwestern
- KOREY, Herman G., 1951 (1953)
Clinical Instructor in Medicine
B.S., 1932, Chicago; M.D., 1936, Rush Medical College
- KRANTZ, Clement I., 1947
Clinical Assistant Professor of Medicine
A.B., 1920, M.D., 1924, Johns Hopkins

- KROUSE, Howard, 1956
Clinical Instructor in Medicine (Neurology)
B.A., 1941, M.D., 1943, Iowa
- LANE, Fenton J., 1954
Clinical Associate in Medicine
M.D., 1945, Michigan
- LARSON, Earl R., 1955
Assistant in Medicine
B.S., 1951, M.D., 1953, Minnesota;
M.I.H., 1955, Harvard
- LAW, E. Harold, 1947 (1953)
Clinical Assistant Professor of Medicine
B.S., 1938, M.D., 1940, Indiana
- LEEDE, William Edward, 1947
Clinical Instructor in Medicine
B.S., 1934, M.D., 1937, Oregon
- LEFFMAN, Henry, 1956
Clinical Assistant Professor of Medicine (Neurology)
M.D., 1935, Prague
- LEHMANN, John Hans, 1950 (1956)
Clinical Instructor in Medicine
M.D., 1935, Perugia (Italy)
- LESTER, Charles N., 1947
Clinical Instructor in Medicine
B.A., 1928, M.D., 1934, Colorado
- LEVENSON, Robert M., 1955
Clinical Associate in Medicine
M.D., 1946, Louisville
- LINDAHL, Wallace W., 1947 (1952)
Clinical Assistant Professor of Medicine (Neurology)
B.S., 1933, Washington State College;
M.D., 1938, Northwestern
- LINDBERG, John H., 1955
Clinical Associate in Medicine
B.S., 1946, Washington; B.M., M.D., 1948, Northwestern
- LINELL, Michael A., 1955
Clinical Associate in Medicine
M.R.C.S., L.R.C.P., 1938, Kings College (England)
- LOGAN, Gordon A., 1952 (1955)
Clinical Associate in Medicine
B.S., 1945, M.S., 1947, Purdue; M.D., 1951, Columbia
- LUCAS, John E., 1952 (1955)
Clinical Instructor in Medicine
B.S., 1940, Washington; M.D., 1943, Harvard; M.S. in Medicine, 1951, Minnesota
- MANCHESTER, Robert C., 1947
Clinical Instructor in Medicine
B.A., 1927, Ohio Wesleyan; M.S., 1930, M.D., 1932, Rochester
- MARR, Thomas A., 1954
Assistant in Medicine
B.A., 1949, B.S., 1951, M.D., 1953, Minnesota
- MARSHALL, Helen S., 1950 (1956)
Clinical Instructor in Medicine
B.S., 1939, M.D., 1942, Wisconsin
- MARTIN, Carroll J., 1952 (1954)
Clinical Instructor in Medicine
B.S., M.D., 1940, Iowa
- MARTIN, John K., 1947
Clinical Assistant Professor of Medicine
B.S., 1926, M.D., 1928, Nebraska
- MATTER, Martin, 1954
Assistant in Medicine
Schw. Staatsexamen, 1950, Zurich (Switzerland)
- McNEALY, Donald E., 1956
Assistant in Medicine
B.M.S., 1953, M.D., 1955, Washington
- MERRYFIELD, Lloyd W., 1951 (1955)
Clinical Associate in Medicine
B.S., 1942, M.S., 1943, California Institute of Technology; M.D., 1950, Harvard
- MICHEL, Jean C., 1951 (1954)
Clinical Instructor in Medicine
B.S., 1943, Bowdoin College; M.D., 1946, Columbia
- MITTELSTAEDT, Lester W., 1952 (1955)
Clinical Associate in Medicine
B.S., 1944, Washington; M.D., 1949, Oregon
- MORGAN, Edward H., 1951 (1954)
Clinical Instructor in Medicine; Lecturer in Nursing
B.A., 1938, DePauw; B.M., M.D., 1943, Northwestern
- MORTON, Robert J., 1948 (1954)
Clinical Assistant Professor of Medicine
A.B., 1939, M.D., 1943, Kansas
- MOTULSKY, Arno, 1953 (1955)
Assistant Professor in Medicine
B.S., 1945, M.D., 1947, Illinois
- MULLER, H. Arnold, Jr., 1956
Assistant in Medicine
B.A., 1952, Dartmouth College; M.D., 1955, Harvard
- MULLINS, John R., 1954 (1955)
Clinical Instructor in Medicine (Neurology)
B.S., 1942, Gonzaga; M.D., 1945, St. Louis
- MUMBY, Mildred, 1947
Clinical Instructor in Medicine
M.D., 1925, Oregon
- NARAHARA, Hiromichi T., 1953 (1956)
Research Instructor
B.A., 1943, M.D., 1947, Columbia
- NELSON, Averly M., 1947
Clinical Instructor in Medicine
B.S., 1937, Washington; M.D., 1941, Oregon
- NOLAN, Donald E., 1951
Clinical Assistant Professor of Medicine; Administrative Assistant
M.D., 1936, Minnesota
- NOYES, Ward D., 1954
Assistant in Medicine
B.A., 1949, M.D., 1953, Rochester
- ORMOND, Louise, 1951 (1954)
Clinical Associate in Medicine
B.A., 1942, Wellesley; M.D., 1947, Rochester
- PACE, William R., Jr., 1951 (1954)
Clinical Instructor in Medicine
B.S., 1943, M.D., 1945, Arkansas
- PAINE, Robert, 1951 (1954)
Clinical Instructor in Medicine; Lecturer in Nursing
B.S., 1942, Bowdoin College; M.D., 1946, Columbia
- PALMER, Lester J., 1947 (1954)
Clinical Professor of Medicine; Lecturer in Nursing
M.D., 1914, Northwestern
- PAXSON, Chauncey G., 1956
Assistant in Medicine
M.D., 1950, Jefferson Medical College
- PEARSON, Clarence C., 1948 (1954)
Clinical Assistant Professor; 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
- PELZEL, Robert B., 1956
Assistant in Medicine
B.A., 1947, West Virginia; M.D., 1954, Harvard
- PETERSON, Philip Leslie, 1947 (1956)
Clinical Assistant Professor of Medicine
A.B., 1926, St. Olaf College; M.D., 1931, Rush Medical College

- PILLOW, Randolph, 1951 (1956)
Clinical Instructor in Medicine
B.A., 1941, M.D., 1944, Virginia
- PIRZIO-BIROLI, Giacomo, 1952 (1955)
Clinical Associate in Medicine
M.D., 1951, Johns Hopkins
- PLUM, Fred, 1953
Assistant Professor of Medicine
(Neurology)
M.D., 1947, Cornell
- POMMERENING, Robert A., 1948 (1954)
Clinical Assistant Professor of Medicine
A.B., 1938, M.D., 1942, Michigan
- POTTER, Robert T., 1949 (1954)
Clinical Assistant Professor of Medicine;
Lecturer in Nursing
B.S., 1937, M.B., 1939, M.D., 1940,
Minnesota; M.P.H., 1944, Johns
Hopkins
- RADKE, Ryle A., 1955
Clinical Instructor in Medicine
M.D., 1934, Northwestern; M.Sc., 1951,
Louisville
- RANKIN, Robert M., 1948 (1952)
Clinical Assistant Professor of Medicine
(Neurology)
B.S., 1937, Washington; M.D., 1942,
Johns Hopkins
- REEVES, Robert L., 1953 (1954)
Clinical Instructor in Medicine
M.D., 1946, Virginia
- ROWBERG, Raymond, 1956
Assistant in Medicine
B.A., 1943, St. Olaf College; M.D.,
1946, Minnesota; D.T.M.&H., 1949,
London
- ROYS, Harvey C., 1951 (1955)
Clinical Instructor in Medicine
M.D., 1943, Oklahoma
- RUBIN, Cyrus E., 1954 (1956)
Assistant Professor of Medicine
A.B., 1943, Brooklyn College; M.D., 1945,
Harvard
- SANDLER, Harold, 1956
Assistant in Medicine
B.S., 1951, M.D., 1955, Cincinnati
- SATA, William K., 1955
Clinical Associate in Medicine (Neurology)
B.A., 1945, M.D., 1947, Utah
- SCHMIDT, Richard P., 1956
Assistant Professor of Medicine
(Neurology)
B.S., 1942, Kent State; M.D., 1945,
Louisville
- SCOTT, Michael J., 1952 (1955)
Clinical Instructor in Medicine
M.D., 1946, Creighton
- SCRIBNER, B. H., 1951 (1954)
Assistant Professor in Medicine
B.A., 1941, California; M.D., 1945,
Stanford; M.S., 1951, Minnesota
- SHAW, John M., 1955
Clinical Associate in Medicine
M.D., 1949, Michigan
- SHAW, Joseph W., 1947
Clinical Professor of Medicine
B.S., 1925, M.D., 1926, M.S., 1930,
Michigan
- SHEEHY, Thomas F., Jr., 1952 (1956)
Clinical Instructor in Medicine
B.S., 1942, Villanova; M.D., 1945, Temple
- SHERWOOD, Kenneth K., 1947
Clinical Assistant Professor of Medicine
B.S., 1923, B.M., 1925, M.D., 1926,
Minnesota
- SIMPSON, Robert W., 1950 (1954)
Clinical Assistant Professor of Medicine
A.B., 1936, M.D., 1942, Stanford
- SKUBI, Kazimer B., 1947 (1954)
Clinical Assistant Professor of Medicine
B.S., 1932, Washington; M.D., 1940,
Rush Medical College
- SMART, Thomas B., 1952 (1955)
Clinical Associate in Medicine
B.S., 1947, M.D., 1951, Washington
- SODERSTROM, Kenneth M., 1947
Clinical Assistant Professor of Medicine
M.D., 1931, Nebraska; M.S. in P.H.,
1940, Johns Hopkins
- SPARKMAN, Donal Ross, 1947 (1956)
Clinical Associate Professor of Medicine
B.S., 1930, Washington; M.D., 1934,
Pennsylvania
- SPICKARD, Warren B., 1948 (1953)
Clinical Assistant Professor of Medicine
B.A., 1940, M.D., 1944, Stanford
- STEENROD, William J., 1953
Clinical Associate in Medicine
B.S., 1943, Western Michigan College;
M.D., 1946, Michigan
- STEVENS, Alexander, 1951 (1955)
Clinical Instructor in Medicine
B.A., 1943, Yale; M.D., 1946, Cornell
- STROH, James E. S., 1947
Clinical Assistant Professor of Medicine
B.S., 1928, South Dakota; M.D., 1931,
Illinois
- SWANSON, August G., 1954 (1955)
Assistant in Medicine; Research Fellow
A.B., 1951, Westminster College; M.D.,
1949, Harvard
- TELFER, James G., 1955
Clinical Assistant Professor of Medicine
M.D., 1934, Washington University
- TENENBERG, Daniel J., 1955 (1956)
Clinical Instructor in Medicine
B.S., 1940, Michigan; Ph.D., 1944,
Minnesota; M.D., 1949, Kansas
- THOMPSON, Alvin J., 1955
Clinical Associate in Medicine
M.D., 1946, Howard
- THOMPSON, Ivan, 1947
Clinical Instructor in Medicine
B.M., 1934, M.D., 1935, Northwestern
- TOMIZAWA, Henry H., 1952 (1955)
Research Instructor in Medicine
B.S., 1949, Iowa State College; Ph.D.,
1952, Illinois
- TYBERGHEIN, Jean, 1954 (1956)
Research Associate in Medicine
M.D., 1952, Louvain (Belgium)
- ULRICH, Delmont M., 1951 (1954)
Clinical Instructor in Medicine
B.S., 1940, M.D., 1943, Minnesota
- UYENO, Ben T., 1951 (1955)
Assistant in Medicine; Research Fellow
B.S., 1943, Washington; M.D., 1949,
Rochester
- VAN ARSDEL, Paul P., 1956
Instructor in Medicine
B.S., 1948, Yale; M.D., 1951, Columbia
College of Physicians and Surgeons
- VOEGTLIN, Walter L., 1947
Clinical Assistant Professor of Medicine
B.S., 1932, M.S., 1933, B.M., 1934, M.D.,
1935, Northwestern
- VOLWILER, Wade, 1949 (1954)
Associate Professor of Medicine
A.B., 1939, Oberlin College; M.D., 1943,
Harvard
- WATTS, Charles E., 1947
Clinical Professor of Medicine
B.S., 1913, Idaho; M.D., 1918, Rush
Medical College
- WATTS, William E., 1950 (1953)
Clinical Assistant Professor of Medicine
B.S., 1938, Washington; M.D., 1942,
Harvard

- WEINSTEIN, Haskell, 1950 (1956)
Clinical Associate in Medicine
B.S., 1949, M.D., 1953, Washington
- WEINSTEIN, Sydney, 1947 (1956)
Clinical Assistant Professor of Medicine
B.S., 1926, Washington; M.D., 1930,
Jefferson Medical College
- WEITZ, Claude H., 1955
Assistant in Medicine
B.S., 1940, Washington State College;
M.D., 1944, Oregon
- WILLIAMS, Paul L., 1947
Clinical Instructor in Medicine
B.S., 1934, M.D., 1937, Oregon
- WILLIAMS, Robert Hardin, 1948
*Professor of Medicine; Executive Officer
of the Department of Medicine*
A.B., 1929, Washington and Lee; M.D.,
1934, Johns Hopkins
- WILLKENS, Robert F., 1955
Assistant in Medicine
B.S., 1950, Antioch College; M.D., 1954,
Rochester
- WILSON, James L., 1953 (1955)
Clinical Instructor in Medicine
B.S., 1942, Washington State College;
B.M., M.D., 1947, Northwestern
- WOLFE, William A., 1951
Clinical Associate in Medicine
B.S., 1943, M.D., 1946, Northwestern;
M.S., 1950, Washington
- YAMAUCHI, Hiroshi, 1956
Assistant in Medicine
B.A., 1951, M.D., 1955, California
- ZIMMERMAN, Bruce M., 1947
Clinical Assistant Professor of Medicine
B.S., 1935, North Dakota; M.D., 1937,
Northwestern
- DONALDSON, L. Bruce, 1948 (1949)
*Clinical Instructor in Obstetrics and
Gynecology*
B.S., 1935, Northwestern; M.D., 1939,
Michigan
- FIGGE, David C., 1953 (1956)
Instructor in Obstetrics and Gynecology
B.S., 1949, M.D., 1950, Northwestern
- FINE, Charles S., 1948
*Clinical Instructor in Obstetrics and
Gynecology*
M.D., 1937, Toronto (Canada)
- FIORINO, John Francis, 1948
*Clinical Associate in Obstetrics and
Gynecology*
B.S., 1924, M.D., 1926, St. Louis
- GOMBERG, Bernard, 1954
*Clinical Instructor in Obstetrics and
Gynecology*
B.S., 1939, M.S., 1941, M.D., 1941,
Illinois
- HELWIG, Carl M., 1948 (1955)
*Clinical Associate Professor of Obstetrics
and Gynecology*
M.D., 1926, Ohio State
- KENNAN, Alfred L., 1955
Instructor in Obstetrics and Gynecology
M.D., 1948, Pennsylvania
- KETTERING, Harry A., 1951 (1955)
*Clinical Instructor in Obstetrics and
Gynecology*
B.A., 1942, M.D., 1945, Oregon
- KIMBALL, Charles Dunlap, 1948 (1956)
Consultant in Obstetrics and Gynecology
M.D., 1934, Buffalo
- KNUDSON, Wendell C., 1948
*Clinical Assistant in Obstetrics and
Gynecology*
B.S., 1933, Washington; M.D., 1938,
Northwestern
- LAMKEE, Muriel, 1956
Assistant in Obstetrics and Gynecology
B.A., 1949, Augustana College; B.S.,
1951, South Dakota; M.D., 1953,
Nebraska
- LAYTON, E. Gerald, 1950
*Clinical Associate in Obstetrics and
Gynecology*
Ph.C., 1929, B.S., 1930, Washington;
B.M., 1934, M.D., 1935, Northwestern
- LEE, Albert F., 1948
*Clinical Instructor in Obstetrics and
Gynecology*
B.S., 1935, College of Puget Sound;
M.D., 1937, Duke
- LOWDEN, Robert J., 1954
*Clinical Associate in Obstetrics and
Gynecology*
B.S., 1942, Seattle; 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
*Clinical Instructor in Obstetrics and
Gynecology*
B.S., 1930, Washington; M.D., 1934,
Pennsylvania
- PETERSON, Paul G., 1948
*Clinical Instructor in Obstetrics and
Gynecology*
A.B., 1927, St. Olaf College; M.D.,
1932, Rush Medical College

OBSTETRICS AND GYNECOLOGY

- AFONSO, Jose Filipe de Sanches, 1954
Assistant in Obstetrics and Gynecology
M.D., 1952, Oporto (Portugal)
- AIKEN, Robert J., 1956
Assistant in Obstetrics and Gynecology
B.S., 1951, Franklin and Marshall
College; M.D., 1955, Pennsylvania
- CAMPBELL, Robert M., 1949 (1952)
*Clinical Instructor in Obstetrics and
Gynecology*
B.S., 1942, Washington; M.D., 1945,
M.S., 1949, Michigan
- CLANCY, John, 1948
*Clinical Instructor in Obstetrics and
Gynecology*
A.B., 1932, Montana; M.D., 1936,
Jefferson Medical College
- CODLING, John W., 1952
*Clinical Assistant in Obstetrics and
Gynecology*
Ph.C., 1929, B.S., 1931, M.D., 1942,
Oregon
- DAY, Charles W., 1949 (1951)
*Clinical Instructor in Obstetrics and
Gynecology*
B.S., 1939, Washington; M.D., 1942,
Oregon
- DE ALVAREZ, Russell R., 1948
*Professor of Obstetrics and Gynecology;
Executive Officer of the Department of
Obstetrics and Gynecology*
B.S., 1933, M.D., 1935, M.S., 1940,
Michigan

- PLANT, Robert K., 1948
Clinical Instructor in Obstetrics and Gynecology
B.S., 1929, Michigan State; M.D., 1932, Michigan
- REEKIE, Richard D., 1948 (1955)
Consultant in Obstetrics and Gynecology
Ph.C., 1925, B.S., 1927, Washington; M.D., 1933, Michigan
- RICE, Glen Griffith, 1949 (1951)
Clinical Instructor in Obstetrics and Gynecology
A.B., 1938, Pacific; M.D., 1942, Oregon
- ROLLINS, Paul R., 1948
Consultant in 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
Clinical Instructor in Obstetrics and Gynecology
A.B., 1932, Illinois; M.D., 1936, Harvard
- SCHROEDER, Herman J., 1948 (1952)
Clinical Instructor in Obstetrics and Gynecology
Ph.C., B.S., 1931, Washington; M.D., 1940, Oregon
- SMITH, Elizabeth Knapp, 1950 (1956)
Associate Professor of Obstetrics and Gynecology
B.S., 1938, Florida State College for Women; M.S., 1939, Michigan; Ph.D., 1943, Iowa
- SMITH, R. Philip, 1948
Clinical Instructor in Obstetrics and Gynecology
A.B., 1930, B.S., 1932, M.D., 1934, Kansas
- STEWART, Robert H., 1950
Clinical Instructor in Obstetrics and Gynecology
M.D., 1927, Oregon
- THOMPSON, Gordon G., 1947 (1954)
Clinical Professor of Obstetrics and Gynecology
B.S., 1906, Macalester College (Minnesota); M.D., 1910, Illinois
- THORP, Donald J., 1948
Consultant in Obstetrics and Gynecology
A.B., 1921, B.S., 1923, M.D., 1927, Michigan
- WOLTER, David F., 1955 (1956)
Associate in Obstetrics and Gynecology
B.S., 1948, M.D., 1952, Washington
- YOUNG, John J., 1954
Clinical Instructor in Obstetrics and Gynecology
B.A., 1928, Louisiana State Normal; M.D., 1936, Tulane
- CHINQUE, Katherine M., 1949 (1951)
Senior Public Health Nurse in the Child Health Center (Pediatrics); Assistant Professor in the School of Nursing
R.N., 1931, Providence Hospital (Michigan); B.S., 1946, Wayne; M.A., 1951, Michigan
- CLEIN, Norman W., 1947 (1956)
Clinical Associate Professor of Pediatrics
B.S., 1922, M.D., 1924, Northwestern
- DEISHER, Robert W., 1949 (1956)
Associate Professor of Pediatrics; Director of the Child Health Center
A.B., 1941, Knox College (Illinois); M.D., 1944, Washington University
- DOCTER, Jack Merton, 1948 (1956)
Clinical Assistant Professor of Pediatrics
B.S., 1937, Washington; M.D., 1941, Columbia
- DOUGLASS, Frank H., 1950
Consultant in Pediatrics
Ph.G., 1919, Washington State College; M.D., 1925, Oregon
- EMERSON, Bettina Meyerhoff, 1948 (1950)
Clinical Instructor in Pediatrics
M.D., 1943, Johns Hopkins
- GERSTMANN, Paul E., 1956
Assistant in Pediatrics
B.S., 1947, Washington; M.D., 1952, Northwestern
- GRYTBÄK, Margit H., 1948 (1950)
Clinical Instructor in Pediatrics
B.S., 1930, B.M., 1932, M.D., 1933, 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
- HADDON, J. E., 1950
Clinical Associate in Pediatrics
B.S., 1929, Washington; M.D., 1933, Oregon
- HARTMANN, John R., 1955
Instructor in Pediatrics
M.D., 1947, Johns Hopkins
- HAZELTINE, Frederick G., 1956
Clinical Instructor in Pediatrics
B.S., 1948, M.D., 1951, Washington
- 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, Mary Louise, 1955
Nutritionist in Child Health Center (Pediatrics); Associate Professor of Home Economics
D.Sc., Harvard
- JOHNSON, Walfred W., 1956
Clinical Instructor in Pediatrics
B.A., 1947, M.D., 1951, St. Louis
- JOY, Frederick B., 1947 (1956)
Clinical Assistant Professor of Pediatrics
B.A., 1929, M.D., 1931, Oregon
- JUSTICE, Robert S., 1955
Associate in Pediatrics
B.A., 1949, College of Puget Sound; M.S.W., 1955, Washington
- KAPLAN, Charles, 1948 (1956)
Clinical Assistant Professor of Pediatrics
B.A., 1934, M.D., 1937, Toronto (Canada)

PEDIATRICS

- KYNOCH, Ruth C., 1955
Instructor in Nursing at the Child Health Center
R.N., 1946, Santa Rosa Junior College; B.S., 1950, Washington
- LAGOZZINO, Daniel A., 1950
Clinical Associate in Pediatrics
B.S., 1940, Washington; M.D., 1943, Oregon
- LANG, Henry T., Jr., 1955
Instructor in Pediatrics
M.D., 1947, Rochester
- LEWIS, Donald, 1956
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
- McDERMOTT, John P., 1950
Clinical Associate in Pediatrics
B.S., M.D., 1935, Creighton
- McGRATH, James R., 1956
Clinical Instructor in Pediatrics
A.B., 1943, M.D., 1945, Chicago
- MOLL, Frederic C., 1948 (1951)
Associate Professor of Pediatrics
A.B., 1937, M.D., 1940, Rochester
- MYKUT, Margaret C., 1951 (1956)
Assistant Professor of Social Work at the Child Health Center
B.S., 1938, Oregon, M.A., 1944, Washington
- POLLEY, Robert F. L., 1953
Clinical Associate in Pediatrics
B.S., 1942, Gonzaga; M.D., 1945, St. Louis
- REID, Sheila M., 1955
Instructor in Dental Hygiene at the Child Health Center
B.S., 1955, Washington
- SEELYE, Walter B., 1947 (1949)
Professor of Pediatrics; Executive Officer of the Department of Pediatrics
B.S., 1922, Washington; M.D., 1926, Harvard
- SHEPARD, Thomas H., 1955
Instructor in Pediatrics
A.B., 1945, Amherst; M.D., 1948, Rochester
- SKINNER, Alfred L., 1955
Research Associate in Pediatrics
A.B., 1947, M.D., 1951, Harvard
- SPICKARD, Vernon W., 1947 (1956)
Senior Consultant in Pediatrics
B.S., 1917, Drake; M.D., 1918, Pennsylvania
- STAMM, Stanley J., 1956
Clinical Instructor in Pediatrics
B.S., 1948, 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
Clinical Instructor in Pediatrics
A.B., 1943, M.D., 1947, Rochester
- TARICA, Samuel H., 1956
Clinical Instructor in Pediatrics
B.S., 1948, M.D., 1952, Washington
- THULINE, Horace C., 1954 (1956)
Clinical Instructor in Pediatrics
M.D., 1953, Washington
- 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; M.D., 1944, Cornell

- VANDEMAN, Philip R., 1950
Clinical Associate in Pediatrics
A.B., 1939, M.D., 1942, Ohio

PSYCHIATRY

- ALLISON, George H., 1950
Clinical Instructor in Psychiatry
B.A., 1943, Rochester; M.D., 1945, Yale
- BAKER, William Y., 1947 (1953)
Clinical Assistant Professor of Psychiatry
B.S., 1931, M.D., 1933, Nebraska
- BASSAN, Morton E., 1954
Clinical Instructor in Psychiatry
B.A., 1938, Hopkins; M.D., 1942, Maryland
- BOBBITT, Francis S., 1949
Clinical Instructor in Psychiatry
B.S., 1941, B.M., 1943, M.D., 1944, Northwestern
- BOUCHER, Jeanne V., 1956
Clinical Assistant 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, Robert W., 1949
Clinical Affiliate in Psychiatry
B.A., 1923, Wisconsin; M.D., 1928, Harvard; M.S., 1940, Minnesota
- BUCHMEIER, Joseph A., 1950
Clinical Instructor in Psychiatry
A.B., 1939, M.D., 1942, Indiana
- BUXBAUM, Edith S., 1955
Clinical Assistant Professor of Psychology
Ph.D., 1923, Vienna (Austria)
- CAMPBELL, M. M., 1955
Clinical Affiliate in Psychiatry
B.S., 1926, Washington; M.D., 1930, Oregon
- CANDY, Ardis J., 1954
Clinical Assistant in Psychiatry
B.S., 1946, Beloit College (Wisconsin); M.S., 1948, M.D., 1950, Wisconsin
- CASEY, James M., 1951
Clinical Instructor in Psychiatry
B.A., 1936, Seattle; M.D., 1944, Creighton
- CHIVERS, Norman C., 1950 (1956)
Clinical Associate Professor of Psychiatry
B.A., 1938, Saskatchewan (Canada); M.D., 1941, Manitoba (Canada)
- CORBETT, James T., 1954
Clinical Instructor in Psychiatry
B.S., 1945, Seattle; 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
- DIAMOND, Leon S., 1951
Clinical Affiliate in Psychiatry
B.S.M., 1937, M.D., 1938, Loyola
- DUGAN, J. Brooks, 1953
Clinical Instructor in Psychiatry
B.S., 1943, Utah; B.M., 1946, M.D., 1947, Northwestern
- FORDYCE, Wilbert E., 1953 (1954)
Clinical Instructor in Clinical Psychology
B.S., 1948, M.S., 1951, Ph.D., 1953, Washington
- FREIDINGER, Arthur W., 1949
Clinical Instructor in Psychiatry
A.B., 1939, Oberlin College; M.D., 1943, Western Reserve
- GABLE, Charles M., 1950
Clinical Instructor in Psychiatry
B.S., 1939, Washington; M.D., 1941, Tennessee

- GOFORTH, Eugene G., 1948 (1953)
Clinical Assistant Professor of Psychiatry
B.S., 1939, M.D., 1941, Illinois
- GRIDER, James A., Jr., 1956
Clinical Instructor in Psychiatry
A.B., 1930, Kentucky; M.D., 1934,
Rush Medical College
- HAMMER, Frank J., 1956
Clinical Instructor in Clinical Psychology
B.A., 1942, Lawrence College;
Ph.D., 1950, Chicago
- HEILBRUNN, Gert, 1948 (1951)
Clinical Assistant Professor of Psychiatry
B.A., 1929, City College of Nuremberg
(Germany); M.D., 1935, Bern
(Switzerland)
- HEINEMANN, Harold E., 1952 (1953)
Clinical Instructor in Psychiatry
B.A., 1937, Eastern Washington College of
Education; M.D., 1948, Oregon
- HEMMEN, John E., 1952
Clinical Instructor in Psychiatry
M.D., 1946, St. Louis
- HENDERSON, J. Lester, 1948 (1953)
Clinical Assistant Professor of Psychiatry
B.S., 1924, Eureka College (Illinois);
M.D., 1929, Washington University
- HENDRICKS, Roger C., 1949
Clinical Instructor in Psychiatry
M.D., 1941, Rush Medical College
- HOEDEMAEKER, Edward D., 1947
Clinical Instructor in Psychiatry
B.S., 1927, M.D., 1929, Michigan
- HOLMES, Thomas H., III, 1949 (1953)
Associate Professor of Psychiatry
A.B., 1939, North Carolina; M.D., 1943,
Cornell
- HORTON, William D., 1950
Clinical Instructor in Psychiatry
B.A., 1939, M.D., 1942, Kansas
- HUNTER, Harry D., 1954
Clinical Instructor in Psychiatry
M.D., 1945, Rochester
- HURLEY, Albert M., 1952 (1956)
Clinical Instructor in Psychiatry
B.S., 1942, St. Joseph College; M.D.,
1946, Marquette
- JACKSON, Joan K., 1955 (1956)
Research Instructor in Psychiatry
M.A., 1947, McGill (Canada); Ph.D.,
1955, Washington
- JACKSON, Stanley W., 1955 (1956)
Clinical Instructor in Psychiatry
B.C., 1941, M.D., C.M., 1950, McGill
(Canada)
- JARVIS, Richard B., 1955
Clinical Instructor in Psychiatry
B.S., 1942, College of Puget Sound; M.D.,
1945, Louisville
- JATEN, Eleanor L., 1956
Clinical Instructor in Psychiatry
(Social Work)
B.A., 1942, Montana State; M.S.W.,
1955, Washington University
(St. Louis)
- JOHNSON, Merlin, 1955
Instructor in Psychology
B.A., 1944, M.D., 1947, Iowa
- JONES, Charles H., 1950
Clinical Affiliate in Psychiatry
B.S., 1940, Washington; M.D., 1943,
Oregon
- KAUFMAN, S. Harvard, 1947 (1954)
Clinical Assistant Professor of Psychiatry
B.S., 1934, M.D., 1936, Wisconsin
- 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 Psychology
B.A., 1934, Wellesley; M.A., 1935,
Ph.D., 1943, Columbia
- KOGAN, William S., 1952
Clinical Instructor in Clinical Psychology
A.B., 1936, New York; M.A., 1939,
Columbia; Ph.D., 1949, Pittsburgh
- KROUSE, Howard, 1951
Clinical Instructor in Psychiatry
B.A., 1941, M.D., 1943, Iowa
- LASATER, James H., 1948
Clinical Instructor in Psychiatry
B.S., 1934, Washington; M.D., 1939,
George Washington
- LEAVITT, Harry C., 1951
Clinical Instructor in Psychiatry
B.M., M.D., 1937, Chicago
- LEFFMAN, Henry, 1953 (1956)
Clinical Assistant Professor of Psychiatry
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
- MCCARTHY, Neal E., 1954
Clinical Assistant in Psychiatry
B.S., 1942, Portland; M.D., 1945, Oregon
- NEWKIRK, Paul R., 1949
Clinical Affiliate in Psychiatry
M.D., 1911, Heidelberg (Germany)
- ORR, Douglas W., 1947 (1953)
Clinical Assistant Professor of Psychiatry
A.B., 1928, Swarthmore College; M.S.,
1933, M.D., 1935, Northwestern
- PETERS, Frederick M., 1949
Clinical Instructor in Psychiatry
B.S., 1936, Washington; B.M., 1941,
M.D., 1943, M.S., 1949, 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 City of New York;
M.D., 1927, Boston
- POST, Nancy R., 1956
Clinical Instructor in Psychiatry
(Social Work)
B.A., 1940, M.S.W., 1953, Washington
- PRATUM, Leif K., 1951 (1952)
Clinical Instructor in Psychiatry
B.S., 1944, Washington; M.D., 1946,
Louisville
- PRESTON, Caroline E., 1949 (1953)
Instructor in Psychology
B.A., 1940, M.A., 1941, Colorado
- QUINN, Robert D., 1953 (1954)
Clinical Assistant in Psychiatry
B.A., 1946, Ph.D., 1951, Chicago
- RILEY, John B., 1948
Clinical Instructor in Psychiatry
B.S., 1929, M.B., 1933, M.D., 1934,
Minnesota
- RIPLEY, Herbert S., 1949
*Professor of Psychiatry; Executive Officer
of the Department of Psychiatry*
A.B., 1929, Michigan; M.D., 1933,
Harvard

- SAYER, Robert J., 1951 (1954)
Clinical Instructor in Psychiatry
A.B., 1944, Pennsylvania; M.D., 1948,
Columbia
- SCHER, Maryonda E., 1955
Clinical Assistant in Psychiatry
B.S., 1950, M.D., 1954, Washington
- SCHWARTZ, Lawrence H., 1955 (1956)
Clinical Instructor in 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
- STEISEL, Ira M., 1949 (1952)
*Instructor in Clinical Psychology in the
Department of Psychiatry; Lecturer in
Psychology in the College of Arts and
Sciences*
B.S., 1944, College of City of New York;
M.A., 1945, Ph.D., 1949, Iowa
- STOLZHEISE, Ralph M., 1948
Clinical Instructor in Psychiatry
A.B., 1926, Willamette; M.D., 1934,
Oregon
- STRACHAN, Willis L., 1949
Clinical Instructor in Psychiatry
A.B., 1929, Colorado College; M.D., 1942,
Colorado
- STRAND, Glenn T., Jr., 1953
Clinical Assistant in Psychiatry
B.S., 1948, M.D., 1952, Washington
- STROTHER, Charles R., 1949
*Professor of Clinical Psychology in the
School of Medicine*
B.A., 1929, M.A., 1932, Washington;
Ph.D., 1935, Iowa
- STUEN, Marcus R., 1953 (1955)
Clinical Affiliate in Psychiatry
B.A., 1943, Pacific Lutheran College;
M.D., 1946, Marquette
- SUGARS, Thomas W., 1948
Clinical Instructor in Psychiatry
S.B., 1936, Washington State College;
M.D., 1939, Rush Medical College
- TATUM, Joseph C., 1955
Clinical Affiliate in Psychiatry
M.D., 1932, Tennessee
- TAYLOR, Benjamin M., 1954 (1955)
Clinical Instructor in Psychiatry
M.D., 1949, St. Louis
- TJOSSEM, Theodore D., 1951 (1953)
Instructor in Psychology
B.A., 1940, Drake; M.A., 1941, Iowa
- WELTI, Walter B., 1952 (1954)
Clinical Instructor in 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
- WORTHINGTON, Robert L., 1949
Clinical Instructor in Psychiatry
M.D., C.M., 1933, McGill (Canada)

RADIOLOGY

- ADDINGTON, Ercell A., 1948
Clinical Assistant Professor of Radiology
B.A., 1928, Carleton College (Minnesota);
M.D., 1932, M.A., 1939, Minnesota
- BALTZO, Ralph M., 1954 (1956)
*Associate in Radiology; Radiologic
Safety Officer*
B.A., 1950, Washington
- BENESH, Alfred J., 1951 (1954)
Clinical Assistant Professor of Radiology
B.A., 1926, M.A., 1931, South Dakota;
M.D., 1933, Chicago

- BRACHER, George, 1953
Clinical Assistant Professor of Radiology
B.A., 1930, Wittenburg College (Ohio);
M.D., 1934, Oregon
- BUSCHKE, Franz, 1948
Clinical Assistant Professor of Radiology
M.D., 1926, Berlin (Germany)
- CANTRIL, Simeon T., 1948
Clinical Associate Professor of Radiology
A.B., 1929, Dartmouth; M.D., 1932,
Harvard
- CARLILE, Thomas Burham, 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
- HARRIS, Milo Truman, 1950
Clinical Associate Professor of Radiology
M.D., 1928, Texas; M.S., 1932, Minnesota
- HARTZELL, Homer V., 1948
Clinical Assistant Professor of Radiology
A.B., 1930, Stanford; M.D., 1936, Oregon
- HODGES, Fred J., III, 1954
Instructor in Radiology
B.S., 1944, M.D., 1946, Wisconsin
- LEIGHTON, Robert S., 1955
Clinical Instructor in Radiology
B.A., 1933, M.D., 1938, Minnesota
- NELSON, James F., 1953 (1955)
Clinical Assistant Professor in Radiology
M.D., 1946, Northwestern
- PARKER, Herbert M., 1948
Clinical Assistant Professor of Radiology
B.S., 1930, M.S., 1931, Manchester
(England)
- ROBERTS, Edward W., 1948
Clinical Instructor in Radiology
B.S., 1929, B.M., 1931, M.D., 1932,
Minnesota
- ROESCH, William C., 1953
Clinical Instructor in 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
Clinical Instructor in Radiology
B.S., 1936, Washington; M.D., 1940,
Michigan
- WARD, Byron H., 1951
Clinical Instructor in Radiology
B.S., 1935, Washington; M.D., 1939,
Oregon

SURGERY

- ADAMS, Alfred O., 1950
Consultant in Orthopedic Surgery
M.D., 1924, Washington University
- ANDERSON, Kirk J., 1952
Clinical Associate 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
- ANDERSON, Rupert F., Jr., 1955
Clinical Associate in Surgery
A.B., 1942, Kenyon College; M.D., 1946,
Columbia

- ASH, Joseph L., 1949
Consultant in Surgery (Otolaryngology)
B.S., 1923, M.D., 1925, Creighton
- BAKER, Joel W., 1948 (1952)
Consultant in Surgery; Director of Medical Student Surgical Teaching, Virginia Mason Hospital
M.D., 1928, Virginia
- BALLARD, Jack D., 1955 (1955)
Assistant in Surgery
M.D., 1943, Oklahoma
- BARRETT, Earl L., 1951
Clinical Associate in Surgery (Ophthalmology)
B.S., 1942, Northwestern; M.D., 1945, Harvard
- BAUER, Göran C. H., 1955
Research Assistant Professor of Surgery (Orthopedics)
M.D., 1948, Karolinska Institutet (Sweden)
- BERENS, Sylvester N., 1953 (1956)
Consultant in Neurosurgery
B.S., 1924, M.D., 1928, Creighton
- BILL, Alexander H., Jr., 1948
Clinical Associate 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 (1955)
Clinical Instructor in Surgery
M.D., 1938, Duke
- BOWLES, Albert J., 1948
Consultant in Surgery
A.B., 1919, M.D., 1923, Oregon
- BROWN, Walter S., 1952
Clinical Associate in Surgery
A.B., 1927, Alabama; M.D., 1932, Illinois
- BUCKNER, Hubbard T., 1948
Senior Consultant in Orthopedic Surgery
M.D., 1913, Jefferson
- BURGESS, Ernest M., 1948
Clinical Instructor in Orthopedic Surgery
A.B., 1932, Utah; M.D., 1937, Columbia
- BURKE, Donald R., Jr., 1954
Clinical Associate in Surgery
B.S., 1945, M.D., 1948, Creighton; M.S., 1955, St. Louis
- CAMPBELL, Robert A., 1949
Clinical Instructor in Surgery (Otolaryngology)
B.S., 1924, Washington; M.D., 1932, Oregon
- CARNEY, John L. P., 1953
Clinical Instructor in Surgery (Otolaryngology)
B.S., 1935, North Dakota; M.D., 1937, Rush Medical College
- CHAMBERS, Edward F. S., 1948
Consultant in Orthopedic Surgery
M.D., 1907, Pennsylvania
- CHISM, Carl E., 1952
Clinical Associate in Surgery
B.S., 1936, M.D., 1941, Nebraska
- COE, Herbert E., 1947
Senior Consultant in Surgery
A.B., 1904, M.D., 1906, Michigan
- COMPTON, David W., 1949
Clinical Associate in Surgery (Anesthesiology)
B.S., 1937, Washington; M.D., 1941, Pennsylvania
- CRENSHAW, William B., 1955
Clinical Associate in Surgery (Urology)
B.A., 1944, M.D., 1948, Virginia
- CRYSTAL, Dean K., 1947 (1952)
Clinical Instructor in Surgery
B.S., 1936, Washington; B.A., 1938, Oxford; M.D., 1941, Johns Hopkins
- CUSTIS, Donald L., 1949 (1952)
Clinical Associate in Surgery
A.B., 1939, Wabash College (Indiana); M.D., 1942, Northwestern
- DAY, Sherman W., Jr., 1955
Clinical Associate in Surgery
B.S., 1944, College of Puget Sound; M.D., 1947, M.S., 1952, Northwestern
- DEPREE, James F., 1952
Clinical Associate in Surgery
B.A., 1926, Hope College (Michigan); M.D., 1931, Rush Medical College
- DILLARD, David H., 1953
Assistant in Surgery
A.B., 1946, Whitman College; M.D., 1950, Johns Hopkins
- DIRSTINE, Morris J., 1947
Clinical Associate in Surgery
Ph.G., 1926, Washington State College; B.S., 1932, Washington; M.D., 1937, Northwestern
- DUNCAN, John A., 1948
Consultant in Surgery; Director of Medical Student Surgical Teaching, Swedish Hospital
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)
- EDMARK, K. William, Jr., 1955
Clinical Associate 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., 1948 (1956)
Clinical Instructor in Urology
B.S., 1933, M.D., 1937, Nebraska
- EMMEL, Harry E., 1948
Clinical Associate in Orthopedic Surgery
B.A., 1936, Willamette; M.D., 1940, Oregon
- EVOY, Matthew H., 1948
Clinical Associate in Surgery
M.D., 1941, St. Louis
- FINLEY, John W., 1953
Clinical Associate in Surgery
B.S., 1940, Idaho; M.D., 1943, Harvard
- FLASHMAN, Forrest L., 1950
Clinical Associate in Orthopedic Surgery
M.D., 1941, Northwestern
- FLETCHER, T. Lloyd, 1951 (1955)
Research Associate Professor of Surgery
A.B., 1937, M.A., 1938, Clark (Massachusetts); Ph.D., 1949, Wisconsin
- FLORER, Robert E., 1948 (1949)
Clinical Associate in Surgery
B.S., 1938, Western Kentucky State Teachers College; M.D., 1941, Louisville
- FOLTZ, Eldon L., 1950 (1953)
Assistant Professor of Neurosurgery
B.S., 1941, Michigan State College; M.D., 1943, Michigan
- FORBES, Robert D., 1947 (1948)
Senior Consultant in Surgery
M.D., C.M., 1903, McGill (Canada)
- FOXWORTHY, Laurel R., 1949
Clinical Associate in Surgery (Ophthalmology)
M.S., 1937, M.D., 1939, Indiana

- FREDERICKSON, Evan L., 1956
Assistant Professor of Surgery (Anesthesiology)
B.S., 1947, M.D., 1950, Wisconsin;
M.S., 1953, Iowa
- GARRETT, Wayne E., 1955
Assistant in Surgery
M.D., 1952, Pennsylvania
- GIRVIN, George W., 1953 (1955)
Instructor in Surgery
B.A., 1948, M.D., 1951, Colorado
- GRAY, A. Bernard, 1951
Clinical Associate in Orthopedic Surgery
M.D., 1935, Manitoba (Canada)
- GRIFFITH, Charles A., 1952 (1955)
Clinical Instructor in Surgery
B.A., 1942, M.D., 1945, Harvard
- GUSTAFSON, Ivan J., 1952 (1955)
Clinical Associate in Surgery
B.S., 1942, Washington State College;
M.D., 1950, Oregon
- HAFFLY, Gilbert N., 1948 (1949)
Clinical Associate in Surgery (Ophthalmology)
B.M., 1932, M.D., 1936, Northwestern
- HALL, Donald T., 1948
Clinical Instructor in Surgery
B.S., 1931, Washington; M.D., 1935, Harvard
- HANSON, A. George, 1949
Clinical Associate in Surgery (Ophthalmology)
B.S., 1930, Washington; M.D., C.M., 1935, McGill (Canada)
- HARKINS, Henry Nelson, 1947
Professor of Surgery; Executive Officer of the Department of Surgery
B.S., 1925, M.S., 1926, Ph.D., 1928, Chicago; M.D., 1931, Rush Medical College
- 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
- HAVERSTOCK, Richard T., 1948
Clinical Associate in Urology
B.S., 1933, M.D., 1936, Illinois
- HEARNE, Rodney B., 1948
Clinical Associate in Surgery
B.S., 1933, Washington; M.D., 1937, Harvard
- HEATH, Sherburne W., 1952
Clinical Instructor in Surgery
A.B., 1941, Whitman College; M.D., 1945, Marquette
- HENRY, Frank C., 1949 (1952)
Clinical Associate in Surgery
A.B., 1934, James Millikan (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
- HILLMAN, Van K., 1952
Clinical Associate in Surgery
B.S., 1937, M.D., M.S., 1941, Northwestern
- HOUSEHOLDER, James R., 1955
Instructor in Surgery (Anesthesiology)
M.D., 1948, Iowa
- HUMISTON, Homer W., 1950
Consultant in Urology
B.S., 1923, Illinois; M.D., 1925, Harvard
- 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; Lecturer in Nursing
B.S., 1931, Washington; M.D., 1936, McGill (Canada)
- JARVIS, Fred J., 1948
Consultant in Surgery
B.A., 1928, M.D., 1932, Iowa
- JENSEN, Carl D. F., 1949
Consultant in Surgery (Ophthalmology)
M.D., 1931, Maryland
- JENSEN, Ole J., 1948 (1956)
Clinical Assistant Professor of Urology
B.S., 1934, Washington; M.D., C.M., 1939, McGill (Canada); D.Med.Sc., 1944, Columbia
- JESSEPH, John E., 1955
Assistant in Surgery
A.B., 1949, Whitman College; M.D., 1953, Washington
- JOHNSON, Robert E., 1956
Associate Professor of Surgery (Surgical Anatomy)
M.D., 1943, Iowa
- JOHNSON, Roger H., 1949
Clinical Associate in Surgery (Ophthalmology)
B.S., 1937, M.D., 1939, Wisconsin; M.S., 1944, Minnesota
- JORDAN, Prescott, 1955
Assistant Professor of Surgery
B.S., 1937, M.D., 1941, Chicago
- KANAR, Edmund A., 1951 (1955)
Consultant in Surgery
B.A., 1943, M.D., 1945, Wayne
- KING, Brien T., 1947
Senior Consultant in Surgery
M.D., 1911, Vanderbilt
- KIRILUK, Lawrence B., 1949 (1954)
Clinical Instructor in Surgery
B.M., 1945, M.D., 1946, Minnesota
- KLEMPERER, Wolfgang W., 1948
Clinical Associate in Neurosurgery
M.D., 1936, Cornell
- KNOPP, Lawrence M., 1954 (1956)
Instructor in Surgery (Neurosurgery)
B.S., 1949, Southwestern; M.S., 1949, M.D., 1951, Tennessee
- KRAUEL, Kathryn K., 1953 (1955)
Research Assistant Professor in Surgery
B.A., 1938, M.S., 1940, Ph.D., 1942, Iowa
- LAMSON, Otis F., 1947
Senior Consultant in Surgery
M.D., 1907, Pennsylvania
- 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
- LECOCQ, Edward A., 1948
Consultant in Orthopedic Surgery
B.A., 1926, M.D., 1929, Oregon
- LECOCQ, John F., 1948
Senior Consultant in Orthopedic Surgery
M.D., 1925, A.B., 1926, Oregon
- LEE, Harry P., 1950
Consultant in Urology
B.A., 1923, George Washington; M.D., 1927, Iowa

- LISTERUD, Mark B., 1955
Assistant in Surgery
 B.A., 1949, B.S., 1950, M.B., 1952,
 M.D., 1953, Minnesota
- LOBB, Allan W., 1955
Clinical Instructor in Surgery
 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
- LOUGHLEN, Ivan K., 1948
Clinical Associate in Orthopedic Surgery
 B.S., 1939, Washington; M.D., 1943,
 Oregon
- LUNDMARK, Vernon O., 1948
Clinical Associate in Surgery
 M.D., 1936, Washington University
- LYDA, Wood, 1954
Clinical Associate in Surgery
(Ophthalmology)
 B.S., 1940, Washington; M.D., 1943,
 Washington University
- 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 Instructor in Surgery
 B.S., 1932, Washington; M.D., 1936,
 Harvard
- MAGUIRE, Richard X., 1952 (1953)
Assistant in Surgery
 B.S., 1947, M.D., 1951, Washington
- MASON, James T., 1950 (1953)
Clinical Instructor in Urology
 M.D., 1940, Michigan
- MATHWIG, James E., 1948
Clinical Associate in Surgery
(Anesthesiology)
 B.S., 1933, Washington; M.D., 1937,
 Oregon
- McCONVILLE, Bernard E., 1948
Clinical Associate in Orthopedic Surgery
 B.S., 1935, M.D., 1936, Nebraska
- McDONALD, Donald F., 1948 (1954)
Associate Professor of Surgery; Head of
Division of Urology
 M.D., 1942, Chicago
- McELMEEL, Eugene F., 1947 (1949)
Clinical Instructor in Surgery
(Otolaryngology)
 B.A., 1930, College of St. Thomas
 (Minnesota); B.S., 1933, M.D., 1936,
 Minnesota
- McLEMORE, Ira O., 1948 (1952)
Senior Consultant in Orthopedic Surgery
 M.D., 1923, Georgia
- MERENDINO, K. Alvin, 1948 (1955)
Professor of Surgery
 B.A., 1936, Ohio; M.D., 1940, Yale;
 Ph.D., 1946, Minnesota
- METHENY, David, 1948
Consultant in Surgery
 A.B., 1920, Pennsylvania; M.D., 1923,
 Jefferson
- MILLER, C. Dudley, 1953 (1956)
Clinical Instructor in Urology
 M.D., 1941, Creighton
- MILLER, Daniel S., 1953
Clinical Associate in Urology
 B.A., 1941, M.D., 1944, Iowa
- MILLER, James W., 1948
Clinical Instructor in Orthopedic Surgery
 A.B., 1936, M.D., 1939, Michigan
- MILLS, Waldo O., 1952
Clinical Associate in Surgery
 B.A., 1937, Willamette; M.D., 1940,
 Oregon
- MOEN, Chester W., 1954
Clinical Associate in Surgery
 B.S., 1939, Washington; M.D., 1943,
 Tennessee
- MOORE, Daniel C., 1953 (1956)
Clinical Assistant Professor of Surgery
(Anesthesiology)
 M.D., 1944, Northwestern
- MORRIS, Lucien E., 1954
Professor of Surgery; Head of Division
of Anesthesiology
 A.B., 1936, Oberlin College; M.D., 1943,
 Western Reserve
- MORGAN, William E., 1952
Clinical Associate in Surgery
 B.S., 1939, Washington; M.D., 1943,
 Oregon
- MOSIMAN, Roscoe S., 1953 (1955)
Clinical Instructor in Surgery
 B.A., 1940, Harvard; M.D., 1943, Johns
 Hopkins; M.M.S., 1951, Tulane Medical
 School
- MULLEN, Bernard P., 1948
Consultant in Surgery
 B.S., 1918, Wisconsin; M.D., 1921, Rush
 Medical College
- NELSON, Jack N., 1948 (1956)
Clinical Assistant Professor of Urology
 M.D., 1932, College of Medical Evangelists
- NORGORE, Martin, 1946 (1952)
Consultant in Surgery
 B.S., 1921, Washington; M.D., 1926,
 Oregon
- NYHUS, Lloyd M., 1952 (1956)
Assistant Professor of Surgery
 B.A., 1945, Pacific Lutheran College;
 M.D., 1947, Medical College of Alabama
- OHMAN, Albert C., 1948 (1956)
Clinical Assistant Professor of Urology
 M.D., 1932, Colorado
- OLSON, Clarence, 1952
Clinical Associate in Surgery
 B.S., 1928, Chicago; M.D., 1933, Rush
 Medical College
- OLSON, Hilding H., 1950 (1955)
Clinical Assistant Professor of Surgery
 B.S., 1939, Washington; M.D., 1943,
 Oregon
- O'NEIL, Gordon B., 1948
Clinical Associate in Orthopedic Surgery
 B.S., 1932, Washington; M.D., C.M.,
 1936, McGill (Canada)
- OSMUN, Paul M., 1949
Clinical Instructor in Surgery
(Otolaryngology)
 A.B., 1932, Brown; M.D., C.M., 1938,
 McGill (Canada)
- OTTO, James R., 1952
Clinical Associate in Surgery
 B.A., 1936, B.S., 1937, North Dakota;
 M.D., 1939, Columbia
- OWEN, James G., 1953
Clinical Associate in Surgery
 B.S., 1940, Monmouth College (Illinois);
 M.D., 1943, Washington University
- PALKEN, Morton, 1954
Clinical Associate in Surgery (Urology)
 B.S., 1943, M.D., 1946, Tufts College
- 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
- PARKER, Dean, 1948
Clinical Instructor in Urology
 B.S., 1933, M.D., 1939, Iowa
- PAYNE, J. Thomas, 1951 (1955)
Associate Professor of Surgery
 B.A., 1938, Westminster College; M.D.,
 1942, Vanderbilt

- PETER, Philip A., 1955
Clinical Associate in Surgery
(Ophthalmology)
B.A., 1945, Whitman College; M.D., 1948, Baylor
- PHILLIPS, James W., 1949 (1953)
Clinical Instructor in Surgery
(Otolaryngology)
B.S., 1934, M.D., 1938, Stanford
- PHILLIPS, James Y., 1948
Clinical Associate in Neurosurgery
M.D., C.M., 1940, McGill (Canada)
- PILLING, Matthew A., 1952
Clinical Associate in Surgery
B.S., 1936, State Teachers' College
(Nebraska); M.D., 1941, Nebraska
- PINKHAM, Roland D., 1948
Clinical Instructor in Surgery
B.S., 1934, Washington; M.D., 1939, Stanford
- POWELL, Archie C., 1949
Clinical Instructor in Surgery
(Otolaryngology)
B.S., M.D., 1936, Nebraska
- RAMSAY, J. Finlay, 1948
Clinical Instructor in Surgery
B.S., 1926, Washington; M.D., 1930, Oregon
- ROCKWELL, Albert G., Jr., 1953
Clinical Associate in Surgery
(Otolaryngology)
A.B., 1940, M.D., 1944, Stanford
- ROGGE, Edgar A., 1948
Clinical Associate in Orthopedic Surgery
B.S., 1931, Washington; M.D., 1935, George Washington
- ROSELLINI, Leo J., 1948
Clinical Associate in Surgery
Ph.G., 1931, California; B.S., 1932, San Francisco; M.D., 1937, Creighton
- RUUSKA, Paul E., 1950
Clinical Associate in Orthopedic Surgery
M.D., 1940, Oregon
- SACHS, Allan E., 1952
Clinical Instructor in Surgery
B.S., 1934, Chicago; M.D., 1937, Rush Medical College
- SANDERSON, Eric R., 1947 (1948)
Clinical Associate in Surgery
B.S., 1923, Minnesota; M.D., 1937, Harvard
- SARRO, Louis J., 1949
Clinical Associate in Surgery
(Ophthalmology)
B.S., 1937, Washington; M.B., 1941, M.D., 1942, Northwestern
- SAUVAGE, Lester R., 1950 (1955)
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
- SCHMIDT, Joan, 1955
Research Associate in Surgery
A.B., 1943, Regis College; M.S., 1950, Washington
- SCHMIDT, Richard P., 1953 (1956)
Assistant Professor of Surgery
(Neurosurgery)
B.S., 1942, Kent State (Ohio); M.D., 1945, Louisville
- SHERIDAN, Alfred I., 1948 (1949)
Clinical Associate in Surgery
B.S., 1938, Washington; M.D., 1943, Northwestern
- SHIACH, John M., 1949
Clinical Associate in Surgery
(Ophthalmology)
B.A., 1930, M.D., 1933, Oregon
- SMITH, Franklin R., 1952
Clinical Associate in Surgery
B.S., 1936, Wisconsin; M.D., 1942, Marquette
- SPEIR, Edward B., 1948
Consultant in Surgery
B.A., 1929, M.D., 1933, Kansas
- SPRECHER, Edwin, 1951
Clinical Associate in Orthopedic Surgery
B.S., 1936, Walla Walla College; M.D., 1940, College of Medical Evangelists
- 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 Surgery (Ophthalmology)
A.B., 1927, M.D., 1934, M.S., 1940, Michigan
- STEVENSON, John K., 1954
Instructor in Surgery
M.D., 1949, Rochester
- STEWART, John E., 1951
Clinical Associate in Orthopedic Surgery
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
- TAYLOR, Murray E., 1952 (1955)
Research Instructor in Surgery
B.S., 1948, M.S., 1952, Washington
- THOMAS, George I., 1955
Assistant in Surgery
B.A., 1946, California; M.D., 1949, Johns Hopkins
- THOMAS, Louis B., 1950
Assistant Professor of Surgery
(Neurosurgery)
M.B., B.S., 1943, London (England); D.P.M., 1948, Bristol (England)
- TOLAN, John F., 1949
Consultant in Surgery (Otolaryngology)
B.S., 1931, M.D., 1933, Michigan
- TUELL, Joseph I., 1948
Consultant in Orthopedic Surgery
B.S., 1929, M.D., 1932, Oregon
- TYVAND, Raymond E., 1948
Clinical Instructor in Urology
B.A., 1923, B.S., 1926, North Dakota; M.D., 1929, Rush Medical College
- WAGNER, Clyde L., 1952
Clinical Associate in Surgery
B.S., 1935, Washington; M.D., 1939, Oregon
- WALKER, Paul E., 1951
Consultant in Surgery
M.D., 1931, Tennessee
- WANAMAKER, Frank H., 1949
Consultant in Surgery (Otolaryngology)
D.D.S., 1922, M.D., 1929, Northwestern
- WANGEMAN, Clayton P., 1949 (1956)
Clinical Associate Professor of Surgery
(Anesthesiology)
B.A., 1929, Ohio Wesleyan; M.D., 1933, Western Reserve
- WARD, Arthur A., 1948 (1955)
Professor of Surgery; Head of Division of Neurosurgery
B.A., 1938, M.D., 1942, Yale
- WATSON, Wilbur E., 1946 (1948)
Clinical Associate in Surgery
B.S., 1930, Washington; M.D., 1935, McGill (Canada)
- WEBER, Julius A., 1949 (1953)
Clinical Assistant Professor of Surgery; Acting Head of the Division of Otolaryngology
B.S., 1923, M.D., 1925, Nebraska

- WHITE, Lowell E., Jr., 1954
Assistant in Surgery (Neurosurgery)
B.S., 1951, M.D., 1953, Washington
- WHITE, Thomas T., 1953 (1955)
Clinical Instructor in Surgery
B.S., 1942, Harvard; M.D., 1945, New York
- WILHELM, Morton C., 1954
Clinical Associate in Surgery
B.S., 1943, Virginia Military Institute; M.D., 1947, Virginia
- WORGAN, David K., 1950 (1954)
Clinical Instructor in Urology
B.S., 1940, M.D., 1943, Maryland

- WYRENS, Rollin G., 1948
Clinical Instructor in Urology
B.S., 1934, M.B., 1937, M.D., 1938, Northwestern; M.S., 1942, Minnesota
- YUNCK, William P., 1948
Clinical Instructor in Urology
B.S., 1930, B.M., 1934, M.D., 1935, Minnesota
- ZECH, Raymond L., 1947 (1948)
Senior Consultant in Surgery
B.S., 1919, M.D., 1920, Northwestern

FACULTY, SCHOOL OF DENTISTRY

CLINICAL DENTAL SCIENCES

- ANDERSON, Berton Emmett, 1948
Acting Dean of the School of Dentistry; Associate Professor of Dental Science and Literature; Director of Admissions; Director of Postgraduate Dental Education
D.M.D., 1925, Oregon
- ANDERSON, Carl O., 1947
Clinical Associate in Prosthodontics
D.D.S., 1924, Northwestern
- ANDERSON, Howard S., 1954
Clinical Assistant in Prosthodontics
D.D.S., 1951, Washington
- AUSTIN, Kenneth P., 1954
Professor in Prosthodontics
D.D.S., 1930, Denver
- AYLEN, Robert Johnston, 1950
Clinical Associate in Fixed Partial Dentures
D.D.S., 1950, Washington
- BAIRD, Frank P., 1953
Clinical Assistant in Pedodontics
D.D.S., 1950, M.S., 1952, Washington
- BALLARD, Charles S., 1950
Clinical Associate in Prosthodontics
D.M.D., 1921, Oregon
- BEASLEY, Bruce A., 1953
Clinical Assistant in Pedodontics
D.D.S., 1953, Washington
- BEDER, Oscar Edward, 1952
Associate Professor of Prosthodontics
B.S., 1936, Rutgers; D.D.S., 1941, Columbia
- BELL, John Allen, 1952
Instructor in Periodontology
D.D.S., 1952, Washington
- BISHOP, Everard Allen, 1949
Clinical Associate in Orthodontics
D.D.S., 1919, Northwestern
- BOLTON, Wayne A., 1954
Clinical Assistant in Orthodontics
D.D.S., 1950, M.S., 1952, Washington
- BOURASSA, Edward A., 1951
Senior Consultant in Oral Roentgenology
D.M.D., 1925, Oregon
- BOWLER, Frank Tait, 1947
Clinical Associate in Pedodontics
D.M.D., 1945, Oregon
- BROWN, Shirl A., 1953
Clinical Assistant in Periodontology
D.D.S., 1953, Washington
- BRUMWELL, G. Keith, 1953
Clinical Associate in Operative Dentistry
D.M.D., 1943, Oregon
- BURKE, Joseph L., 1954
Clinical Assistant in Fixed Partial Dentures
D.D.S., 1952, Iowa
- BURRELL, Frank C., 1952
Clinical Assistant in Periodontology
D.D.S., 1952, Washington
- CANFIELD, Robert C., 1951
Clinical Assistant in Operative Dentistry
D.D.S., 1951, Washington
- CHILSON, James M., 1955
Clinical Associate in Dental Materials
D.M.D., 1918, Oregon
- CHIPPS, John E., 1955
Guest Lecturer in Oral Surgery
D.M.D., 1937, Louisville
- CODD, John S., 1953
Clinical Assistant in Periodontology
B.S., 1949, D.D.S., 1953, Washington
- COLEMAN, Clarence Iles, 1949
Clinical Associate in Pedodontics
Ph.C., 1932, D.M.D., 1946, Oregon
- DAVIS, Max Daniel, 1955
Clinical Assistant in Fixed Partial Dentures
D.D.S., 1955, Northwestern
- DEGERING, Charles Irvin, 1950
Assistant Professor of Oral Diagnosis and Treatment Planning
B.A., 1942, Walla Walla College; D.D.S., 1950, Washington
- DOLAN, Alto F., 1954
Clinical Assistant in Operative Dentistry
D.D.S., 1950, California
- DORE, George David, Jr., 1949
Clinical Associate in Oral Surgery
D.D.S., 1941, Northwestern
- EDSON, James E., 1955
Clinical Assistant in Operative Dentistry
D.D.S., 1948, Northwestern
- ENDZELL, Frank E., 1952
Clinical Assistant in Operative Dentistry
D.D.S., 1952, Washington
- FLEEGER, James A., 1955
Clinical Assistant in Pedodontics
D.D.S., 1953, St. Louis
- FLOOD, Clyde Richard, 1955
Clinical Assistant in Prosthodontics
D.M.D., 1925, North Pacific College
- FORD, Jack W., 1954
Clinical Assistant in Fixed Partial Dentures
B.S., 1940, Washington State College; D.M.D., 1949, Oregon
- FRANCIS, Frederick Henderson, 1949
Clinical Associate in Oral Surgery
D.D.S., 1936, Northwestern
- FRASER, Emery James, 1949
Senior Consultant in Orthodontics
D.D.S., 1924, Northwestern
- GARRETSON, Jack C., 1952
Clinical Associate in Oral Surgery
B.S., 1939, Washington; D.D.S., 1943, Northwestern

- GASKILL, Herbert L., 1950
Assistant Professor of Dental Materials;
Acting Executive Officer of the
Department of Dental Materials
B.S., M.S. in Ch.E., 1949, Washington
- GEHRIG, John D., 1954
Associate Professor of Oral Surgery;
Acting Executive Officer of the
Department of Oral Surgery
B.S., M.S. in Ch.E., 1949, Washington
- GERMAN, William Myndert, 1946
Clinical Associate in Fixed Partial
Dentures
B.S., D.D.S., 1943, Southern California
- GIBB, George H., 1954
Clinical Assistant in Operative Dentistry
B.Sc., 1950, Alberta; D.D.S., 1952, Alberta
- GILBERT, Howard I., 1949
Clinical Associate in Operative Dentistry
D.M.D., 1917, Oregon
- GREY, John M., 1955
Clinical Assistant in Operative Dentistry
B.A., 1934, Carleton College; B.S., 1945, Oregon; D.D.S., 1947, Oregon
- GUTHRIE, John DeMott, 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
- HAMILTON, Alexander Ian, 1949
Associate Professor in Operative Dentistry
D.D.S., 1936, Toronto; B.A., 1953, Washington
- HARRIS, Earl Odell, 1954
Clinical Assistant in Prosthodontics
D.D.S., 1946, Minnesota
- HASS, Glen W., 1955
Clinical Assistant in Fixed Partial
Dentures
B.S., 1945, D.D.S., 1946, Northwestern
- HILEMAN, Alvin C., 1952
Assistant Professor in Periodontology
B.S., D.M.D., 1943, Oregon
- HODSON, Jean E., 1952
Instructor in Fixed Partial Dentures
(Ceramics)
B.S., 1952, Washington
- HOELSCHER, Frank J., 1953
Clinical Associate in Prosthodontics
D.M.D., 1924, Oregon
- HOFFMAN, Olin E., 1950
Clinical Associate in Pedodontics
M.P.H., 1943, Michigan; D.D.S., 1921, Iowa
- HOUSEHOLDER, James R., 1955
Clinical Associate (Special Lecturer) in
Oral Surgery
M.D., 1948, Iowa
- INGLE, John Ide, 1948
Associate Professor of Periodontology and
Endodontics
D.D.S., 1942, Northwestern; M.S.D., 1948, Michigan
- JACOBSON, F. Lloyd, 1950
Associate Professor of Oral Diagnosis and
Treatment Planning; Executive Officer
of the Department of Oral Diagnosis
and Treatment Planning
D.M.D., 1934, Oregon
- JAMES, Thomas W., 1953
Clinical Assistant in Oral Surgery
D.M.D., 1946, B.S., 1947, Oregon; M.S., 1950, Minnesota
- JANKELSON, Bernard, 1951
Clinical Associate in Prosthodontics
D.M.D., 1924, Oregon
- JINKS, Gordon MacMillan, 1950
Clinical Assistant in Pedodontics
D.D.S., 1946, Toronto
- JOHNSON, Richard J., 1953
Clinical Assistant in Prosthodontics
D.D.S., 1939, Northwestern
- JOHNSON, Robert Edward, 1949
Clinical Associate in Oral Surgery
D.D.S., 1944, M.S., 1948, Michigan
- KAHN, Kenneth S., 1950
Clinical Assistant in Orthodontics
B.A., 1940, Washington; B.S., D.D.S., 1943, California; M.S., 1950, Washington
- KESSLER, Milton M., 1954
Clinical Associate in Operative Dentistry
D.D.S., 1919, Pennsylvania
- KINNEY, Roy C., 1955
Clinical Assistant in Oral Surgery
D.D.S., 1925, Iowa
- KINTNER, Walter R., 1953
Clinical Assistant in Prosthodontics
D.D.S., 1947, Southern California
- KNOWLTON, John P., 1954
Clinical Associate in Prosthodontics
D.D.S., 1946, Marquette
- KYDD, William L., 1950
Clinical Assistant in Prosthodontics
D.M.D., 1947, Oregon
- LAMBRECHT, James R., 1954
Clinical Assistant in Fixed Partial
Dentures
D.D.S., 1952, Marquette
- LAW, David Barclay, 1947
Associate Professor of Pedodontics;
Executive Officer of the Department
of Pedodontics
B.S.D., D.D.S., 1938, M.S., 1941, Northwestern
- LEWIS, Frederick K., 1953
Clinical Associate in Operative Dentistry
D.D.S., 1951, Washington
- LEWIS, M. Leonard, 1946
Clinical Associate in Operative Dentistry
B.S., 1938, Washington; D.M.D., 1943, Oregon
- LEWIS, Paul Donovan, 1949
Clinical Associate in Orthodontics
D.M.D., 1919, Oregon
- LEWIS, Thompson M., 1955
Instructor in Pedodontics
D.D.S., 1950, Northwestern; M.S.D., 1955, Washington
- LINDLEY, Ross C., 1952
Clinical Associate in Prosthodontics
D.M.D., 1925, Oregon
- LOOMIS, Olin M., 1955
Clinical Assistant in Operative Dentistry
D.M.D., 1943, North Pacific College (Oregon)
- LOSH, John Harvey, 1950
Clinical Associate in Periodontology
D.M.D., 1942, Oregon
- LUCAS, Robert Joseph, 1956
Clinical Assistant in Oral Surgery
B.S., 1943, Washington; D.M.D., 1946, 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
- McCANN, Jean, 1954
Instructor in Dental Hygiene
D.H., 1952, Ohio State; B.S. in D.H., 1952, Ohio
- McCLAIN, Patrick P., 1951
Clinical Associate in Prosthodontics
D.D.S., 1950, Washington

- McCLUNG, Earle J., 1954
Clinical Assistant in Prosthodontics
D.M.D., 1915, Oregon
- McCULLOUGH, Patricia A., 1953
Instructor in Dental Hygiene
B.S., R.D.H., 1952, Washington
- McGOVERN, William Palmer, 1949
Senior Consultant in Orthodontics
D.D.S., 1921, California
- McINTYRE, Thomas J., 1953
Clinical Assistant in Oral Surgery
B.S., 1947, D.D.S., 1948, Northwestern
- MEHUS, Paul Edward, 1950
Clinical Associate in Dental Science and Literature
B.S., D.M.D., 1929, Oregon
- MITCHELL, Robert D., 1955
Clinical Assistant in Prosthodontics
B.S., 1947, Brigham Young; D.D.S., 1951, Washington
- MOORE, Alton Wallace, 1948
Acting Assistant Dean of the School of Dentistry; Professor of Orthodontics; Executive Officer of the Department of Orthodontics; Director of Graduate Dental Education
D.D.S., 1941, California; M.S., 1948, Illinois
- MORRISON, Kenneth Nelson, 1948
Assistant Professor of Operative Dentistry
D.D.S., 1943, Toronto (Canada); M.S., 1952, Washington
- NEILSON, John Warrington, 1952
Associate Professor of Periodontology
B.A., 1939, Saskatchewan (Canada); D.D.S., 1941, Alberta (Canada); M.S., 1946, Michigan
- OGILVIE, Alfred L., 1948
Assistant Professor of Periodontology
D.D.S., 1944, Toronto (Canada); M.S., 1948, California
- OSTLUND, Lyle E., 1950
Clinical Associate in Operative Dentistry
D.M.D., B.S., 1947, Oregon
- OVERBY, Grant E., 1955
Clinical Assistant in Periodontology
B.S., 1948, D.D.S., 1953, Washington
- PHELPS, Gilbert M., 1954
Clinical Assistant in Operative Dentistry
B.S., D.D.S., 1951, Nebraska
- PHILBRICK, Richard C., 1953
Clinical Associate in Orthodontics
B.S., 1942, D.D.S., 1943, California
- PITTS, Howard W., 1953
Clinical Assistant in Periodontology
B.S., 1949, Washington State College; D.D.S., 1953, Washington
- PLUMMER, Ralph E., 1948
Clinical Associate in Dental Materials
D.M.D., 1914, Oregon
- RALEIGH, Donald H., 1956
Clinical Associate in Periodontology
A.B., 1940, College of Puget Sound; D.D.S., 1950, Washington
- REID, Sheila M., 1955
Instructor in Dental Hygiene
B.S., R.D.H., 1955, Washington
- RIEDEL, Richard Anthony, 1949
Assistant Professor of Orthodontics
D.D.S., 1945, Marquette; M.S.D., 1948, Northwestern
- RODGERS, Maurice S., 1955
Clinical Assistant in Prosthodontics
D.D.S., 1938, Iowa
- ROGERS, John R., 1952
Clinical Assistant in Pedodontics
B.S., 1943, United States Coast Guard Academy; D.D.S., 1951, Northwestern
- SCHROETER, Charles, 1950
Instructor in Oral Anatomy; Director of Dental Photography
- SHAW, Donald Robert, 1955
Clinical Assistant in Prosthodontics
D.D.S., 1938, Iowa
- SHIPSTEAD, Kenneth Marvin, 1955
Clinical Assistant in Prosthodontics
D.D.S., 1954, Minnesota
- SMITH, Clifton, 1949 (1955)
Clinical Associate in Prosthodontics
D.M.D., 1943, Oregon
- STARKE, Milan V., 1948
Clinical Associate in Endodontics
B.S., D.D.S., 1940, Nebraska
- STIBBS, Gerald D., 1948
Professor of Operative Dentistry and Fixed Partial Dentures; Executive Officer of the Departments of Operative Dentistry and Fixed Partial Dentures; Director of the Dental Operatory
B.S., D.M.D., 1931, Oregon
- STICKELS, Claudette M., 1955
Instructor in Dental Hygiene
R.D.H., 1951, Northwestern; B.S., R.D.H., 1956, Washington
- SUTHERLAND, Wallace F., 1955
Clinical Assistant in Periodontology
B.S., 1946, D.M.D., 1949, Oregon
- TAKANO, William S., 1950
Clinical Assistant in Orthodontics
D.D.S., 1949, Marquette; M.S., 1950, Washington
- TEEL, W. Stephen, 1954
Clinical Assistant in Periodontology
D.D.S., 1954, Washington
- TERKLA, Robert Sherman, 1955
Clinical Assistant in Operative Dentistry
B.A., 1951, Washington; B.S., 1953, D.M.D., 1955, Oregon
- THOMAS, Bernard Owen Amos, 1946
Professor of Periodontology; Executive Officer of the Department of Periodontology
D.D.S., 1935, B.A., 1936, M.S., 1939, Minnesota; D.D.S., 1940, Ph.D., 1946, Columbia
- TIMBERLAKE, Keith R., 1952
Clinical Assistant in Operative Dentistry
D.D.S., 1952, Washington
- ULIP, Edward J., 1956
Clinical Associate in Prosthodontics
D.D.S., 1937, Chicago College of Dental Surgery
- VENABLES, Leslie A., 1952
Clinical Assistant in Prosthodontics
D.D.S., 1945, Minnesota
- VERANTH, Charles O., 1955
Clinical Assistant in Prosthodontics
D.D.S., 1939, Marquette
- WALL, Thomas P., 1952
Clinical Associate in Oral Diagnosis and Treatment Planning
D.M.D., 1934, Oregon
- WANAMAKER, Frank H., 1947
Professor of Major Oral Surgery
D.D.S., 1922, M.D., 1929, Northwestern
- WHITE, Charles P., 1955
Clinical Assistant in Oral Surgery
D.D.S., 1945, Maryland
- WICK, Edwin L., 1953
Clinical Assistant in Prosthodontics
D.D.S., 1952, Washington
- WILKINS, Esther M., 1950
Associate Professor of Dental Hygiene; Director of the Department of Dental Hygiene
B.S., 1938, Simmons; D.H., 1939, Forsyth; D.M.D., 1949, Tufts

WILSON, Gale E., 1950
Clinical Associate in Jurisprudence
(Dental Science and Literature)
 B.S., 1926, Washington; M.D., 1930,
 Harvard
 YOUNG, Harry Allen, 1948
Professor of Prosthodontics; Executive
Officer of the Department of
Prosthodontics
 D.D.S., 1919, Indiana

ZACK, David T., 1951
Clinical Associate in Oral Surgery
 D.M.D., 1947, Oregon; M.S.D., 1950,
 Northwestern
 ZECH, Jerome Monroe, 1955
Consultant in Oral Roentgenology
 B.S., 1949, D.D.S., 1952, Washington

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COORDINATION OF PURCHASING: D. R. de Mers, *Chairman*; Robert Bradley, J. M. Flett, J. W. Harding, B. S. Henry, J. I. Ingle, R. L. Johnson, L. S. Rambeck, R. D. Wade.

INSTRUMENT SHOP: A. C. Young, *Chairman*; W. E. Quinton, *Secretary*; H. S. Bennett, W. B. Dandliker, R. F. Hain, L. B. Thomas, J. W. Woodbury. Ex officio: D. R. de Mers, J. W. Haviland.

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MEDICAL ILLUSTRATION: R. F. Rushmer, *Chairman*; J. Phillips, *Secretary*; R. J. Blandau, E. Burke, L. D. Ellerbrook, A. W. Moore, J. G. Skahen. Ex officio: D. R. de Mers, J. W. Haviland.

SPACE: J. W. Haviland, *Chairman*; D. R. de Mers, D. F. Hiscox, K. Hoffman, A. W. Moore, L. S. Rambeck.

TELEVISION EVALUATING AND PLANNING: A. W. Moore, *Chairman*; B. M. Bennett, J. M. Dille, L. Enos, D. F. Hiscox, K. A. Merendino, R. E. Pearson, J. Phillips, M. Ryan, C. E. Vavra.

SCHOOL OF MEDICINE

ADMISSIONS: R. J. Blandau, *Chairman*; M. Santo, *Secretary*; G. N. Aagaard, J. L. Bakke, C. D. Baldwin, L. D. Carlson, P. C. Groman, J. W. Haviland, E. G. Krebs, H. D. Patton, H. S. Ripley, W. D. Voorhees, T. C. West, P. C. Griffith.

APPOINTMENTS AND PROMOTIONS: R. R. de Alvarez, *Chairman*; H. S. Bennett, T. C. Ruch, W. M. Kirby.

CLINICAL INVESTIGATION: W. M. Kirby, *Chairman*; E. G. Krebs, K. A. Merendino, R. H. Reiff.

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EXTERNSHIP: F. L. Scheyer, *Chairman*; G. N. Aagaard, D. M. McIntyre, W. Volwiler.

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POSTGRADUATE EDUCATION: R. H. Williams, *Chairman*; J. McGraw, *Secretary*; G. N. Aagaard, R. A. Bruce, R. R. de Alvarez, R. W. Deisher, R. S. Evans, F. J. Hodges, T. H. Holmes, A. L. Kennan, W. M. Kirby, T. A. Loomis, D. F. McDonald, K. A. Merendino, W. E. Reynolds, H. S. Ripley, W. B. Seelye.

PROGRAM COMMITTEE FOR THE UNIVERSITY OF WASHINGTON MEDICAL MEETING: F. C. Moll, *Chairman*; E. L. Foltz, L. H. Jensen, W. M. Kirby, H. D. Patton, P. E. Wilcox.

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SCHOOL OF DENTISTRY

ADMISSIONS COMMITTEE: B. E. Anderson, *Chairman*; O. E. Beder, N. B. Everett, E. C. Roosen-Runge, A. M. Scher, G. D. Stibbs, B. O. A. Thomas.

CLINICAL COORDINATING COMMITTEE: D. B. Law, *Chairman*; J. D. Gehrig, F. L. Jacobson, A. W. Moore, G. D. Stibbs, B. O. A. Thomas, E. M. Wilkins, H. A. Young.

CURRICULUM COMMITTEE: A. W. Moore, *Chairman*; B. E. Anderson, J. D. Gehrig, D. B. Law, G. D. Stibbs, B. O. A. Thomas, H. A. Young.

DEAN'S ADVISORY COMMITTEE ON APPOINTMENTS, PROMOTION, AND TENURE: B. O. A. Thomas, *Chairman*; A. W. Moore, G. D. Stibbs.

EXECUTIVE COMMITTEE: B. E. Anderson, *Chairman*; R. J. Blandau, J. M. Dille, H. L. Gaskill, J. D. Gehrig, F. L. Jacobson, D. B. Law, A. W. Moore, G. D. Stibbs, B. O. A. Thomas, E. M. Wilkins, H. A. Young.

HOSPITAL LIAISON COMMITTEE: J. D. Gehrig, *Chairman*; J. I. Ingle, F. L. Jacobson, R. E. Johnson, B. O. A. Thomas.

SPACE PLANNING AND ALLOCATION COMMITTEE: A. W. Moore, *Chairman*; D. B. Law, K. N. Morrison, B. O. A. Thomas, H. A. Young.

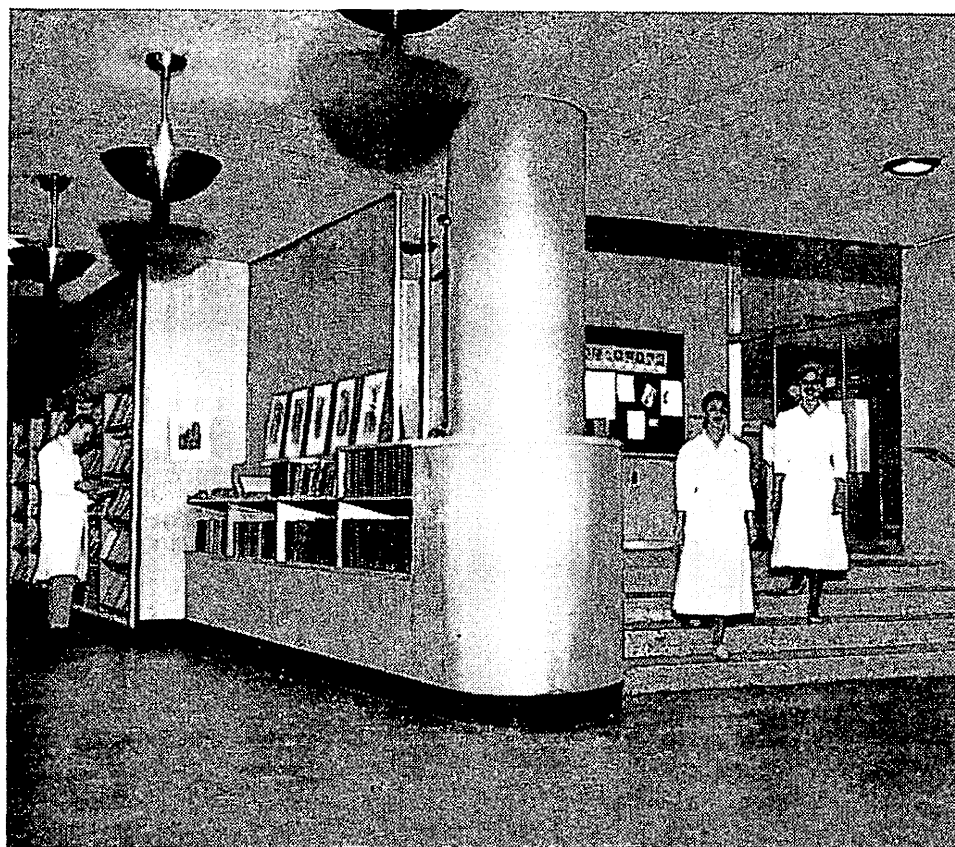
STUDENT EVALUATING COMMITTEES: *Chairmen*, H. L. Gaskill, first-year class; A. I. Hamilton, second-year class; F. L. Jacobson, third-year class; B. E. Anderson, fourth-year class.

STUDENTS' HONORS AND AWARDS COMMITTEE: J. I. Ingle, *Chairman*; K. P. Austin, C. I. Degering, K. N. Morrison, A. M. Ogilvie, Jean McCann.

THESIS COMMITTEE: A. M. Ogilvie, *Chairman*; B. O. A. Thomas, B. E. Anderson, D. B. Law, G. D. Stibbs.

CHANGES IN UNIVERSITY REGULATIONS

The University and its colleges and schools reserve the right to change the rules regulating admission to, instruction in, and graduation from the University and its various divisions, and to change any other regulations affecting the student body. 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 and change fees at any time.



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 now offers both bachelor's and advanced degrees. (The nursing program is described in the *School of Nursing Bulletin* and the pharmacy program in the *College of Pharmacy 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 Medical Science 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, Biology, Botany, Chemistry, Physics, Psychology, and Zoology; the College of Engineering; the School of Fisheries; the Graduate School of Social Work; and the Student 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 and clinical units of the School of Dentistry, the Basic Medical Science 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 adequate 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 \$9,000,000 in construction and equipment.

Plans are being developed for a 300-bed teaching and research hospital at the eastern end of the Health Sciences Building. On June 30, 1952, ground was broken for the first unit of the University Hospital, which now houses administration offices, clinical laboratories, and office, laboratory, and teaching areas for four clinical departments of the School of Medicine. Recently the Board of Regents has made available a substantial fund which will permit construction of the second unit of the hospital. The second unit is being carefully coordinated with the existing structure as to design and function and will house a major portion of the inpatient and outpatient facilities of the completed teaching and research hospital. Construction of the second unit should be completed by 1958. Future plans also include a west wing to house the College of Pharmacy. When these units are completed, the University will have one of the finest plants in the United States.

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 58,000 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.

HOSPITAL AFFILIATIONS

The clinical teaching programs of the Schools of Medicine and Nursing are conducted in hospitals affiliated with the Division of Health Sciences. The clinical teaching program in medicine is centered at King County Hospital, which has a bed capacity of 480 to 555 in the Harborview Division and 240 in the Geriatrics Division. The executive officers of the clinical departments of the School of Medicine are the active heads of the clinical departments in King County Hospital. Temporary offices and classrooms at Harborview accommodate some of the activities of the clinical departments, and clinical research is being conducted in the Health Sciences Building. The new 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 is operating 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 pediatrics and orthopedics. 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's family housing project, 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, Public Health and Preventive Medicine, and Psychiatry.

The state mental hospitals are affiliated in the 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 are planned for use in both undergraduate and graduate training programs. The School of Medicine is stressing the importance of a solid foundation in general medicine and is planning a program of affiliations with qualified hospitals throughout the state in the development of internships and residencies for those interested in general practice. When the teaching and research hospital is completed, training will center on the University campus but will be integrated with the state-wide affiliation program. The ultimate goal of the Division of Health Sciences is a continuous educational program for undergraduate and graduate training in all its professional schools.

EXPENSES

Tuition and fees in the School of Medicine are described on pages 46-47, those in the School of Dentistry on pages 89-90.

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. Veterans Administration regulations specify that the veteran's ultimate goal must be stated on his application for a certificate. Only one change of course is allowed on the Korean Bill. If the veteran has any questions regarding application for certificate, he should contact the Veterans Division, 1B Administration 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 registration for the quarter the veteran wishes to enter the University. If the veteran is eligible, the Veterans Administration will issue him a certificate for education and training which should be filed in the Veterans Division, 1B Administration Building, during registration or the first week of instruction. 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.

INITIATION OF TRAINING

An *eligible* Korean veteran who entered and/or served in the Armed Forces between June 27, 1950, and January 31, 1955, must initiate his training under the Korean Bill, Public Law 550, prior to August 20, 1954, or the date *three* years after his release from active service, whichever is later.

Veterans Administration regulations provide that after initiating his training a Korean veteran may discontinue training at any time as long as his interruption is not in excess of twelve consecutive calendar months.

TERMINATION OF TRAINING

A veteran *eligible* under Public Law 550 must complete his training by *eight* years after his release from active service.

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.

WORLD WAR I AND II VETERANS

Under certain conditions a veteran of World Wars I and II who is not eligible for Veterans Administration benefits is fully or partly exempt from tuition charges (see page 46).

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.

HOUSING

A limited number of accommodations are available to men in the Men's Residence Hall, 1101 Campus Parkway, Seattle 5, Washington. Interested students should write to the Manager, the Men's Residence Hall. Housing is available to women in the Women's Residence Halls. For further information write to Manager, Women's Residence Halls, University of Washington, Seattle 5, Washington. The Students' Cooperative Association, 1114 East Forty-fifth Street, operated independently from the University, has low-cost accommodations for both men and women. Housing is available in medical fraternities for members.

The Office of Student Residences keeps listings of rooms, rooms with board, housekeeping rooms, and a few apartments and houses. These listings must be consulted in person. Married students who are veterans of World War II or Korea and who have children may apply to this office for accommodations in Union Bay Village, the University's family housing project. Since there is a long waiting list, new students should not rely on the possibility of immediate housing there.

• 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.



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; and courses for practicing physicians. The four-year curriculum for an M.D. degree includes studies in three main areas: Basic Medical Sciences, Conjoint Courses, and Clinical Sciences. In the Basic Medical Sciences, the Departments of Anatomy, Biochemistry, Microbiology, Pathology, Pharmacology, Physiology and Biophysics, and Public Health 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 Medicine, Obstetrics and Gynecology, Pediatrics, Psychiatry, Radiology, and Surgery provide clinical study in the fields of medical specialization and in general medical practice.

The main purpose of the Medical School is to provide a solid foundation for the students' future development. It is felt that the students must learn fundamental principles which are significant to the entire body of medical knowledge and that they should, if they have not already done so, acquire habits of reasoning and critical judgment of evidence and experience in order that they may use the fundamental principles wisely in solving problems of health and disease. The educational program is also designed to establish in the students sound habits of self-education and the mastery of certain basic clinical and social skills. The Medical School wants them to develop sound attitudes regarding the people whom they will serve and to gain a thorough understanding of professional and ethical principles. The four-year education program is planned to achieve these objectives.

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 is a participating member of the Western Interstate Commission for Higher Education.

ADMISSION

Although four years of college training are recommended, the Committee on Admissions of the School of Medicine will consider as candidates for admission to

the School individuals who have completed at least three years of premedical training (135 academic quarter credits or 90 semester credits) with a grade-point average of 2.50 or above. Before admission all applicants must complete these minimum premedical requirements:

	QUARTER CREDITS	SEMESTER CREDITS
English (Composition)	9	6
Biology	12	8
Chemistry (Inorganic)	12	8
Chemistry (Organic)	6	4
Physics	12	8
	<hr/> 51	<hr/> 34

The grade-point average for these courses also must be 2.50 or above. 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.

The premedical course serves the double purpose of providing both basic science training and a broad general background. The latter should be insured by selection of elective courses in the humanities (including such courses as literature, modern languages, music, art, etc.) and social sciences (including economics, history, philosophy, political science, psychology, sociology, etc.). Science subjects recommended as of value in strengthening the required basic science background are mathematics, physical chemistry, genetics, and anthropology.

Students taking their premedical undergraduate work at the University of Washington customarily enroll in the College of Arts and Sciences and consult Prof. Richard Snyder, Premedical Adviser, 121 Miller Hall, for help in planning their programs.

APPLICATION PROCEDURE

Applications and all credentials should be sent to the Committee on Admissions. 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*. 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 Committee on Admissions) showing the complete college record, with grades and credits. Each applicant is requested 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. One unmounted recent photograph (2 by 3 inches).
4. 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.)
5. 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 November of each year. When the student takes the test, he should request that his scores be sent directly to the Committee on Admissions.
6. A short autobiography.

7. Whenever possible, the applicant is requested to forward to the Admissions Committee his score on the Selective Service Qualifications Test. It is also requested that the registrar of his college inform the Committee of his relative class standing.

Primary consideration is given to applications from residents of Washington and Alaska 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.

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 Committee on Admissions).
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. 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 sciences, i.e., anatomy, biochemistry, microbiology, pathology, pharmacology, and physiology. These qualifying examinations will be offered by the departments involved and regularly scheduled by them 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. Accredited schools are listed in the educational number of the *Journal of the American Medical Association*.

PROCESSING OF APPLICATIONS

EVALUATION OF CREDENTIALS. The Committee on Admissions 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 Committee on Admissions. 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-town 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 Committee on Admissions has reached a decision. Acknowledgment of this 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 been notified that he is accepted 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. 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. At no time, however, will the successful applicant be required to confirm his acceptance and make his deposit prior to January 15 of the year in which he plans to be matriculated.

TUITION AND FEES

All tuition and fees are payable at the time of registration. The first two years of the medical course are on the quarter system, three quarters in each academic year. The third year is divided into four terms of nine weeks each. The fourth year is divided into five terms of seven weeks each.

The University reserves the right to change any of its fees without notice. Principal fees are listed below.

Tuition

Resident students

Per quarter	\$100.00
Per term for third-year students	75.00
Per term for fourth-year students	60.00

A resident student is one who has been domiciled in Washington or Alaska for at least a year immediately prior to registration. Domicile connotes a present intention of permanent residence. Temporary residence in the state merely for the purpose of attending school, performing duties while in the military service, or for reasons of health or pleasure is not a basis for the establishment of legal domicile. The domicile of a minor is that of his parents.

Nonresident students

Per quarter	165.00
Per term for third-year students	123.75
Per term for fourth-year students	99.00

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

Veterans of World Wars I and 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, University Comptroller's Office. Nonresident students who meet one of these requirements pay one-half the nonresident tuition. This exemption is not granted to Summer Quarter students.

Incidental Fee

Resident students

Per quarter	27.50
Per term for third-year students	20.65
Per term for fourth-year students	16.50

Nonresident students

Per quarter	52.50
Per term for third-year students	39.40
Per term for fourth-year students	31.50

ASUW Fees**Membership**

Per quarter	8.50
Per term for third-year students	6.40
Per term for fourth-year students	5.10

Athletic admission ticket (optional for ASUW members)	3.00-5.00
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Ticket for Autumn, Winter, and Spring Quarters, \$5.00; for Winter and Spring Quarters only, \$3.00; for Spring Quarter only, \$3.00.

Electrolyte Kit Rental Fee	5.00
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Paid by second-year students in Winter Quarter only.

Transcript Fee	.50
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One transcript is furnished without charge; the fee is charged for each additional copy. Supplementary transcripts are 25 cents each.

Graduation Fee	10.00
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SPECIAL FEES

From \$2.00 to \$5.00 is charged for late registration; \$2.00 for each change of registration; \$5.00 for a late medical examination; and \$1.00 for a late X ray. The fee for a special examination is \$1.00; for an advanced-credit examination, \$2.00 per credit; and for removal of an Incomplete, \$2.00.

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**Tuition, Incidental, and ASUW Fees**

Full-time resident students	\$408.00
Full-time nonresident students	678.00

Athletic Admission Ticket (optional)	3.00-5.00
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Accident Insurance (optional)	4.35
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Microscope Purchase	250.00
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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.

Bona fide residents of King County who are financially unable to purchase microscopes may arrange for loans from the Hickman Fund, which is managed by the Peoples National Bank of Seattle.

Books and Supplies	100.00
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Board and Room

Double room and meals in Men's Residence Hall	600.00
Room and meals in Women's Residence Halls	540.00-630.00
Room and meals in student cooperative house	510.00
Room and meals in fraternity or sorority house	660.00-700.00

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

Personal Expenses	200.00
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STUDENT ACHIEVEMENT AND PROMOTION

Student achievement in each course is reported by the Dean's Office to the Registrar as *P* (Pass), *D* (Poor), or *E* (Failure).

P signifies that the work is satisfactory and is the equivalent of A, B, and C in the University marking system. Students are not advised of grades as long as their work falls into the *P* category.

D signifies that the work is of passing grade but poor. Warnings are sent to students who receive *D*. This is a final grade and may not be raised.

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.

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.

CLASS SCHEDULES

Current schedules for all classes are distributed to medical students at the beginning of each academic year. The 1956-57 schedules may be found on pages 50-53.

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 public health and preventive medicine, and psychiatry. In the second year, the major courses are pathology, microbiology, pharmacology, conjoint clinical medicine, and conjoint laboratory procedures, with continuing courses in public health and preventive medicine and in psychiatry.

The second year serves as a bridge between the basic medical 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 them for the role of the 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, to examine patients, and to 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: nine weeks each of medicine and surgery; six weeks of obstetrics and gynecology; four and a half weeks each of pediatrics and psychiatry; and three weeks of neurology-neurosurgery.

During the fourth year of the course, the school year is divided into five terms of seven weeks each: eight weeks of medicine; six weeks of surgery; seven weeks shared by psychiatry and public health and preventive medicine; three and a half weeks each of pediatrics and obstetrics and gynecology; and seven 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 clinical conferences which are assigned to the departments of the Medical School. During the year, each department develops some problem of current general interest that enlists the active participation not only of its own departmental staff but also of members of the Basic Medical Sciences departments and of the Clinical Sciences departments. These sessions are open to all interested medical students, staff, and physicians.

ELECTIVE COURSES

In 1955, it was decided that approximately 25 per cent of the available class hours in each year should be left unscheduled in the required curriculum, thus providing students with time in which they might elect work in areas of special interest. In the first and second years, Tuesday and Thursday afternoons have been freed completely of required courses throughout the year. In the fourth year, a block of seven weeks, one term, has been left free. As yet, free time in the third-year curriculum has not been developed. Information concerning elective course offerings is available at the Dean's Office.

The general practice externship which has proven so valuable to and popular with fourth-year students is available as an elective. Three and one-half or seven weeks may be spent with a general physician engaged actively in practice in the state of Washington or one of the neighboring states. 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.

The thesis program of the School of Medicine is voluntary, and participation in it is initiated by the student. It is expected that sometime during the medical course 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.

FIRST-YEAR SCHEDULE, 1956-57

50

Autumn Quarter

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
8	Anat. 401-	Anat. 401-	Psychiat. 400	Anat. 401-	Anat. 404	Anat. 401-
9	Free		Free			
10						
11	Biochem. 401-	Biochem. 401-	Biochem. 401-	Biochem. 401-	Biochem. 401-	
12	Lunch	Lunch	Lunch	Lunch	Lunch	
1	Anat. 401-	Free	Anat. 401-	Free	Anat. 405-	
2						
3						
4						

Winter Quarter

8	Biochem. -402	Biochem. -402 Lab.	Biochem. -402	Biochem. -402 Lab.	Anat. -406-	Anat. -402
9	Anat. -402		Anat. -402			
10						
11						
12	Lunch	Lunch	Lunch	Lunch	Lunch	
1	Physiol. 401-	Free	Physiol. 401-	Free	Physiol. 401-	
2	Biochem. -402 Conf.		Physiol. 401- Conf.		Physiol. 401- Lab.	
3						
4			Psychiat. 400			

Spring Quarter

8	Anat. -407	Conjoint 409	Psychiat. 400	Conjoint 409	Conjoint 409	Free			
9			Pub. Health 409						
10									
11			Physiol. -402 Conf.		Physiol. -402				
12	Lunch	Lunch	Lunch	Lunch	Lunch				
1	Physiol. -402	Free	Physiol. -402	Free	Physiol. -402				
2	Physiol. -402 Lab.		Free		Physiol. -402 Lab.				
3									
4									

SECOND-YEAR SCHEDULE, 1956-57

Autumn Quarter

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
8	Path. 441-	Pharmacol. 442-	Path. 441-	Pharmacol. 442-	Pharmacol. 442-	Micro. 441-
9	Path. 441-	Micro. 441-	Path. 441-	Micro. 441-	Path. 441-	Micro. 441- Lab.
10	Lab.	Micro. 441-	Lab.	Micro. 441-	Path. 441-	Psychiat. 430
11		Lab.		Lab.	Lab.	
12	Lunch	Lunch	Lunch	Lunch		Lunch
1	Path. 441-	Free	Pharmacol. 442-	Free	Lunch	
2	Path. 441-		Lab.		Pharmacol. 442-	
3	Lab.					
4					Free	

Winter Quarter

8	Conj. 426- (Surg.)		Pharmacol. -443		Conj. 446-		Conj. 426- (Med.)		Conj. 426- (Med.)		Path. 442- (1st half)	
9	Conj. 426- A-Med. Conj. 426- B-Surg.		Micro. -442		Conj. 446- Lab.		Micro. -442		Conj. 426- A-Surg. Conj. 426- B-Med.		Micro. -442 (2nd half)	
Micro. -442			Micro. -442				Micro. -442 Lab. (Half)					
Lab.			Lab.				Path. -442 Lab. (Half)					
10												
11												
12	Lunch		Lunch		Lunch		Lunch		Lunch		Lunch	
1	Pharmacol. -443		Free		Path. -442-		Free		Pharmacol. -443			
2	Path. -442-				Path. -442-				Pharmacol. -443			
3	Path. -442-				Lab.				Lab.			
4	Lab.											

Psychiatry Lecture—Friday, March 1. 8. 15 at 4 p.m.

Spring Quarter

8	Conj. -427 (Med.)*		Coni. -427 (Surg.)		Coni. -427 (Med.)		Conj. -427 (Peds.)		Conj. -427 (Obs.)		Path. -443		
9	A-Med.	B-Sec below	A-Sec below	B-Med.	A-Med.	B-Free	A-Free	B-Med.	Conj. -447		Path. -443		
10									Conj. -447		Lab.		
11													
12	Lunch		Lunch		Lunch		Lunch		Lunch				
1	Micro. 443-4		Free		Micro. 443-4		Free		Pub. Health 425				
2	Micro. 443-4				Path. -443				Micro. 443-4				
3	Lab				Lab. Path. -443				Lab.				
4					Lab.								

*Obs. Lectures—Monday, Apr. 29, May 6, 13, 20 at 8 a.m.

Group A—Tuesday has Psychiat., Mar. 26, Apr. 2, 9; Peds., Apr. 16, 23; Obs., Apr. 30, May 7, 14, 21. No assignments Thursday 8-11 a.m., except Apr. 18, Peds.

Group B—Monday has Psychiat., Mar. 25, Apr. 1, 8; Peds., Apr. 15, 22; Obs., Apr. 29, May 6, 13, 20. No assignments Wednesday 8-11 a.m., except Apr. 24, Peds.

THIRD-YEAR CLERKSHIP SCHEDULE, 1956-57

52

THE SCHOOLS OF MEDICINE AND DENTISTRY

	Term I			Term II			Term III			Term IV		
Sections	Sept. 24 - Nov. 24			Nov. 26 - Feb. 2			Feb. 4 - Apr. 6			Apr. 8 - June 8		
Section A ¼ of class	Medicine Clerkship			Surgery Clerkship			Obstetrics- Gynecology Clerkship	Pediatrics Clerkship		Psychiatry Clerkship	Neurology- Neurosurgery Clerkship	Obstetrics Extern- ship
Section B ¼ of class	Surgery Clerkship			Obstetrics- Gynecology Clerkship	Pediatrics Clerkship		Psychiatry Clerkship	Neurology- Neurosurgery Clerkship	Obstetrics Extern- ship	Medicine Clerkship		
Section C ¼ of class	Obstetrics- Gynecology Clerkship	Pediatrics Clerkship		Psychiatry Clerkship	Neurology- Neurosurgery Clerkship	Obstetrics Extern- ship	Medicine Clerkship			Surgery Clerkship		
Section D ¼ of class	Psychiatry Clerkship	Neurology- Neurosurgery Clerkship	Obstetrics Extern- ship	Medicine Clerkship			Surgery Clerkship			Obstetrics- Gynecology Clerkship	Pediatrics Clerkship	

THIRD-YEAR LECTURE SCHEDULE, 1956-57

Hour	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
8	Clerkship	Clerkship	Clerkship	Obs.-Gyn. (35 lectures)	Clerkship	Surg. 465 (23 lectures) Med. 465 (12 lectures)
9				Clerkship		Med. 465 (35 lectures)
10						Conjoint Clinical Conferences (35)
11						
12				Surg. 465 (23 lectures) Ped. 465 (17 lectures) Psychiat. 465 (17 lectures)		Radiol. 465 (18 lectures) ¼ of class every other week
1						
2						
3						
4						

FOURTH-YEAR CLERKSHIP SCHEDULE, 1956-57

	Term I		Term II		Term III		Term IV		Term V	
Sections	Sept. 24 - Nov. 10		Nov. 13 - Jan. 12		Jan. 14 - Mar. 2		Mar. 4 - Apr. 23		Apr. 22 - June 8	
Section A ½ of class	Medicine Clerkship		Surgery Clerkship and one week of pulmonary disease		Obstetrics-Gynecology Clerkship	Pediatrics Clerkship	A.M. Public Health and Preventive Medicine Clerkship P.M. Psychiatry Clerkship		Electives	
Section B ½ of class	Surgery Clerkship and one week of pulmonary disease		Obstetrics-Gynecology Clerkship	Pediatrics Clerkship	A.M. Public Health and Preventive Medicine Clerkship P.M. Psychiatry Clerkship		Electives		Medicine Clerkship	
Section C ½ of class	Obstetrics-Gynecology Clerkship	Pediatrics Clerkship	A.M. Public Health and Preventive Medicine Clerkship P.M. Psychiatry Clerkship		Electives		Medicine Clerkship		Surgery Clerkship and one week of pulmonary disease	
Section D ½ of class	A.M. Public Health and Preventive Medicine Clerkship P.M. Psychiatry Clerkship		Electives		Medicine Clerkship		Surgery Clerkship and one week of pulmonary disease		Obstetrics-Gynecology Clerkship	Pediatrics Clerkship
Section E ½ of class	Electives		Medicine Clerkship		Surgery Clerkship and one week of pulmonary disease		Obstetrics-Gynecology Clerkship	Pediatrics Clerkship	A.M. Public Health and Preventive Medicine Clerkship P.M. Psychiatry Clerkship	

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 LECTURE SCHEDULE, 1956-57

Hour	SATURDAY	
8	Medical Ethics and Economics	Sept. 29-Dec. 1 (10 lectures)
	Surgery 480	Dec. 8-June 8 (25 lectures)
9	Medicine 480	Sept. 29-Mar. 30 (25 lectures)
	Medical Ethics and Economics	Apr. 6-June 8 (10 lectures)
10-12	Conjoint Clinical Conference	Sept. 29-June 8 (35 conferences)

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. Dr. Walter L. Bierring, president of the fraternity, presented the charter June 8, 1950.

SCHOLARSHIP, FELLOWSHIP, AND LOAN FUNDS

WILLIAM B. BRADSHAW TRUST FUND. This fund was established in 1955 to provide an annual award for research in epilepsy or other disorders of the central nervous system. Application for this award should be made to the Dean by March 15.

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 for the use of women medical students. It is administered by the Dean.

JOHN BYRNE MEMORIAL SCHOLARSHIP. An annual award of tuition costs was established in 1949 by Mr. and Mrs. C. J. Byrne in memory of John Byrne, who lost his life in military service during World War II. Eligibility is limited to medical students. Application for this award should be made to the Dean by March 15.

CHI OMEGA LOAN FUND. The Seattle Chi Omega Alumnae established a loan fund in 1956 to aid deserving medical students. It is administered by the Dean.

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 bequeathed the bulk of her estate to the University of Washington, the income from which is to be used for scholarships for medical students. Recommendations for these scholarships are made by a Committee appointed by the President of the University with the Dean as an adviser. Applications should be made to the Office of the Dean by March 15. Recipients of the scholarships must have completed at least the first year in Medical School, have demonstrated personal and scholastic worthiness, be industrious, and give promise of useful citizenship. Special consideration will be given to students who have been self-supporting. Announcement of these scholarships will be made generally in the spring each year.

GROUP HEALTH COOPERATIVE SCHOLARSHIP. An annual award 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. Application should be made to the Dean by March 15.

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 will go to his sister during her lifetime. Thereafter the income will be turned over to the University to provide scholarships and loans to worthy students in the School of Medicine.

JULIA H. LANE FOUNDATION. In 1955, a living trust for medical students at the University of Washington was established to provide funds for summer research scholarships, student loans, counseling service for premedical students, and research in the various medical fields such as rehabilitation, diseases of the aging, etc. Information concerning the availability of funds for these purposes may be obtained at the Dean's Office. Applications should be made to the Dean by March 15.

HELEN M. RUSSELL FUND. This fund for medical students was established in 1954 through a bequest of the estate of Helen M. Russell to be administered by the Dean.

SPOKANE EXCLUSIVE PRESCRIPTION PHARMACIES MEDICAL SCHOLARSHIP. An annual award 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. Application for this scholarship should be made to the Dean by March 15.

ALICE C. STOTLAR LOAN FUND. The fund was established in March, 1951, to aid deserving medical students in obtaining their education as determined and administered by the Dean.

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. It is administered by the Dean.

SUMMER RESEARCH FELLOWSHIPS. Each year a number of research fellowships carrying modest stipends are available to provide selected medical students with the opportunity to engage in investigative work during the summer recess. Qualified students who have indicated an interest in this type of work are nominated by individual faculty members by March 15. Further information may be obtained from members of the faculty or from the Dean's Office.

Other scholarships and fellowships for University students are listed in the *Handbook of Scholarships*, published by the Office of the Dean of Students, 333 Student Union Building.

AWARDS

MOSBY BOOK AWARDS. The Mosby Company provides awards for five outstanding graduating seniors, selected by the Scholarship Committee, of \$20 certificates entitling them to a choice of medical books.

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.

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.

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.

SPASTIC AID COUNCIL AWARD. An annual award of \$25 was established by the Spastic Aid Council to be given to the student writing the best paper on basic neurological research relative to cerebral palsy.

RESEARCH GRANTS

Grants-in-aid for research and special investigative projects in the School of Medicine totaling approximately \$1,275,000 were received during the past year. About \$1,040,000 was received from government agencies and private sources, and some \$235,000 was received from the state of Washington under Initiative 171. Since the opening of the School in 1946, more than \$6,460,000 has been awarded to enable investigators to carry on their work in the School of Medicine.

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.

BACHELOR OF SCIENCE. A curriculum leading to a bachelor's degree with a major in public health and preventive medicine is offered for students in the College of Arts and Sciences. Professional courses in the curriculum are given by the Depart-

ment of Public Health and Preventive Medicine in the School of Medicine. Public health students may choose an option in sanitary science, public health statistics, 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 become technologists in hospital, clinic, and medical-research laboratories. The first part of the course consists of three years in the College of Arts and Sciences, with training in chemistry, zoology, physiology, anatomy, histology, and microbiology. Upon successful completion of the three-year program, students may apply for admission to the final part of the course, which is offered by the Department of Pathology in the School of Medicine. This eighteen-month period consists of both class instruction and practical supervised work in hospital and medical-research laboratories.

Courses taken in the final period of the medical technology program are described in this Bulletin, along with other courses offered by the Department of Pathology. The entire curriculum is described in the *College of Arts and Sciences Bulletin*.

BACHELOR OF SCIENCE IN FOOD TECHNOLOGY. The food technology program is designed to provide professional training for students who plan to become laboratory workers in the field of food production, researchers in home economics, or college teachers of food and nutrition. This program is offered through the College of Arts and Sciences and is sponsored by both the Department of Microbiology in the School of Medicine and the School of Home Economics in the College of Arts and Sciences. Microbiology and biochemistry courses taken in the last two years of the curriculum are described in this Bulletin, along with other courses offered by the Departments of Microbiology and Biochemistry. The curriculum is described in the *College of Arts and Sciences Bulletin*.

BACHELOR OF SCIENCE IN BASIC MEDICAL SCIENCE. The basic medical science degree may be taken at the end of the first year in the School of Medicine by students who have completed at least the third year of premedical training and the first year of the medical course at the University of Washington and have a grade-point average of at least 2.50 in college and Medical School combined. Students who wish to qualify for this degree must complete University requirements for graduation as well as the requirements of the college and department in which the three years of premedical work were taken.

Requirements for this degree are described in the *College of Arts and Sciences Bulletin*. Applications should be sent to Prof. Richard Snyder, Premedical Adviser, 121 Miller Hall.

MASTER OF SCIENCE AND DOCTOR OF PHILOSOPHY. Work leading to advanced degrees is offered, in accordance with the requirements of the Graduate School, in the Departments of Anatomy, Biochemistry, Microbiology, Pharmacology, Physiology and Biophysics, and Surgery.

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. 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

The School of Medicine cooperates with the Washington State Medical Association and the Washington State Department of Health in planning courses to meet the needs for postgraduate medical education in the region. Intensive specialized courses are organized and conducted by several departments. The faculty of the School of Medicine also participates in general courses organized by the Washington State Medical Association.

Detailed information about postgraduate instruction is given in announcements describing the specific courses, the times they are scheduled, the number of students accepted, and the tuition fees.

SHORT COURSES

A series of short courses designed primarily for the physician in general practice is given at various times throughout the year by the faculty of the School. These courses provide doctors with an opportunity to review fundamental concepts and recent advances in diagnosis and treatment.

GYNECOLOGY. This course is devoted entirely to a presentation of gynecologic problems as they pertain to general practice, as well as to the specialized practice of gynecology. It embodies considerations of office gynecology, diagnostic methods and gynecologic endocrinology, as well as operative gynecology.

MEDICINE. The Department of Medicine each year sponsors several postgraduate courses concerned with recent advances in cardiology, gastroenterology, hematology, infectious diseases, neurology, and metabolism.

PRACTICAL PSYCHIATRY. The purpose of this course is to present some of the practical aspects of current concepts in psychiatry. Instruction is carried on by lecture, informal discussion, and the presentation of data pertaining to individual patients. Emphasis is placed on the development of psychoneurotic and psychosomatic illness, the means of prevention, and the treatment.

EMOTIONAL PROBLEMS OF CHILDREN. Problems of infancy through childhood, including mother-child relationships, effects of hospitalization, surgery, discipline, feeding and sleeping problems, psychosomatic disorders, and serious psychiatric entities are emphasized. The course consists of lectures, seminars, and case demonstrations at the Children's Orthopedic Hospital, the University Child Health Center, and the University of Washington Psychiatric Clinic for Children.

OBSTETRICS. As a study of general office problems in obstetrics, as well as diagnostic methods, obstetric endocrinology considerations, and operative obstetrics, the course is intended primarily for general practitioners.

CONJOINT REFRESHER COURSE IN CANCER. This course is presented once yearly in cooperation with the American Cancer Society.

CONTINUOUS COURSES

These courses are offered throughout the school year. Inquiries concerning them should be directed to the Department of Pathology.

ONCOLOGY. Selected tumors from the Washington State Tumor Registry covering the common important neoplasms and selected uncommon neoplasms are presented for study. The selected slides are initially studied using the microscope and are reviewed tutorially using Scopicon projection. Fresh gross specimens are also

demonstrated. This course may be taken one, two, or three sessions per week; it is limited to eight students.

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 furnished. This is not a course but a program of individual study, which may be arranged in accordance with individual needs.

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 quarterly *Time Schedule and Room Assignments*.

BASIC MEDICAL SCIENCES

ANATOMY

Executive Officer: H. STANLEY BENNETT, 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)** **Odor**
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 68.)
- 328-329 Gross Anatomy (6-4)** **Blandau, Everett**
Lectures and dissection. The first quarter is devoted to a study of the entire human body except the head and neck areas, with emphasis on the thoracic and abdominal regions, and the second quarter to an intensive study of the head and neck areas. For dental students; others by permission.
- 330 Microscopic Anatomy (4)** **Roosen-Runge**
Lecture and laboratory work in microscopic anatomy. For dental students; others by permission.
- 331 Neuroanatomy (2)** **Everett**
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 68.)
- 401-402 Gross Anatomy (10-6)** **Johnson**
Intensive lectures and dissection accompanied by roentgenographic demonstrations. Study of the entire human body except the brain and spinal cord. Required for first-year medical students. Prerequisite for nonmedical students, permission.

- 404 Human Embryology (3)** **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.
- 405-406-407 Microscopic and Submicroscopic Anatomy (3-3-2)** **Bennett**
Essentials of microscopic, submicroscopic, and chemical anatomy. Required for first-year medical students. Prerequisite for nonmedical students, permission.
- Conjoint 408 Conjoint Research Projects (2)** (See Conjoint Courses, page 68.)
- Conjoint 409 Basis of Neurology (3,5, or 8)** (See Conjoint Courses, page 68.)
- 497 Medical Students' Elective (*)** **Staff**
Work in any of the following fields: biological polarization microscopy, cytochemistry, biological X-ray structure analysis, prenatal anatomy, mammalian reproduction, biological tracer techniques, molecular and submicroscopic anatomy, cytology, tissue fine structure, embryology, endocrinology, neuroanatomy, gross anatomy, X-ray diffraction, hematology, brain dissection, histogenesis, and organogenesis. Prerequisite, permission.
- 498 Undergraduate Thesis (*)** **Staff**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*)** **Staff**
For medical students. Prerequisite, permission.
- 510 Cytochemistry (4)** **Bennett**
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.
- 521 Seminar in Molecular and Submicroscopic Anatomy (2)** **Bennett**
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 (4)** **Everett**
Techniques of using radioactive isotopes as tracers in biological research. Prerequisite, permission.
- 535 Histogenesis and Organogenesis (2)** **Blandau**
Laboratory study and conferences dealing with the ontogenetic maturation of tissues and organs during fetal life. Prerequisite, permission.
- 540 Prenatal Anatomy I (4)** **Johnson**
The study and dissection of the fetus and the newborn, emphasizing the thoracic cavity. Primarily intended for pediatricians and surgeons. Prerequisite, permission.
- 541 Prenatal Anatomy II (4)** **Johnson**
The study and dissection of the fetus and the newborn, emphasizing the spine and extremities. Primarily intended for orthopedists. Prerequisite, permission.
- 542 Prenatal Anatomy III (4)** **Johnson**
The study and dissection of the fetus and the newborn, emphasizing the head and neck. Primarily intended for practitioners of otorhinolaryngology, ophthalmology, neurology, and pediatrics. Prerequisite, permission.
- 543 Prenatal Anatomy IV (4)** **Johnson**
The study and dissection of the fetus and the newborn, emphasizing the abdomino-pelvic cavities. Primarily intended for pediatricians and surgeons. Prerequisite, permission.
- 550 Biological Polarization Microscopy (4)** **Bennett**
Theory, technique, and application of polarization microscopy in biological studies. Prerequisite, permission.
- 555 Mammalian Reproduction (3)** **Blandau**
Fundamental processes of reproductive anatomy and physiology of laboratory animals. Prerequisite, permission.
- 557 Seminar (1-3, maximum 9)** **Staff**
Prerequisite, permission.
- 560 Quantitative Optical Methods in Cytology (3)** **Thornburg**
Quantitative studies of cell structure and function using light microscope, phase microscope, polarizing microscope and microspectrophotograph. Prerequisite, permission.
- Conjoint 581, 582, 583, 584 Surgical Anatomy I, II, III, IV (4,4,4,4)**
(See Conjoint Courses, page 68.)

COURSES FOR GRADUATES ONLY

- 600 Research (*)** **Staff**
Prerequisite, permission.
- Thesis (*)** **Staff**

BIOCHEMISTRY

Executive Officer: 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. Biochemists occupy positions in academic teaching and research institutions, in hospitals, and in industry and government laboratories.

The Department offers courses in basic biochemistry for students in various areas of study in the University, including the natural sciences, medicine, dentistry, and others. Students who intend to work toward 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 Executive Officer of the Department before registration.

COURSES

- 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, and others. Prerequisite, Chemistry 230 or 232.
- 362 Biochemistry Laboratory (3)** **Staff**
Laboratory exercises and conferences. Certain experimental aspects of biochemistry of special interest to dental students are considered. For dental students.
- 363 Biochemistry Laboratory (2)** **Staff**
Laboratory exercises in general biochemistry for students in home economics, medical technology, and others. Prerequisite, 361, which may be taken concurrently.
- 401, 402 Biochemistry (4,7)** **Staff**
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.
- Conjoint 408 Conjoint Research Projects (2) (See Conjoint Courses, page 68.)**
- 481, 482 Biochemistry (4,3)** **Staff**
Lectures and conferences in the first quarter cover the fundamentals of biochemistry. In the second quarter more advanced aspects of the subject are treated. Recommended for advanced undergraduate or graduate students of chemistry, biochemistry, and various biological sciences. Biochemistry 483 is recommended as a concurrent course with 482. Prerequisites, Chemistry 337 for 481; 481 or permission for 482; introductory physical chemistry is recommended.
- 483 Biochemistry Laboratory (3)** **Staff**
Laboratory exercises and conferences. For students of biochemistry, chemistry, and various biological sciences. Prerequisite, 481.
- 497 Medical Students' Elective (*)** **Staff**
Each student will carry out a research project under the guidance of a staff member, and will also participate in the Department's seminar program. By special arrangement, it may be possible for the student to assist in certain phases of instruction. For medical students. Prerequisite, permission.
For other electives open to qualified medical students, see Biochemistry 520, 562, 563, 564, 565, 566, 567, 568, 569, 570.
- 498 Undergraduate Thesis (*)** **Staff**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*)** **Staff**
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)** **Staff**
Prerequisite, permission.
- 562 Physical Biochemistry (2)** **Dandliker**
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 1957-58.) Prerequisites, 482 and Chemistry 357 or permission.

- 563, 564 Proteins (2,2)** **Dandliker, 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 1957-58.) Prerequisites, 562 or permission for 563; 563 for 564.
- 565, 566, 567 Enzymes and Enzyme Action (2,2,2)** **Fischer, Huennekens, Krebs**
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 1958-59.) 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, 1956.) Prerequisite, 402 or 482 or permission.
- 569 Topics in Bio-organic Chemistry (2)** **Huennekens, Wilcox**
Application of organic chemistry to selected problems in biochemistry, illustrated by the determination of structure, total synthesis, and mechanism of action of such compounds as nucleotides and peptides. (Offered Winter Quarter, 1957.) Prerequisite, 482 or permission.
- 570 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, 1957.) Prerequisite, 402 or 482 or permission.
- 583 Advanced Biochemistry Laboratory (3)** **Staff**
Biochemical preparations and investigations of physical and chemical properties by special techniques, including spectrophotometry, polarimetry, manometric method, electrophoresis, isotope tracer applications, etc. Prerequisites, 483 and permission.
- 600 Research (*)** **Staff**
Prerequisite, permission.
- Thesis (*)** **Staff**

MICROBIOLOGY

Executive Officer: 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 and food technology leading to bachelor's degrees in the College of Arts and Sciences (see page 55). 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 bacteriology, immunology, parasitology, medical mycology, virology, and physiology of bacteria. Course requirements vary according to the field chosen.

COURSES

- 204 Medical Parasitology for Sanitarians (4)** **Groman**
Consideration of medically important parasites with emphasis on public health aspects. Offered last eight weeks of quarter. For undergraduate students majoring in public health. Prerequisites, 301 or equivalent and permission.
- 235, 236 Microbiology for Students of Dentistry (6,1)** **Zahler**
Lecture and, in 235, 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 be permitted to take these courses for less than full credit or to substitute a research problem for the laboratory work. Prerequisite, for nondental students, permission.
- 300 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 microbiology. 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.

- 301 General Microbiology (5)** **Rickenberg**
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.
- 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. Prerequisite, permission.
- 322 Applied Bacteriology (5)** **Staff**
Practical experience in a public health laboratory; fifteen hours per week. For students majoring in medical microbiology. Prerequisites, permission and letter to laboratory director.
- 430 Industrial Microbiology (3 or 5)** **Douglas**
Microbiological and biochemical aspects of industrially important fermentative and oxidative processes. For students majoring in microbiology or food technology. Prerequisites, 300 or 301, and Chemistry 221 and 232.
- 441-442 Medical Bacteriology, Virology, and Immunology (*, maximum 5-, *, maximum -5)**
Evans, Groman, Henry, Weiser
441- includes a survey of microorganisms and a general consideration of the morphology and physiology of bacteria; an introduction to immunology, formation and properties of antibodies, nature of antigen-antibody reactions, blood groups, allergies, and an analysis of factors of innate and acquired immunity. During the last part of 441- and throughout 442, specific pathogenic bacteria and viruses are studied in detail. Students who have had previous work in bacteriology may by special permission be allowed to take 441- or 442 for less than the full 5 credits. Required for second-year medical students. Open to non-medical 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 first three weeks of quarter. Required for second-year medical 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 last eight weeks of quarter. Required for second-year medical students. Open to nonmedical students. Prerequisites, 441-442 or equivalent, and permission.
- 497 Medical Students' Elective (*)** **Staff**
Laboratory and/or library problems in the fields of general or medical bacteriology, mycology, virology, parasitology, or immunology. Prerequisite, permission.
- 498 Undergraduate Thesis (*)** **Staff**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*)** **Staff**
Specific problems in industrial, medical, and general microbiology.

COURSES FOR GRADUATES ONLY

- 510 Physiology of Bacteria (3)** **Douglas, Groman, Ordal, Whiteley, Zahler**
Fundamental physiological and metabolic processes of bacteria. (Offered alternate years; offered 1956-57.) Prerequisites, 300 and a course in biochemistry.
- 520 Seminar (1)** **Staff**
- 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, Chlamydothales, Caryophanaeae, and Borrelomycetaceae. (Offered alternate years; offered 1957-58.) Prerequisite, permission.
- 540 Filterable Viruses (*, maximum 4)** **Evans**
(Offered alternate years; offered 1957-58.) Prerequisites, 442 and permission; histology is recommended.
- 550 Advanced Immunology (*, maximum 4)** **Weiser**
(Offered alternate years; offered 1956-57.) Prerequisites, 441- and permission.
- 600 Research (*)** **Staff**
- Thesis (*)** **Staff**

PATHOLOGY

Acting Executive Officer: LESTER D. ELLERBROOK, D509 Health Sciences Building

In addition to courses for medical students and for other students of the health sciences, the Department of Pathology offers courses for a curriculum leading to the degree of Bachelor of Science in Medical Technology. This curriculum is given through the College of Arts and Sciences.

COURSES

- 231 General Pathology (5)** **Staff**
This course is open to dental students and to selected graduate students in the basic sciences. The objective is to cover in a more brief form the basic work covered in detail in 441-, 442-, and 443. The method of presentation is therefore the same as in those courses. A reasonable knowledge of histology, anatomy, and physiology is essential to 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.
- 303-304 General and Clinical Pathology for Nurses (1-1)** **Staff**
Lectures and demonstrations covering the fundamental functional and structural mechanisms of diseases encountered in hospital nursing.
- 310 General Pathology (3)** **Staff**
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.
- 321, 322-323-324-325, 326 Medical Technology (5, 6-6-6-6, 16)** **Ellerbrook, Erikson, Reiff, Staff**
During this eighteen-month period, medical technology students become familiar with the common clinical laboratory procedures and with the interpretation of the results obtained. They perform the tests used in the laboratories of clinical chemistry, urinalysis, hematology, serology, microbiology, and pathology. Practical experience is obtained in the laboratories of the School of Medicine and of one or more hospitals. For medical technology students. Prerequisites, completion of three-year prescribed curriculum in the College of Arts and Sciences and permission. 321 only may be taken by microbiology students; permission is required.
- 441-442-443 General and Special Pathology (5-5-5)** **Staff**
Lecture followed by tutorials in the laboratory. Pathogenesis, pathological physiology, experimental background, and laboratory tests where indicated, are stressed. Comprehensive lantern slide presentations, demonstrations of gross pathology to small groups, and Scopicon microprojections of pertinent material are used in the presentation of subject matter. Time is available for the study of the histopathology of diseases and discussion of problems with staff members. Participation by students at autopsies is included at scheduled intervals throughout the course. The technique of the dissection and protocol writing are demonstrated, as well as correlation of clinical and laboratory data with findings. At the completion of the course the student should be thoroughly familiar with the causes, processes, and effects of the major diseases. Required for second-year medical students; graduate students by permission.
- Conjoint 446-447 Laboratory Procedures (*-*) (See Conjoint Courses, page 68.)**
- 470 Surgical Pathology (*)** **Staff**
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 (*)** **Staff**
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.
- 497 Medical Students' Elective (*)** **Staff**
Advanced course in autopsy technique. Gross and histologic study of post-mortem material. Surgical and clinical pathology. Attendance at and participation in clinical-pathological conferences and other hospital activities. King County and Veterans Administration Hospitals. Seven weeks; full time. Fourth-year medical students. Prerequisite, permission. Courses in oncology, selected topics in hematology and pathology will also be offered by arrangement.
- 498 Undergraduate Thesis (*)** **Staff**
Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 500 Principles of Pathology (5)** **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 basic sciences.
- 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)**Ellerbrook, Erikson, Reiff**

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.

PHARMACOLOGY

Executive Officer: JAMES M. DILLE, F421 Health Sciences Building

Pharmacology deals with the mechanisms whereby modification of physiological function is produced by drugs and the application of these drugs to the relief and treatment of disease.

The Department of Pharmacology provides courses for medical, dental, and pharmacy students and for those doing graduate work in these fields. Students who intend to work toward 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 Executive Officer before registration.

COURSES

234 General Pharmacology (4)**Staff**

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, 303 General Pharmacology (3,3,3)**Staff**

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. For pharmacy students.

442-443 General Pharmacology (5-4)**Staff**

The action of drugs, with emphasis on their basic mechanisms and their application to the relief and treatment of disease. Toxicological manifestations of excessive doses of drugs; management and treatment of these poisonous effects. Laboratory experiments and demonstrations. Required for second-year medical students. Prerequisite for graduate students, a major or a minor in pharmacology.

497 Medical Students' Elective (*, maximum 15)**Staff**

The fields of basic pharmacology. Mechanisms of drug action and rational therapeutic applications of drugs.

498 Undergraduate Thesis (*)**Staff**

For medical students. Prerequisite, permission.

499 Undergraduate Research (*)**Staff**

Participation in departmental research projects. For medical students. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

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.

508 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.

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.

Thesis (*)**Staff**

PHYSIOLOGY AND BIOPHYSICS

Executive Officer: 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 applying as candidates for M.S. and Ph.D. degrees are accepted with bachelor's degrees in zoology, psychology, chemistry, or physics or with an M.D. degree.

COURSES

126 Human Physiology (6)**Scher, 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 68.)

Conjoint 350-351 Human Function and Structure (6-6) (See Conjoint Courses, page 68.)**401-402 Advanced Human Physiology (7-7)****Ruch, Staff**

Advanced work in physiology approached from the biophysical, mammalian, and clinical points of view. Small-group teaching and special laboratory problems. Required for first-year medical students; graduate students by permission.

Conjoint 408 Conjoint Research Projects (2) (See Conjoint Courses, page 68.)**Conjoint 409 Basis of Neurology (3,5, or 8) (See Conjoint Courses, page 68.)****411 Introductory Biophysics (4)****Carlson, 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.

481 Seminar: Pathological Physiology of Pain (2)**Amassian, Ruch**

Systematic seminar discussion of pain components of clinical syndromes based upon the experimental and clinical literature. Prerequisite for graduate students, permission.

483 Neurology of Emotional Behavior (2)**Patton, Ruch**

Seminar survey of the experimental literature on the hypothalamus, orbitofrontal lobes, and rhinencephalon, with special reference to abnormal behavior. Prerequisite for graduate students, permission.

484 Endocrinological Reaction to Stress (2)**Carlson, Patton**

Seminar survey of the literature concerned with the response of endocrine glands to physiological stresses and strains, such as exercise and extreme temperatures, in normal and diseased individuals. Prerequisite for graduate students, permission.

491 Medical Physics (2)**Staff**

Review of physical principles applicable to medicine. Elective for medical students. Graduate students by permission.

492 Selected Topics in Physiology and Biophysics (2)**Staff**

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)** **Staff**
Application of physiological principles in analysis of cardiopulmonary function. Prerequisite, 401-402 or permission.
- 494 Neurological Study Unit (2) Physiology, Neuroanatomy, Neurology, Neuropathology, Neurosurgery, and Psychiatry Staff**
Faculty and student discussion of neurological topics illustrated with clinical cases or demonstrations. Elective for medical students. Graduate students by permission.
- 497 Medical Students' Elective (*)** **Staff**
Topics in physiology and biophysics chosen according to the interests of the group.
- 498 Undergraduate Thesis (*)** **Staff**
For medical students. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 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)** **Carlson, 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)** **Carlson, Young**
Prerequisite, B.S. in physical science or permission.
- 524 Membrane Potentials (2-5)** **Woodbury, Young**
Theories of ionic transport. Planck-Fokker equations. Theory of absolute reaction rates. Unidirectional and net transport of ions. Active transport. Prerequisite, B.S. in physical science or 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.
- 532 Basic Principles of Physiological Instrumentation (2-5)** **Woodbury, 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.
- 533 Applied Physiological Instrumentation (2-5)** **Amassian, Carlson, Rushmer, Scher**
Study and use of research instruments applicable to the nervous system (stimulators, amplifiers, and oscilloscopes), the cardiovascular system (cinefluorograph, electro- and 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, Ruch**
Dafferentiation, decerebration, and Sherrington reflex preparation; osteoplastic bone flap, Horsley-Clarke apparatus, and reconstruction of lesions; primate colony and operating room management. Prerequisite, permission.
- 600 Research (*)** **Staff**
Prerequisite, permission.
- Thesis (*)** **Staff**

PUBLIC HEALTH AND PREVENTIVE MEDICINE

Executive Officer: WILLIAM E. REYNOLDS, B506 Health Sciences Building

In addition to courses for medical students, the Department of Public Health and Preventive Medicine offers courses for a four-year curriculum leading to a Bachelor of Science degree in the College of Arts and Sciences (see page 55).

COURSES

- Conjoint 295, 296 Introduction to Normal Growth and Development (2,2)**
(See Conjoint Courses, page 68.)
- 402 Communicable Disease Control (3)** **Houghton**
Public health methods for the control of common communicable diseases. For science majors. Prerequisite, Microbiology 301 or permission.

- 409 Biostatistics (2)** **Bennett, Reynolds**
Statistical methods used in compilations, interpretation, and presentation of medical data. Required for first-year medical students; others by permission.
- 412 Public Health Organizations and Services (3)** **Staff**
Study of local, national, and international public health services. For nonmedical students. Prerequisite, permission.
- 425 Epidemiology of Communicable Diseases (1)** **Reynolds**
Basic theories of epidemic spread of diseases; epidemiology of principal communicable diseases of man, with emphasis on control. Required for second-year medical students. Prerequisite for others, Microbiology -442.
- 432 Food Sanitation (3)** **Hatlen**
Public health methods of preventing transmission of disease through food. For nonmedical students. Prerequisite, 412.
- 434 Milk Sanitation (3)** **Hatlen**
Methods of preventing transmission of disease through dairy products. For nonmedical students. Prerequisite, 412.
- 435 Vector Control (3)** **Hatlen**
Current practical techniques of controlling rodent and insect vectors of disease. For nonmedical students. Prerequisite, 412.
- 438 Rural Water Supply and Excreta Disposal (3)** **Dunn**
Public health aspects and principles of institutional and household water supply and excreta disposal, particularly as they apply to rural and fringe areas. For nonmedical students. Prerequisite, 412 or permission.
- 439 Applied Sanitary Science (3)** **Dunn**
Principles of sanitary science as related to environmental utilities, including plumbing, swimming pools, bathing beaches, ventilation, air conditioning, lighting, housing, schools. Prerequisite, 438.
- 451 Industrial Hygiene (3)** **Staff**
Methods of preventing industrial and occupational diseases and accidents. For nonmedical students. Prerequisite, permission.
- 453 Industrial Hygiene Techniques (3)** **Kusian**
Field and industrial-laboratory testing procedures 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. For nonmedical students. (Offered Summer Quarters only.) Prerequisite, permission.
- 461 School and Community Health Programs (5)** **Reeves, Vavra**
Organizational structure, function, and services of official and nonofficial community and school health agencies, with particular attention to the interrelated roles of teachers, physicians, nurses, and sanitarians. For nonmedical students. Prerequisite, junior standing.
- 463 Community Organization for Health Education (3)** **Vavra**
Trends and problems in community health education, including community organization. For nonmedical students. Prerequisite, 412 or permission.
- 464 Community Health Education Techniques (3)** **Vavra**
Practice in the techniques of working with groups; preparation and use of visual education materials. For nonmedical students. Prerequisite, 412 or permission.
- 470 Introduction to Public Health Statistics (2)** **Bennett**
Statistical methods used in the compilation, interpretation, and presentation of vital data. For nonmedical students. Prerequisite, 412 or permission.
- 472 Applied Statistics in Health Sciences (2-4)** **Bennett**
Application of statistical techniques to biological and medical research; design and interpretation of experiments. For nonmedical students. Prerequisite, permission.
- 475 Clerkships and Seminar (*)** **Staff**
A half term of supervised observation of the work of both voluntary and official public health organizations. The students are also required to complete one social case study for presentation at a weekly seminar. Required for fourth-year medical students.
- 476 Advanced Public Health Statistics (5)** **Bennett**
Medical and public health record systems, life table techniques and their application to chronic diseases; population studies and estimates; statistical methods in epidemiology; sample surveys. (Offered when demand is sufficient.) Prerequisites, 470 and 472.
- 477 Statistical Methods in Biological Assay (3)** **Bennett**
Methods appropriate to estimation of the dose-effect relationship; biological standardization; microbiological assay; design of experiments. For nonmedical students. (Offered when demand is sufficient.) Prerequisite, permission.
- 480 Public Health Problems (2-6)** **Staff**
Special assignments in the field of public health. Prerequisite, permission.
- 482 Field Practice in Public Health (2-6)** **Staff**
An assignment to a local health department for supervised application of public health practices. For nonmedical students. Prerequisite, permission.

- 483 Field Practice in Public Health (6)** **Staff**
An assignment to a local health department for practice in program planning. For non-medical students. Prerequisite, permission.
- 484 Field Practice in Public Health (3)** **Staff**
An assignment to a local health department for training in the utilization of community resources. For nonmedical students. Prerequisite, permission.
- 485J School Health Problems (2)** **Leahy, Vavra**
Analysis of and planning for school health programs based on developmental needs of the school-age child. For nonmedical students. Offered jointly with the School of Nursing. Prerequisite, permission.
- 492J Problems in International Health (2)** **Leahy, Reynolds**
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 university student. Prerequisite, permission.
- Conjoint 496 Concept of the Child (3) (See Conjoint Courses below.)**
- 497 Medical Students' Elective (*)** **Staff**
Elective courses are offered in the following subjects: Communicable disease control, epidemiology in public health, advanced medical statistics, public health aspects of air pollution, and industrial hygiene and toxicology.
- 498 Undergraduate Thesis (*)** **Staff**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*)** **Staff**
For medical students. Prerequisite, permission.

COURSE FOR GRADUATES ONLY

- 502J Applied Group Development Principles (3)** **Burke, 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, permission, Speech 332 or equivalent, and background in the health field.

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

- 295 Introduction to Normal Growth and Development (2)** **Chinque, Staff**
Study of the child from the standpoint of normal growth and development and nutritional and emotional needs. Offered by the Departments of Pediatrics and Public Health and Preventive Medicine. For nonmedical students. Prerequisite, permission.
- 296 Introduction to Normal Growth and Development (2)** **Chinque, Staff**
This course is an introduction to normal growth and development of children from school age through adolescence. It is a continuation of 295. Offered by the Departments of Pediatrics and Public Health and Preventive Medicine. For nonmedical students. Prerequisite, 295.
- 317-318 Elementary Anatomy and Physiology (6-6)** **Skahen, Staff**
Human physiology with anatomical demonstrations. An elementary course integrating anatomy, histology, physiology, and biochemistry of the human body. Offered by the Departments of Anatomy and Physiology and Biophysics. For nursing and dental hygiene students.
- 350-351 Human Function and Structure (6-6)** **Skahen, Staff**
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.
- 408 Conjoint Research Projects (2)** **Carlson, Krebs, Blandau**
An elective course offered by the Departments of Anatomy, Biochemistry, and Physiology and Biophysics in which an opportunity is provided for medical students to work out research projects under the guidance of staff members of the three Departments. The research projects are geared to the student's interest, ability, and available time. Oral presentation

of the result of the research projects is to be given before students and staff at the end of Spring Quarter. Open to medical students; graduate students by permission.

- 409 Basis of Neurology (3,5, or 8)** **Everett, Patton, Ruch**
An advanced course in the anatomy of the central nervous system and its correlation with neurophysiology. Offered by the Departments of Anatomy and Physiology and Biophysics. Required for first-year medical students. Prerequisite for graduate students, permission.
- 426-427 Clinical Medicine (*-*)** **Staff**
Introduction to clinical medical sciences. The student is taught to take complete histories and perform general physical examinations. Knowledge acquired in the basic medical sciences is used to explain the mechanism of development of cardinal symptoms and the signs of major diseases. Offered by the Departments of Medicine, Obstetrics and Gynecology, Pediatrics, Psychiatry, and Surgery. Required for second-year medical students.
- 446-447 Laboratory Procedures (*-*)** **Ellerbrook, Scribner, Staff**
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.
- 490 Conjoint Clinical Conference (*)** **Staff**
Two-hour clinical conference held weekly in which a department develops a clinical problem that enlists the active participation of its own staff and that of the Basic Sciences Departments and of the Clinical Sciences Departments. The entire staff of the School of Medicine attends these conferences. Presentation of the problem by staff members is followed by an open forum. Open to third- and fourth-year medical students.
- 496 Concept of the Child (3)** **Deisher, Baldwin, Staff**
An advanced course for students who desire a more complete understanding of the child from the standpoints of pediatrics, public health, psychiatry, psychology, nutrition, social work, and nursery education. Offered by the Departments of Pediatrics and Public Health and Preventive Medicine. For nonmedical students. Prerequisite, permission.
- 581, 582, 583, 584 Surgical Anatomy I, II, III, IV (4,4,4,4)** **R. Johnson**
An intensive course of lectures and dissection devoted to one region of the body each quarter, i.e., thorax, abdomen, upper extremity, head and neck. Offered by the Departments of Surgery and Anatomy. Prerequisite for nonmedical students, permission.

MEDICAL PRACTICE

COURSES

- 401 Introduction to Medicine (*)** **Haviland, Staff**
Survey of the objectives of medicine with an introduction to the historical background of medical ethics and economics. Medical historical material illustrates the reflection of social and economic readjustments in medical progress. Open to all medical students.
- 475 Externship in General Practice (*)** **Schoyer, Staff**
Three and one-half or seven 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 students.
- 481 Medical Ethics, Economics, and Legal Medicine (*)** **Aggaard, Staff**
Lectures and discussions by authorities in these fields on topics of current and practical interest for the future physician. Required for fourth-year medical students.
- 483 Hospital Extension Service (*)** **Staff**
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

MEDICINE

Executive Officer: 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.

COURSES

Conjoint 426-427 Clinical Medicine (*-*) (See Conjoint Courses, page 68.)

Conjoint 446-447 Laboratory Procedures (*-*) (See Conjoint Courses, page 68.)

465 Clinical Clerkships (*)

Staff

Approximately three hospital patients a week are assigned to each student for a complete work-up. Ward rounds are held daily; lectures, clinics, and conferences weekly. Ten days are spent at Firland Sanatorium and ten days with neurology inpatients. Required for third-year medical students.

480 Clinical Clerkships (*)

Staff

One fifth of the fourth-year class spends seven weeks as clinical clerks on the medical wards at the King County Hospital. Each week the students attend specialty conferences, six ward rounds, the General Medical Clinic, and two of the following Clinics: Allergy, Arthritis, Cardiology, Chest, Dermatology, Gastroenterology, Infectious Diseases, Metabolism, Neurology, and Psychiatry. One lecture is given to the entire class each week.

497 Medical Students' Elective (*)

Staff

Elective work in any of the following for first- and second-year students: samples of clinical medicine; the blood group systems, their application to transfusion reactions and hemolytic disease of the newborn; fluid and electrolyte balance; the pathologic physiology of common endocrine disorders; patient care in the home; physical diagnosis of heart disease; clinical and experimental use of radioisotopes; selected topics in human genetics.

Elective work in any of the following for fourth-year students: endocrinology and metabolism; hematology (clinical and experimental), cardiology, clinical neurology and rehabilitation, clinical clerkships at the King County Hospital, and work in the following Outpatient Clinics: General Medicine, Allergy, Arthritis, Cardiology, Chest, Dermatology, Endocrinology, Gastroenterology, and Hematology.

498 Undergraduate Thesis (*)

Staff

For medical students. Prerequisite, permission.

499 Undergraduate Research (*)

Staff

Case studies, with laboratory research. For medical students. Prerequisite, permission.

OBSTETRICS AND GYNECOLOGY

Executive Officer: RUSSELL R. DE ALVAREZ, BB617 University Hospital

The Department of Obstetrics and Gynecology represents the field of general obstetrics, 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 Clinical Medicine (*-*) (See Conjoint Courses, page 68.)

465 Clinical Clerkships (*)

de Alvarez, Staff

With the exception of one weekly lecture, the work is almost entirely clinical and limited to the inpatient service of King County Hospital. The student spends two-thirds of his time on obstetrics and one-third on gynecology. On obstetric service, students work in obstetric wards, labor rooms, and delivery rooms. They are given instruction in the immediate care of the normal newborn infant and the obstetric implications reflected by the newborn infant. On gynecology service, the student spends his time with patients in the wards, making ward walks, and assisting in the operating room as well as performing examinations under ideal conditions. Part of the work emphasizes the application of obstetric and gynecologic endocrinology. In addition, each student spends ten days in one of the private hospitals, observing and assisting in the methods used in the private practice of obstetrics and gynecology. While in these hospitals, he is under the immediate supervision of responsible members of the departmental faculty. Required for third-year medical students.

480 Clinical Clerkships (*)

de Alvarez, Staff

The student spends his time equally in obstetrics and gynecology. The time in obstetrics involves being at King County Hospital on certain nights of the clerkship, being present at all deliveries, and closely following the management of all obstetric patients. In gynecology service, the student makes ward rounds, studies the problems of inpatient gynecology and the phases of gynecologic endocrinology. In addition, he spends a certain proportion of his time in outpatient clinics devoting himself to the office problems of the specialty. Required for fourth-year medical students.

497 Medical Students' Elective (*)

de Alvarez, Staff

Elective work in any of the following: obstetric externship in one of the Army hospitals, office obstetrics and gynecology, vaginal cytology, endocrinology, Postoperative Gynecology Clinic, Gynecology Clinic, New Obstetrics Clinic, Prenatal Clinic, Postpartum Clinic, Tumor Clinic, gynecologic pathology, operative gynecology, planned parenthood, obstetric and gynecologic endocrinology, and obstetric and gynecologic endocrinology seminar. Prerequisite, permission.

498 Undergraduate Thesis (*)

de Alvarez, Staff

For medical students. Prerequisite, permission.

PEDIATRICS

Executive Officer: WALTER B. SEELYE, C520 Health Sciences Building

The Department of Pediatrics orients the student toward the problems of physical and emotional growth and development and of the various metabolic, infectious, and other disorders of infancy and childhood, with clinical experiences in both outpatient and inpatient clerkships which will assure a careful and thorough approach in his professional relations with children.

COURSES

Conjoint 295, 296 Introduction to Normal Growth and Development (2,2)
(See Conjoint Courses, page 68.)

404 Human Growth and Development (*) **Baldwin, Deisher, Shepard**
An opportunity is provided to observe and closely follow an infant and his family in consecutive fashion throughout one or two years. Influence on total growth and development of constitutional and environmental factors will be demonstrated in individual interviews and group discussion with members of the pediatrics staff. Open to medical students.

Conjoint 426-427 Clinical Medicine (*-*) (See Conjoint Courses, page 68.)

465 Clinical Clerkships (*) **Staff**
Lectures, eighteen hours; inpatient clinical clerkship. Students are assigned to the pediatric ward at King County Hospital or to Children's Orthopedic Hospital to work in small groups under supervision of the departmental staff. Required for third-year medical students.

480 Clinical Clerkships (*) **Staff**
Students are assigned patients in the outpatient departments of King County Hospital and Children's Orthopedic Hospital where they are responsible for the complete work-up and study of these patients under staff supervision. Special opportunities for observation of normal children are provided at the University Child Health Center and children with cerebral palsy at the Preschool Spastic Clinic. Other special Clinics include Pediatric Allergy, Cardiology, and Endocrinology. Required for fourth-year medical students.

Conjoint 496 Concept of the Child (3) (See Conjoint Courses, page 68.)

497 Medical Students' Elective (*) **Baldwin, Deisher**
Further experience at the University Child Health Center in the common, everyday problems met in clinical practice among well children from infancy to adolescence. Principles of infant feeding, immunization, accident prevention, and management of behavior problems, as well as normal physical and emotional growth and development are emphasized, with the student participating actively in all phases of work at the Center. Research in child growth and development. Pursuit of short-term projects in growth and development by the student under the guidance of the Child Health Center staff. Possible projects include: weight or prematurity factor in Gesell testing; follow-up of medical-care programs in patients leaving the Child Health Center; influence of sleep loss on growth; case studies on special behavior problems in childhood. Open to fourth-year students.

498 Undergraduate Thesis (*) **Staff**
For medical students. Prerequisite, permission.

COURSE FOR GRADUATES ONLY

505 Physical Growth of the Well Child (2) **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 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)** Jarvis
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 (*, maximum 3)** Lemere, Ripley
Emotional and personality development from infancy through old age; the adaptation of the individual to his environment, with attention to the roles of heredity, constitution, physical changes, and family and social relationships as determinants in psychodynamics. Comparative personality development is illustrated by animal and human behavior.
- Conjoint 426-427 Clinical Medicine (*-*)** (See Conjoint Courses, page 68.)
- 430 Psychopathology (*)** Ripley, Staff
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.
- 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.
- 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. Prerequisite, 450 or permission.
- 465 Clinical Clerkships (*)** Staff
Four and one-half weeks of supervised work in an inpatient psychiatric service. The student is responsible for a psychiatric work-up of patients at King County Hospital and Veterans Administration Hospital. Clinical conferences with discussion of psychoses, psychoneuroses, and psychosomatic disorders are held. Weekly lectures are given throughout the year. Required for third-year medical students.
- 475 Psychiatric Externship (*)** Staff
Three and one-half or seven weeks of work at a private or 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. Prerequisite, permission.
- 480 Clinical Diagnosis and Treatment (*)** Staff
Half of the time during a seven-week term is spent at the University Psychiatric Clinic for Children, the Community Psychiatric Clinic for Adults, and at the King County Hospital. Emphasis is placed on an understanding of the total dynamics resulting in emotional and mental problems and the simpler methods of psychotherapy. The student obtains firsthand knowledge of the function of a psychiatric team composed of psychiatrist, social worker, and psychologist, and the utilization of community facilities. Required for fourth-year medical students.
- 497 Medical Students' Elective (*)** Staff
Advanced clerkships are offered at the King County Hospital, Veterans Administration Hospital, University Psychiatric Clinic for Children, and the Community Psychiatric Clinic for Adults to include inpatient and outpatient experience. Instruction is offered in the administration and interpretation of the Rorschach, Thematic Apperception, and Bellevue-Wechsler tests with patients in the psychiatric wards or in the Outpatient Clinic at King County Hospital. Seminars and projects can be arranged in: personality development; the physiology of emotions; and social factors in health and disease. Prerequisite, permission.
- 498 Undergraduate Thesis (*)** Staff
Supervised library, clinical, or experimental work. Elective for medical students. Prerequisite, permission.
- 499 Undergraduate Research (*, maximum 15)** Staff
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. 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. Prerequisite, 267 or 451 or permission.
- 557 Clinical Psychiatry (2)** Staff
Discussion of clinical psychiatry considering causation, prevention, treatment, and rehabilitation. Not open to students who have taken 457. 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.

RADIOLOGY

AA304 Health Sciences Building

The courses given by the Department are designed to acquaint the student with the uses and dangers of radiant energy in medical practice.

COURSES

- 410 Research Orientation in Radiobiology (4, maximum 12)** **Baltzo**
Observation and participation in research and clinical use of radiation emitters. Prerequisite, permission.
- 465 Diagnostic and Therapeutic Radiology (*)** **Hodges, Staff**
Quiz-conferences covering the nature, hazards, and clinical use of X rays and gamma rays. Required for third-year medical students.
- 470 Problems of Health Physics (1, maximum 3)** **Baltzo**
Seminar presentation of selected topics in radiologic safety and radioisotope control. Prerequisite, 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.
- 497 Medical Students' Elective (*)** **Hodges, Staff**
Observation and participation in clinical hospital radiology, both diagnostic and therapeutic. Prerequisite, permission.
- 498 Undergraduate Thesis (*)** **Staff**
The student may write a thesis in either therapeutic or diagnostic phases of radiology. Prerequisite, permission.

SURGERY

Executive Officer: 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, surgical principles, and an introduction to surgery. In the third year, the inpatient clerkship 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 outpatient work and special assignments in affiliated hospitals.

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. A residency in neurosurgery is also available. 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 Clinical Medicine (*-*) (See Conjoint Courses, page 68.)

465 Clinical Clerkships (*)**Foltz, Harkins, Householder, McDonald, Merendino, Morris, Olson, Payne, Ward, Staff**

Four equal periods in the divisions of general surgery, neurosurgery, urology, and orthopedics in King County and Veterans Administration Hospitals. The student is assigned interesting cases in rotation and is responsible for a complete work-up of the patient, including the routine laboratory examination. The patient is followed by the student from admission until discharge. Bedside clinics with discussions of the student's write-ups and differential diagnoses, as well as ward rounds are conducted daily. The basic science approach is correlated with the mechanisms of clinical disease. Scrubbing in the operating room is included. Special instruction in technique is a prerequisite to operating room participation. Instruction also includes surgical pathology and formal lecture periods in the surgical specialties. Formal lectures are presented in ophthalmology and otolaryngology. Required for third-year medical students.

480 Clinical Clerkships (*)**Baker, Duncan, Foltz, Harkins, McDonald, Merendino, Morris, Olson, Walker, Ward, Staff**

King County Hospital: Time is divided among the outpatient service departments of the divisional specialties of surgery, the emergency room, and the inpatient and outpatient services of the divisions of ophthalmology and otolaryngology. This experience is similar to office practice. The interview is conducted by the student; a review of the case and final recommendations are made by the student with staff supervision. U. S. Public Health Service Hospital: inpatient and outpatient service in general surgery, urology, neurosurgery, and orthopedics. Children's Orthopedic Hospital: orthopedics only, inpatient and outpatient. Madigan Army Hospital: ophthalmology and otolaryngology only. Doctors, Virginia Mason, and Swedish Hospitals: essentially inpatient, general surgery only. Required for fourth-year medical students.

497 Medical Students' Elective (*)**Staff**

Clinical: externship in anesthesiology, King County Hospital. Surgical externship at Virginia Mason, U. S. Public Health, Swedish, and Doctors Hospitals. Ophthalmology and otolaryngology only at Madigan Army Hospital. Orthopedics only at Children's Orthopedic Hospital.

Research: neurophysiological research; urology research; experimental animal surgery at Veterans Administration Hospital and medical school; orthopedics and anesthesiology research.

498 Undergraduate Thesis (*)**Staff****499 Undergraduate Research (*)****Staff****COURSES FOR GRADUATES ONLY****520 Seminar (5)****Harkins, Merendino**

Conferences, seminars, and round-table discussions of advanced surgical topics and recent literature in the field.

Conjoint 581, 582, 583, 584 Surgical Anatomy I, II, III, IV (4,4,4,4)**(See Conjoint Courses, page 68.)****590 Surgical Experimental Techniques (5)****Harkins, Merendino**

Basis for graduate research and advanced thesis work.

591 Applied Basic Sciences in Orthopedic Surgery (*)**Staff**

Lectures, demonstrations, and laboratory periods devoted to the application of anatomy, physiology, and pathology to clinical problems in orthopedic surgery.

594 Seminar in Orthopedic Surgery (*)**Staff**

Discussions of recent literature, experimental work, and relative clinical problems.

598 Seminar in Urology (*)**McDonald, Staff**

Problems in the field of urology discussed by various visiting members of the faculty of urology and of other departments to provide a well-rounded basic scientific and clinical presentation.

600 Research (*)**Foltz, Harkins, McDonald, Merendino, Morris, Payne, Ward, Staff****Thesis (*)****Staff**

ROSTER OF STUDENTS IN MEDICINE

CLASS OF 1957

- ADAMS, Neil Darius, Jr., Seattle
University of Washington
- AHLNESS, Paul Lien, Rhame, N.D.
B.A., Concordia College
University of North Dakota
- ALTIZER, Bentley Byron, Seattle
B.S., University of Washington
- ANDERSON, Albert Kenneth, Wenatchee
University of Washington
- ANDERSON, Robert Arthur, Yakima
Willamette University
- BAER, Duncan Theodore, Seattle
University of Washington
- BAILEY, Richard Jesse, Jr., Spokane
B.A., Princeton University
- BAIRD, Robert Alfred, Belle Fourche, S.D.
A.B., University of Colorado
University of South Dakota
- BAIRD, Theodore William, Belle Fourche,
S.D.
A.B., University of Colorado
B.S., University of South Dakota
- BARNER, Hendrick Boyer, Bremerton
University of Washington
- BECKER, Rolfe Allen, Seattle
B.A., University of Washington
- BENOIT, Fred Louis, III, Yakima
Seattle University
- BIRK, Thomas Conrad, Jr., Aberdeen
B.A., Whitman College
- CARTER, Robert Griffith, Alderson, W. Va.
B.S., Mount Union College
University of North Dakota
- CHIPMAN, Anna Henderson, Seattle
B.S., University of Washington
- COLE, Robert Elmer, Bridgeport, Conn.
University of Washington
- DAHL, Allen Wilbur, Seattle
B.S., University of Washington
- DAVENPORT, Bruce Nelson, Seattle
Seattle Pacific College
- DIVELBISS, Charles Levi, Seattle
B.A., University of Washington
- DLUGATZ, George, New York
B.A., University of Pennsylvania
University of Basel
- DOUGLASS, James Kirk, Seattle
Washington State College
- DUBEAU, Ray Adam, Seattle
Seattle University
- ELAM, Lloyd Charles, Seattle
B.S., Roosevelt (Chicago)
University of Washington
- ERICKSON, Delbert Lee, Everson
University of Washington
- GRINOLS, Donald Roy, Seattle
University of Washington
- HAMES, Ted Edward, Seattle
University of Washington
- HAMMAR, Sherrel Leyton, Caldwell
B.A., College of Idaho
- HARMON, Stanley Dale, Seattle
B.S., University of Washington
- HARTWIG, James Henry, Seattle
B.S., University of Washington
- HATHAWAY, Joseph Charles, Spokane
B.S., Northwestern
- HAYES, Jude Rodger, Edmonds
B.A., Marquette
University of Washington
- HENWOOD, Wesley Charles, Portland, Ore.
B.A., Reed College
- HERRINGTON, Robert Thomas, Spokane
B.S., The Citadel
- HOLMES, Frederick Franklin, Tacoma
College of Puget Sound
- HOLMES, Grace Foege, Colville
B.A., 1953, Pacific Lutheran College
- HOPFNER, Edward Anthony, Edmonds
University of Washington
- HOUGLUM, Oris Burton, Vancouver
B.S., University of Washington
- HOWRY, Cherie Lee Butts, Olympia
B.S., University of Washington
- HOY, William John, Seattle
University of Washington
- IRVING, Stanley Dale, Seattle
B.S., Washington State College
- JACK, Marious Kim, Spokane
B.S., University of Washington
- JOHNSON, Ted Dean, Seattle
University of Washington
- KAUTH, James Harold, Kennewick
B.A., Pacific Lutheran College
- KRAFF, Manus Coleman, Toppenish
B.A., University of Washington
- LARSON, Duane Ramon, Everett
University of Washington
- LARSON, Willard Alvin, Seattle
B.S., University of Washington
McGill University
- LAUDAN, John Carl Harold, Seattle
B.S., University of Washington
- LAVENSON, George Stanley, Jr., Seattle
University of Washington
- LEE, John, Spokane
B.A., University of Washington
- LLOYD, John Harold, Mitchell, S.D.
B.A., M.A., University of South Dakota
- LUNDH, Henrik Anker Bjerregaard, Seattle
University of Washington
- MAY, Karl Joseph, Jr., Chewelah
B.A., University of Washington
- McALLISTER, Clarence Orville, Jr., Seattle
University of Washington
- McGREAL, Robert Dana, Seattle
B.A., Washington State College
- McILROY, William, Port Townsend
Central Washington College of Education
- MOSEBAR, Robert Howard, Yakima
University of Washington
- RANNIGER, Dan Edward, Ellensburg
B.A., Central Washington College of
Education
- RATCLIFFE, Arthur Reeves, Seattle
B.S., University of Washington
- RICE, Orlin Warren, Bremerton
University of Washington
- RICHARDS, Eugene William, Seattle
B.A., University of Washington
- ROCKEY, Dean McDowell, Olympia
University of Washington
- ROSER, Donald Max, McCleary
B.S., Washington State College
- SCHEYER, William James, Seattle
B.B.A., University of Washington
- SCOTT, Clarence Melvin, Jr., Seattle
B.A., University of Washington
- SPADONI, Leon Richard, Gig Harbor
University of Washington
- TOONE, Cleedis Doyne, Seattle
B.A., University of Washington

TREMBLAY, Richard Emery, Seattle
B.S., University of Washington
TRIER, Jerry Steven, Seattle
University of Washington
VOGEL, John Henry Kenneth, Spokane
Gonzaga University

CLASS OF 1958

ALEXANDER, Haywood Lloyd,
Plainfield, N.J.
B.S., Shaw University
Howard University
ALKSNE, John Fergus, Palo Alto, Calif.
B.S., University of Washington
ANDERSON, Kenneth N., Seattle
B.S., University of Washington
BEATY, Harry N., Tacoma
University of Washington
BECKWITH, John B., Great Falls, Mont.
B.A., Whitman College
BENSON, Robert L., Seattle
University of Washington
CASSIDY, Patrick H., Bellingham
University of Washington
CHRISTOPHERSON, Alvin, Seattle
B.A., University of Washington
CONVERY, Frederick R., Chehalis
B.A., University of Washington
DANFORTH, Howard B., Seattle
University of Washington
DAVENPORT, Philip M., Wenatchee
B.A., Washington State College
DUNBAR, June H., Nome, Alaska
University of Colorado
DUNCAN, Elmore E., Mossyrock
B.A., Pacific Lutheran College
ELY, Neal E., Tacoma
B.S., Juilliard School of Music
M.A., Columbia University
College of Puget Sound
ERIE, Norman A., Billings, Mont.
B.S., College of Great Falls
FORD, William P., Seattle
B.S., University of Washington
GLEESON, Francis G., Longview
B.A., University of Washington
GOLLER, Vernon L., Seattle
B.A., University of Washington
GRAHAM, Charles A., Valleyford
B.S., Washington State College
University of Washington
GRAHAM, Clyde B., Jr., Richland
B.A., University of Illinois
HARDING, George T., Olympia
University of Washington
HARDY, Thomas C., Yakima
B.A., San Jose State College
Seattle University
HART, John C., Seattle
University of Washington
HORTON, Richard, Seattle
University of Washington
HUFFMAN, Philip, Seattle
B.S., University of Washington
JOHNSON, Dexter W., Bellingham
B.A., Western Washington College of
Education
JOHNSON, Ronald Lee, Tacoma
B.S., Seattle University
KEITH, Donald M., Seattle
B.A., Pacific Lutheran College
KLEINBERG, Henry, Seattle
B.A., University of Washington
KNIGHT, Lawrence, Loomis
University of Idaho

WADE, James Belknap, Seattle
B.A., Reed College
WOODS, Richard Henry, Seattle
B.S., Seattle University
LAGERBERG, Eugene V., Seattle
B.S., University of Washington
LANE, Katherine E., Bellingham
B.A., University of Denver
M.S., University of Chicago
LARSON, Roger K., Tacoma
B.A., Pacific Lutheran College
LARSON, Stuart M., Bremerton
B.S., University of Washington
LEBENZON, Albert B., Portland, Ore.
B.S. (Optics), Pacific University
LIUKANE, Juhan, Seattle
B.S., University of Washington
McALEXANDER, Robert A., Pullman
B.S., Washington State College
MEBUST, Winston K., Kalispell, Mont.
University of Washington
MEYER, Melvin, Seattle
B.A., Yale University
MITCHELL, Robert G., Burley, Idaho
B.S., University of Idaho
MONAHAN, James T., Mercer Island
University of Washington
MOSS, Norman W., Pullman
B.S., Washington State College
NEHRING, Charles H., Jr., Olympia
B.S., Washington State College
B.S., University of Washington
NORMAN, Allen C., Bremerton
B.A., University of Washington
NORTON, James J., Seattle
B.S., Oregon State College
OSTLUND, James A., Seattle
B.S., Seattle University
O'LANE, John M., Seattle
B.S., University of Washington
O'LEARY, Jay F., Tacoma
A.B., Harvard College
PARKER, Frank, Seattle
University of Washington
PARKER, Richard H., Seattle
B.S., University of Washington
PORTELANCE, Herbert J., Tahsis, B.C.,
B.A., University of Washington
REICHENBACH, Dennis, Billings, Mont.
B.S., University of Washington
RILEY, Patrick J., Seattle
B.S., Gonzaga University
ROBERTS, Richard W., Tacoma
B.S., Washington State College
ROGERS, Donald R., Tacoma
B.S., College of Puget Sound
ROLLMAN, Albert J., New York
B.S., Fordham University
Basel University
ROSCOE, Roderick T., Seattle
B.A., Whitman College
ROTOUS, Helen A., Aberdeen
University of Washington
SHAW, Spencer W., Seattle
B.S., University of Washington
SNYDER, Loretta A., Anchorage, Alaska
B.S., Washington State College
STAVNEY, Luthard S., Seattle
University of Washington

STUART, Ronald R., Seattle
B.S., University of Washington
THAL, Ben, Bellingham
B.A., University of Washington
THOMPSON, Douglas W., Centralia
B.S., Washington State College
TUCKER, Keith B., Seattle
University of Washington
VERHEY, Joseph W., Sunnyside
Seattle University

CLASS OF 1959

ALKSNIS, Zaiga, Chehalis
University of Washington
ANDERBERG, Merlyn L., Spokane
B.A., Reed College
ANDERSON, Richard P., Seattle
University of Washington
BALDECK, Eugene M., Lewiston, Idaho
B.S., University of Idaho
BIGELOW, John C., Bremerton
B.A., Washington State College
BIRKELAND, Ivar W., Bellevue
University of Washington
BOWEN, Dale A., Ellensburg
Washington State College
BOYETT, Harry L., Davis, Calif.
A.B., University of California
BURNETT, Leland, Seattle
Washington State College
CARLSTROM, Edward B., Blaine
B.S., University of Manitoba
CHIPMAN, Dennis C., Seattle
University of Washington
DERBY, Alfred J., Walla Walla
B.A., University of Washington
DYER, Betzabe Maria, Auburn, Calif.
B.A., University of California
EDDY, Roger C., Mercer Island
B.S., University of Washington
ELLINGHAM, Hayden, Yakima
B.A., Whitman College
ENGSTROM, Donald E., Seattle
University of Washington
FISHBACK, Malcolm E., Chehalis
B.S., Washington State College
D.V.M., Washington State College
FREDERICKS, Richard, Helena, Mont.
Montana State University
Montana State College
FREEMAN, Melvin I., Seattle
University of Washington
FULLINGTON, Frank F., Bremerton
B.A., University of Washington
GAISER, Donald F., Vancouver
B.A., Clark College
University of Washington
GORAI, Arthur S., Pasadena, Calif.
B.S., University of Nebraska
M.S., Harvard University
GRAY, Gary M., Seattle
B.S., Seattle University
GUDBRANDSEN, Cato B. O., Norway
B.A., Pacific Lutheran College
HANSON, David, Medimont, Idaho
B.S., University of Washington
HART, James E., Malaga
B.A., University of Washington
HARVEY, Emerson, Jr., Spokane
B.S., University of Oregon
HAYDEN, Daniel T., Zenith
B.S., University of Washington
Ph.D., University of Washington
WEBB, Vivien, Edmonds
B.S., University of Washington
WHITENACK, Donald C., Vancouver
B.S., University of Washington
WILSON, Wayne R., Jr., Ellensburg
B.S., University of Washington
WYNIA, Robert E., Poplar, Montana
B.A., University of Washington
HOFFMAN, Roger, Snohomish
B.A., Whitman College
HOLLINGSWORTH, Kennan H., Bothell
University of Washington
JONES, Myles Channing, Seattle
University of Washington
KIRK, Richard A., Helena, Mont.
Hiram College
Montana State College
KJAER, George, Seattle
B.A., University of Washington
KO, Janie Ching-Yin, Kdbajeran, Djakarta,
Indonesia
B.S., Whitworth College
LAFONT, Harold L., Walla Walla
B.A., Whitman College
LEIDIG, Raymond, Seattle
University of Washington
LEWIS, Robert M., Bellevue
B.A., University of Washington
LING, Shun Mei, Tacoma
B.S., B.S. (Public Health),
University of Washington
LONN, Lawrence I., Seattle
University of Washington
MACK, Robert M., Seattle
A.B., Oberlin College
MAHNKE, James, Walla Walla
A.B., Harvard College
MATOVICH, John P., Kellogg, Idaho
B.S., University of Idaho
McINTYRE, David J., Bellingham
University of Washington
MEDLICOTT, William J., Mt. Vernon
B.B.A., University of Washington
MINARD, James G., Spokane
B.S., Whitworth College
MOE, Roger E., Brainerd, Minn.
B.S., University of Washington
MORNINGSTAR, Douglas, Seattle
B.A., Yale University
MURPHY, Gerald P., Seattle
B.S., Seattle University
NELSON, James R., Kirkland
B.A., University of Washington
NICHOLSON, Henry R., Parkland
B.A., Pacific Lutheran College
NOBLE, Richard E., Spokane
B.A., Gonzaga University
O'NEILL, Sally Jo, Seattle
University of Washington
PAULSEN, Suzanne M., Seattle
B.S., University of Washington
PETERSON, Wilbur R., Fall City
University of Washington
RAMUS, Nickolas G., Spokane
B.A., Eastern Washington College of
Education
SCHENK, Eric A., Seattle
B.S., University of Connecticut
M.S., University of Washington

SCHOPER, Glenn W., Montpelier, Idaho
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SCHWINDT, Walter D., Castle Rock
Pacific Lutheran College
SCOTT, Clifford R., Seattle
University of Washington
SIDELL, Sheldon, Seattle
B.S., University of Washington
SILBERMAN, Stanford J., Spokane
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STARCEVICH, George T., Renton
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STRIKER, Gary E., Seattle
University of Washington
STRUNK, Stanley, Tacoma
University of Washington
STURMAN, Melvin J., Everett
University of Washington
SWANSON, William H., Seattle
B.S., University of Washington

TAYLOR, Ronald E., Everett
University of Washington
TEMPLIN, David W., Helena, Mont.
B.S., Wheaton College
THOM, Theodore E., Opportunity
University of Washington
THORSON, Richard D., Bremerton
B.A., Whitman College
TINLING, David, Seattle
University of Washington
TOOTHAKER, Joel H., Centralia
B.A., B.A. (Arch.), University of
Washington
WIGHTMAN, Bruce K., Seattle
B.S., University of Washington
WILSKE, Kenneth R., Nampa, Idaho
College of Idaho
WILSON, Wesley W., Sunnyside
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B.S., University of Washington
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Ancker Hospital, St. Paul, Minn.
ANDERSON, Arthur Alexander, Jr.,
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B.S., University of Washington
Indianapolis General Hospital,
Indianapolis, Ind.
ANDERSON, Arthur Melvin, Seattle
B.S., University of Washington
Johns Hopkins Hospital, Baltimore, Md.
BALYEAT, George Edward, Kelso
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Memorial Hospital, Phoenix, Ariz.
BARTH, Grant Dean, Opportunity
B.A., University of Washington
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BROOKS, Thomas Pidduck, Anacortes
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CAREY, Thomas Francis, Jr., Seattle
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King County Hospital System, Seattle
CASE, Austin McLain, Seattle
B.A., Stanford University
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COON, Duane Afton, Sitka, Alaska
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Tacoma General Hospital, Tacoma
COTTINGTON, Gordon Malcolm, Honolulu
B.S., Bethany College
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B.S., University of Washington
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DAHL, Arne, Bellingham
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DALE, Howard Marion, Grand Forks, N.D.
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B.S., University of Washington
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B.A., Stanford University
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Methodist Hospital, Brooklyn, N.Y.
KATZNELSON, Gordon, Vancouver, B.C.
University of British Columbia
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Cincinnati, Ohio
- KELLER, Marcia Marie, Redmond
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- LARSON, Wyllis G., Sisseton, S.D.
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- LAYTON, Richard Howard, Seattle
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City Detroit Receiving Hospital,
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- MAAS, Louis Phillip, Pullman
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- MANIRE, John Emmett, Seattle
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- MANSY, Alexander William, Seattle
B.S., University of Washington
Doctors Hospital, Seattle
- MARTINIS, Andrew John, Everett
B.S., University of Washington
King County Hospital System, Seattle
- MERRILL, Clinton Franklin, Harrah
B.A., Linfield College
Virginia Mason Hospital, Seattle
- MINOR, Ralph Hugh, Monroe
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Philadelphia General Hospital,
Philadelphia, Penn.
- MOLONEY, Eugene Ira, Seattle
Seattle University
Providence Hospital, Seattle
- NOTHSTEIN, Donald Lou, Tacoma
B.A., Pacific Lutheran College
U.S.P.H.S. Hospital, Baltimore, Md.
- NUTLEY, Eugene Arthur, Seattle
B.A., University of Washington
Providence Hospital, Seattle
- OLSON, Lloyd Laues, Langford, S.D.
University of South Dakota
St. Joseph's Hospital, St. Paul, Minn.
- PALMER, Marguerite Louise, Deer Park
B.S., Seattle Pacific College
Charity Hospital, New Orleans, La.
- PATON, Richard Reid, Cashmere
B.S., University of Washington
Massachusetts Memorial Hospital,
Boston, Mass.
- PEARSON, Roger Warren, Seattle
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Indianapolis General Hospital,
Indianapolis, Ind.
- PETERSON, Malcolm Lee, Bremerton
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Philadelphia General Hospital,
Philadelphia, Penn.
- REEBS, Frederick William, Fairbanks,
Alaska
B.S., University of Washington
Los Angeles County General Hospital,
Los Angeles, Calif.
- SCHER, Maryonda Edmonstone, Seattle
B.S., University of Washington
Virginia Mason Hospital, Seattle
- SENZ, Keith Melvin, Port Angeles
University of Washington
Pierce County Hospital, Tacoma
- SHIELDS, John Paul, Jr., Gardiner, Mont.
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- SHIELDS, John Riley, Seattle
B.S., University of Chicago
University Hospital, Cleveland, Ohio
- SHULL, Thomas Earl, Moscow, Idaho
B.S., University of Idaho
Hartford Hospital, Hartford, Conn.
- SIDELL, Alvin Donald, Seattle
B.S., University of Washington
Charity Hospital, New Orleans, La.
- SKALLEY, Thomas Waldo, Everett
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- VANDENBERG, James Joseph, Seattle
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- AUERSPERG, Nelly Gutmann,
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Vancouver, B.C.
- BACHMAN, Lester Bruce, Missoula, Mont.
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- BARCLAY, David Lewis, Seattle
University of Washington
Baltimore City Hospital, Baltimore, Md.
- BARDARSON, Baird Milton, Seattle
University of Washington
Los Angeles County General Hospital,
Los Angeles, Calif.
- BARRETT, John Edgar, Concrete
University of Washington
William Beaumont Hospital,
El Paso, Texas
- BILSTEN, George Bonaventura, Seattle
B.A., University of Wisconsin
Jefferson-Hillman Hospital,
Birmingham, Ala.
- BLOOMSTROM, Albert Duane, Seattle
B.S., University of Washington
Tacoma General Hospital, Tacoma
- BUNCH, Stephan Andrew, Yakima
B.A., Yale University
St. Louis City Hospital, St. Louis, Mo.
- CARLSON, Dennis Gordon, Seattle
University of Washington
Strong Memorial Hospital,
Rochester, N.Y.
- COOKE, Shirley Ann, Seattle
B.A., University of Washington
Los Angeles County General Hospital,
Los Angeles, Calif.
- ELANDER, Carl Richard, Seattle
University of Washington
William Beaumont Hospital,
El Paso, Texas
- FAIRFAX, George Taylor, Puyallup
B.S., College of Puget Sound
U.S. Naval Hospital, Oakland, Calif.
- FARRELL, Dennis Herbert, Seattle
B.S., University of Washington
Baltimore City Hospital, Baltimore, Md.
- FITHIAN, Robert Arthur, Anacortes
B.S., University of Washington
King County Hospital System, Seattle
- FLANNIGAN, Fredric Cecil, Puyallup
B.A., M.A., University of Washington
Pierce County Hospital, Tacoma
- FLUVOG, Phillip Ernest, Barton, N. D.
B.A., University of California
B.S., University of North Dakota
Swedish Hospital, Seattle
- GAMES, Jack Edward, Seattle
University of Washington
St. Elizabeth's Hospital, Washington, D.C.
- GEORGE, Justus Winfred, Caldwell, Idaho
College of Idaho
St. Louis City Hospital, St. Louis, Mo.
- GRIFFIN, Arthur Russell, Seattle
University of Washington
Minneapolis General Hospital,
Minneapolis, Minn.
- GRIFFIN, James Trenholme, Seattle
University of Washington
Denver General Hospital-University of
Colorado, Denver, Colo.
- GUNSUL, Alan Lane Webster, Seattle
Seattle University
Doctors Hospital, Seattle
- HEGSTROM, Robert Marvin, Seattle
University of Washington
Bellevue Hospital, New York, N.Y.
- KARPELES, Leo Maurice, Washington,
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Johns Hopkins University
Albany Hospital, Albany, N.Y.
- KELSCH, Walter Daryl, Billings, Mont.
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B.S., University of North Dakota
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- KIDD, Kenneth Laverne, Port Townsend
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Los Angeles, Calif.
- KING, Harold Eugene, Seattle
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Cleveland City Hospital, Cleveland, Ohio
- KUMASAKA, Yukio, Seattle
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King County Hospital System, Seattle
- LANE, James Joseph, Jr., Three Forks,
Mont.
B.S., Northwestern University
University Hospital of Cleveland,
Cleveland, Ohio
- LAVIOLETTE, Rodney Melvin, Seattle
University of Washington
General Hospital of Fresno County,
Fresno, Calif.
- LEE, Eldon Edward, Seattle
Seattle Pacific College
Vancouver General Hospital,
Vancouver, B.C.
- LEIN, John Nave, Spokane
B.S., University of Idaho
Indiana University Medical Center,
Indianapolis, Ind.
- MAGOON, Carl Chatman, Seattle
B.S., Aurora College
Indianapolis General Hospital,
Indianapolis, Ind.
- MARK, John Sui Tahn, Honolulu
University of Washington
University of Chicago Clinics,
Chicago, Ill.
- MCGLYNN, Lynn Douglas, Sidney, Mont.
B.A., Montana State University
Veterans Administration Hospital,
Houston, Texas
- MCGUINNESS, Donald Lee, Yakima
Stanford University
Cincinnati General Hospital,
Cincinnati, Ohio
- MCNEALEY, Donald Eddins, Kelso
University of Washington
King County Hospital System, Seattle
- MEHAFFEY, Janet Luschei, Spokane
B.S., University of Washington
King County Hospital System, Seattle
- MOLINERO, Donald Peter, Roslyn
B.A., University of Washington
Pierce County Hospital, Tacoma
- MORTON, William Edwards, Seattle
College of Puget Sound
Doctors Hospital, Seattle
- MULLEN, Marr Parker, Seattle
B.A., Dartmouth College
King County Hospital System, Seattle
- MURPHY, Francis John, Jr., Seattle
Seattle University
District of Columbia General Hospital,
Washington, D.C.
- NEAL, Richard King, Jr., Seattle
University of Washington
University of Minnesota Hospital,
Minneapolis, Minn.
- NISCO, Frank Samuel, Seattle
B.A., Rutgers University
Providence Hospital, Seattle
- NIXON, John Elliott, Seattle
B.S., University of Washington
Los Angeles County General Hospital,
Los Angeles, Calif.
- ORTH, Rodney Davis, Spokane
B.A., Whitman College
Vanderbilt University Hospital,
Nashville, Tenn.

- PETERSEN, Walter Connell, Seattle
University of Washington
Kings County Hospital, Brooklyn, N.Y.
- PHIBBS, Clifford Matthew, Jr., Sumner
Washington State College
Ancker Hospital, St. Paul, Minn.
- POAGE, Donald Ellis, Tacoma
B.S., College of Puget Sound
U.S.P.H.S. Hospital, San Francisco,
Calif.
- POSNER, Jerome Beebe, Seattle
University of Washington
King County Hospital System, Seattle
- PRINCE, Cyrus Edward, Jr., Tacoma
B.A., Western Washington College of
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M.A., University of Kansas
U.S.P.H.S. Hospital, Seattle
- ROHRBACKER, Donald Max, Yakima
Linfield College
Indianapolis General Hospital,
Indianapolis, Ind.
- SALMON, Peter Alexander, Victoria, B. C.
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University of Minnesota Hospital,
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- SAMPLE, Donald William, Seattle
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District of Columbia General Hospital,
Washington, D.C.
- SASAKI, Edwin Hideo, Seattle
B.S., University of Washington
King County Hospital System, Seattle
- SHELDON, William Barnard, Seattle
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U.S.P.H.S. Hospital, New York, N.Y.
- SHERRY, Robert Arnold, Seattle
University of Washington
University of Chicago Clinics, Chicago, Ill.
- SIMMONDS, Joe Beachley, Otis Orchards
Creighton University
Deaconess Hospital, Spokane
- SMITH, Mackenzie, Seattle
B.A., University of Washington
Baltimore City Hospital, Baltimore, Md.
- SMITH, Patricia Marie, Seattle
B.S., Seattle University
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Cincinnati, Ohio
- SNYDER, Joseph, Tacoma
B.S., College of Puget Sound
University of Minnesota Hospital,
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- SOSS, Siedell Lawrence, Spokane
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San Francisco Hospital-
Stanford University, San Francisco,
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- THRUPP, Lauri David, Seattle
B.A., Stanford University
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- TRANTOW, John William, Kelso
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- TURNER, Leslie Dean, Seattle
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- VOYNOW, Robert Bernard, Kew Gardens,
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Louisville General Hospital,
Louisville, Ky.
- WALKER, Vern Neil, Seattle
University of Washington
U.S. Naval Hospital, San Diego, Calif.
- WIEGERT, Henry Thomas, Seattle
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- WOLFE, William Jackson, Seattle
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- ADAMS, Betty Kathleen, Moses Lake
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- BEALE, David Alan, Spokane
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Madigan Army Hospital, Ft. Lewis
- BEALL, Joseph Hilary, Jr., Wenatchee
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King County Hospital System, Seattle
- BOWMAN, Howard Randolph, Naches
B.S., College of Puget Sound
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Pierce County Hospital, Tacoma
- BREMNER, James Douglas, Lynden
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U.S.P.H.S. Hospital, Staten Island, N.Y.
- BRIDGE, Mary Frances, Seattle
B.A., Stanford
B.S., University of Washington
Emanuel Hospital, Portland, Ore.
- BROWN, Harold Wendell, Eugene, Ore.
B.S., College of Idaho
University of Oregon
Bellevue Hospital-New York University,
New York, N.Y.
- BROWN, Leo Richard, Seattle
University of Washington
U.S. Naval Hospital, Bremerton
- BURKHARDT, Garfield Fred, Tacoma
B.S., College of Puget Sound
University of Washington
Kings County Hospital, Brooklyn, N.Y.
- BURNS, Robert Milton, Seattle
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San Francisco Hospital, University of
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- CARNEY, Robert Emmett, Mt. Vernon
University of Washington
Bellevue Hospital-Columbia Medical
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- CHAPMAN, Niles Daniel, Butte, Mont.
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- CORPRON, Douglas Ogden, Yakima
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Texas Christian University
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- CREWDSON, Frank Roy, Jr., Olympia
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- DAVIS, Hal Walter, Pocatello, Idaho
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Salt Lake County General Hospital,
Salt Lake City, Utah
- DEAN, Orval, Colbert
Whitworth College
St. Luke's Hospital, Spokane

- DEGROOT, Lambert, Everett
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Santa Clara County Hospital,
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B.A., University of British Columbia
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- EVANS, Thomas Oscar, Spokane
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University of Minnesota Hospitals,
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- EWY, Vincent Owre, Seattle
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Mercy Hospital, San Diego, Calif.
- EYER, Kenneth Moore, Seattle
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- FARNHAM, Norman Gardner, Payette,
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- FULLINGTON, Warren Richard,
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- GABRIELSEN, Trygve Olav, Seattle
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- GUENTHER, Dean Edward,
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Colorado General Hospital-University of
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- HOFFMAN, Gerhard Heinz, Snohomish
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- HOLCOMB, Fred Duane, Kelso
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- HOLLOWAY, Jonathan Aldrich, Seattle
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- LARSON, Vernon Oscar, Palouse
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U.S.P.H.S. Hospital, New Orleans, La.
- LICHTY, Lloyd Real, Seattle
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U.S. Naval Hospital, Bremerton
- LIMBECK, George Andrew, Seattle
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Charity Hospital, New Orleans, La.
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- NELSON, Melvin Hilding, Everett
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Detroit Receiving Hospital, Detroit, Mich.
- OLIPHANT, Manford Merle, Jr., Chehalis
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- PYFER, Howard Richard, Seattle
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- RANDOLPH, Ernest LeRoy, Parkland
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- ROBERG, Elizabeth Ann, Yakima
University of Washington
Salt Lake County General Hospital,
Salt Lake City, Utah
- ROWE, Marvin, Seattle
University of Washington
U.S.P.H.S. Hospital, San Francisco,
Calif.
- SHAW, Russell Laverne, Seattle
B.S., University of Washington
St. Louis City Hospital, St. Louis, Mo.
- SMITH, Edward Alan, Spokane
B.A., Stanford
Gonzaga University
Temple University Hospital,
Philadelphia, Penn.
- STAVIG, Darrell Elwood, Seattle
University of Washington
King County Hospital System, Seattle
- STEWART, Charles Henry, Ellensburg
Harvard College
Philadelphia General Hospital,
Philadelphia, Penn.

SYMONDS, Frank Bruce, Anacortes
B.A., Western Washington College
of Education
St. Louis City Hospital, St. Louis, Mo.
VIRAK, Roy Harold, Bonners Ferry, Idaho
B.A., Pacific Lutheran College
U.S.P.H.S. Hospital, Seattle
WATANABE, James Michio, Seattle
B.A., University of Washington
Charity Hospital, New Orleans, La.
WELLER, Forestine LaDonna,
Vermillion, S.D.
B.S., University of South Dakota
Providence Hospital, Seattle

WILLIAMS, Buerk, Walla Walla
B.A., Whitman College
University Hospital and Hillman Clinic,
Birmingham, Ala.
WILLIAMSON, Robin A., Seattle
B.S., Washington State College
San Diego County General Hospital,
San Diego, Calif.
WONG, Kenneth Gen, Seattle
B.S., University of Washington
Madigan Army Hospital, Ft. Lewis
WYNNE, Garnet Francis, Jr., Havre, Mont.
University of Minnesota
Tripler Hospital, Honolulu, T.H.

ROSTER OF STUDENTS IN MEDICAL TECHNOLOGY

CLASS OF 1957

DEAN, Mary B., Seattle
EATON, Janet L., Idaho Falls, Idaho
FORTIN, Patricia, Seattle
LOE, Mary E., Seattle
MORGAN, Audrey C., Sedro Woolley
NOLAN, Eve, Spokane

PUGH, Joan, Everett
RELLING, Pearl, Seattle
THOMPSON, Shirley, Seattle
TOSCHI, Joyce Takako, Seattle
WEIRMAC, Susan R., Seattle

CLASS OF 1956

BEAUDREAU, Olive Lee, Seattle
KAYLOR, Grace Le Vesconte, Ellensburg
LODEN, Betty Mae, Eatonville
McGOWAN, Betty Woodward, Seattle

McLENNAN, R. Marlene, Everett
OTOSHI, Marianne S., Seattle
ULBRIGHT, Anne Libby, Hoquiam
UYEDA, Fuzako, Tacoma

Degree of Bachelor of Science in Medical Technology Conferred

CLASS OF 1955

BOSTAIN, Gilbert O., Seattle
HARVEY, Violet Mildred, Arlington
HERRINGTON, Barbara L., Seattle
RIGGS, Shirley Mae, Wapato

RYNO, Joan Weidemann, Seattle
SPEARMAN, Irene M., Seattle
WARASHINA, Emily, Spokane
WHITE, Shirley E., Shelton

CLASS OF 1954

BURKHARDT, Joan Rowland, Tacoma
MIYAZAKI, Julianne, Seattle

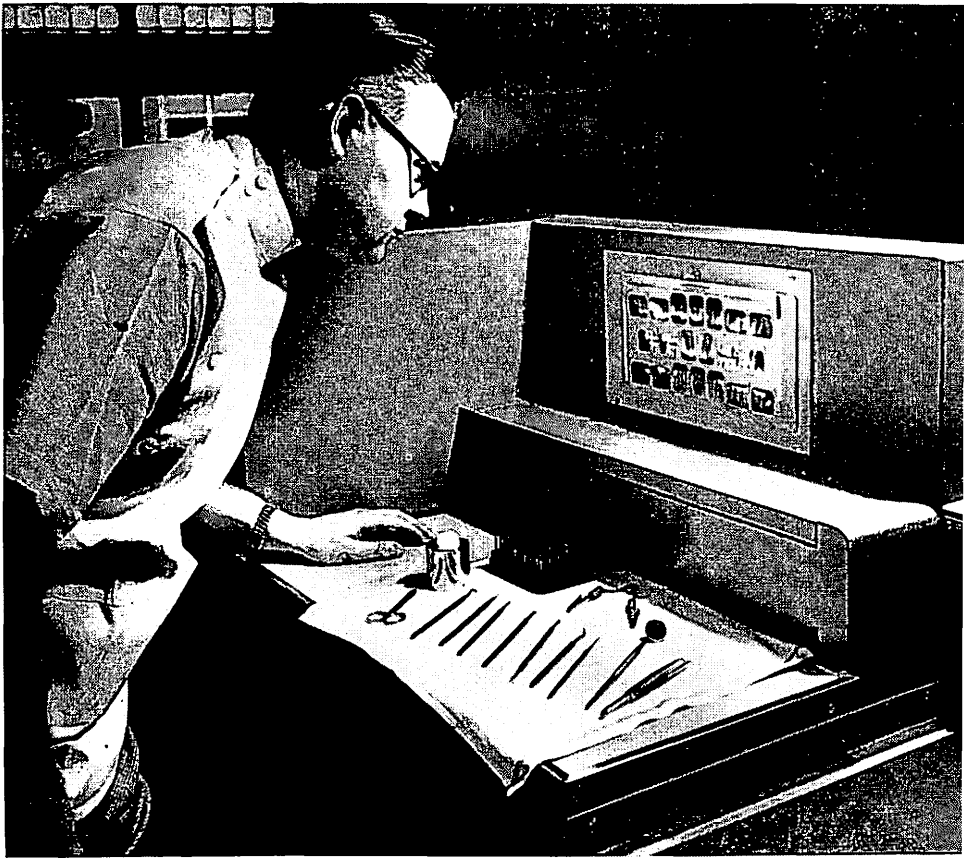
OLSON, Bonnie J., Seattle
TSALAKY, Magdaline, Seattle

CLASS OF 1953

SABOE, Nancy Donaldson, Seattle

CLASS OF 1952

WONG, Peggy, Seattle



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.); graduate programs leading to the Master of Science degree; and courses for practicing dentists. The four-year curriculum consists of all the courses given in ten departments of the School, plus related courses in the Basic Medical Sciences Departments of the School of Medicine. The Department of Dentistry offers courses for graduate dentists only, and the Department of Dental Hygiene, which has separate admission and graduation requirements (see page 99), offers a curriculum leading to the degree of Bachelor of Science.

The objective of the School of Dentistry is to prepare a selected group of students for the practice of dentistry by using the best educational techniques in this field.

The School of Dentistry is approved by the Council on Dental Education of the American Dental Association and by the American Association of Dental Schools.

ADMISSION

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 descriptions given in the *College of Arts and Sciences Bulletin*.

QUARTER CREDITS	
English 101, 102, 103 (Composition).....	9
Chemistry 111, 112, 113 (General and Qualitative Analysis)	15
or	
Chemistry 115, 116 (General and Qualitative Analysis) and	
5 additional quarter credits in chemistry.....	15

Chemistry 231, 232, 241, 242 (Organic).....	10
Physics 101, 102, 103, 107, 108, 109 (General).....	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 predental 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.

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*. On or before 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. Official transcript of previous college record (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; and (c) credit granted for high school study.
3. Two unmounted recent photographs (2 by 2 inches).
4. At least three letters of recommendation, one from a science instructor and two from business or professional people.

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.

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.

PERSONAL INTERVIEW. If an examination of the credentials shows them to be satisfactory, the candidate will be requested to appear for a personal interview. A personal interview will not be requested if the credentials are not satisfactory or if application material is incomplete. Interviews are held at the School of Dentistry by members of the Committee on Admissions.

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.

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. 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.

At the end of each academic year the Executive Committee of the School of Dentistry evaluates the accomplishment 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.

TUITION AND FEES

All tuition and fees are payable at the time of registration. A table of charges for dentistry and dental hygiene students is on page 90. The University reserves the right to change any of its fees without notice.

SPECIAL FEES

From \$2.00 to \$5.00 is charged for late registration; \$2.00 for each change of registration; \$5.00 for a late medical examination; and \$1.00 for a late X ray. The fee for a special examination is \$1.00; for an advanced-credit examination, \$2.00 per credit; and for removal of an Incomplete, \$2.00.

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

TRANSCRIPT FEE. One transcript is furnished without charge; 50 cents is charged for each additional copy. Supplementary transcripts are 25 cents each.

TRANSFER EXAMINATION FEE. Students transferring to the School of Dentistry from other dental schools pay a fee of \$10.00.

DIPLOMA FEES. The fee for the Doctor of Dental Surgery diploma is \$10.00. The fee for the Master of Science in Dentistry diploma is \$5.00.

CERTIFICATE FEE. The fee for a certificate in restorative dentistry, orthodontics, or pedodontics is \$5.00.

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.

TEXTBOOKS AND INSTRUMENTS

Textbooks to be used in first-year courses in dentistry are assigned at the first meeting of classes. The estimated cost of textbooks for the first year is \$102, and instruments will cost about \$385. Approximate second-year costs will be \$105 for

TUITION AND FEES FOR STUDENTS OF DENTISTRY AND DENTAL HYGIENE**AUTUMN QUARTER**

<i>Class</i>	<i>Tuition</i>	<i>Incidental Fee</i>	<i>ASUW Fee</i>	<i>Microscope Rental*</i>	<i>Dental Engine Rental*</i>	<i>Laboratory Case Rental</i>	<i>Total</i>
FRESHMAN—Resident....	\$100.00	\$27.50	\$8.50	\$7.00	....	\$2.50	\$145.50
Nonresident..	165.00	52.50	8.50	7.00	....	2.50	235.50
SOPHOMORE—Resident....	100.00	27.50	8.50	7.00	3.50	2.50	149.00
Nonresident	165.00	52.50	8.50	7.00	3.50	2.50	239.00
JUNIOR—Resident.....	100.00	27.50	8.50	7.00	3.50	2.50	149.00
Nonresident.....	165.00	52.50	8.50	7.00	3.50	2.50	239.00
SENIOR—Resident.....	100.00	27.50	8.50	....	3.50	2.50	142.00
Nonresident.....	165.00	52.50	8.50	....	3.50	2.50	232.00
GRADUATE—Resident....	100.00	27.50	8.50	....	3.50	....	139.50
Nonresident..	165.00	52.50	8.50	....	3.50	....	229.50
DENTAL HYGIENIST (Junior)—Resident.....	100.00	27.50	8.50	3.50	....	....	139.50
Nonresident..	165.00	52.50	8.50	3.50	....	....	229.50
DENTAL HYGIENIST (Senior)—Resident.....	100.00	27.50	8.50	....	....	....	136.00
Nonresident..	165.00	52.50	8.50	....	....	....	226.00

WINTER QUARTER

FRESHMAN—Resident....	\$100.00	\$27.50	\$8.50	\$7.00	\$3.50	\$2.50	\$149.00
Nonresident..	165.00	52.50	8.50	7.00	3.50	2.50	239.00
SOPHOMORE—Resident....	100.00	27.50	8.50	7.00	3.50	2.50	149.00
Nonresident	165.00	52.50	8.50	7.00	3.50	2.50	239.00
JUNIOR—Resident.....	100.00	27.50	8.50	....	3.50	2.50	142.00
Nonresident.....	165.00	52.50	8.50	....	3.50	2.50	232.00
SENIOR—Resident.....	100.00	27.50	8.50	....	3.50	2.50	142.00
Nonresident.....	165.00	52.50	8.50	....	3.50	2.50	232.00
GRADUATE—Resident....	100.00	27.50	8.50	....	3.50	....	139.50
Nonresident..	165.00	52.50	8.50	....	3.50	....	229.50
DENTAL HYGIENISTS— (Junior & Senior) Resident.....	100.00	27.50	8.50	....	....	....	136.00
Nonresident.....	165.00	52.50	8.50	....	....	....	226.00

SPRING QUARTER

FRESHMAN—Resident....	\$100.00	\$27.50	\$8.50	\$7.00	\$3.50	\$2.50	\$149.00
Nonresident..	165.00	52.50	8.50	7.00	3.50	2.50	239.00
SOPHOMORE—Resident....	100.00	27.50	8.50	7.00	3.50	2.50	149.00
Nonresident	165.00	52.50	8.50	7.00	3.50	2.50	239.00
JUNIOR—Resident.....	100.00	27.50	8.50	7.00	3.50	2.50	149.00
Nonresident.....	165.00	52.50	8.50	7.00	3.50	2.50	239.00
SENIOR—Resident.....	100.00	27.50	8.50	....	3.50	2.50	142.00
Nonresident.....	165.00	52.50	8.50	....	3.50	2.50	232.00
GRADUATE—Resident....	100.00	27.50	8.50	....	3.50	....	139.50
Nonresident..	165.00	52.50	8.50	....	3.50	....	229.50
DENTAL HYGIENISTS— (Junior & Senior) Resident.....	100.00	27.50	8.50	....	....	....	136.00
Nonresident.....	165.00	52.50	8.50	....	....	....	226.00

SUMMER QUARTER

GRADUATE—Resident and Nonresident..	\$100.00	\$27.50	\$2.50	\$3.50	\$133.50
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*Subject to change.

NOTE: Veterans should refer to pages 39-40 and 46-47.

books and \$700 for instruments and supplies; third year, \$67 for books, \$250 for instruments and supplies; fourth year, \$60 for books, \$35 for instruments and supplies.

CLASS SCHEDULES

The School of Dentistry operates on the quarter system of the University. There are three eleven-week quarters in the school year.

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 99).

BACHELOR OF SCIENCE IN BASIC MEDICAL SCIENCE. This degree may be taken at the end of the first year in the School of Dentistry by students who have completed at least the third year of predental training and the first year of the dental course at the University of Washington and have a grade-point average of at least 2.50 in college and Dental School combined. Students who wish to qualify for this degree must have completed University requirements for graduation as well as the requirements of the college and department in which the three years of predental work were taken.

Requirements for this degree are described in the *College of Arts and Sciences Bulletin*. Applications should be sent to Prof. Richard Snyder, Predental Adviser, 121 Miller Hall.

MASTER OF SCIENCE IN DENTISTRY. Work leading to this advanced degree is offered, in accordance with the requirements of the Graduate School, in the fields of orthodontics, pedodontics, and restorative dentistry. Students who intend to work toward this degree should obtain an announcement of graduate and postgraduate courses from the Director of Postgraduate Dental Education in the School of Dentistry. Specific requirements for admission to candidacy for an advanced degree are given in the *Graduate School Bulletin*.

CERTIFICATE IN ORTHODONTICS, PEDODONTICS, OR RESTORATIVE DENTISTRY. Course requirements for these certificates are the same as those for the Master of Science, except that the programs are not supervised by the Graduate School and the thesis requirement is waived.

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.

POSTGRADUATE DENTAL EDUCATION

A number of short, intensive, one-week and two-week as well as more extensive courses are offered from time to time in each of the special areas of dentistry.

DENTAL MATERIALS

Executive Officer: HERBERT L. GASKILL, B122 Health Sciences Building

The Department of Dental Materials offers instruction in the physical and chemical properties and manipulation of the materials used in dentistry.

COURSES

131, 132 Dental Materials (3,3)

Gaskill, Staff

Physical and chemical properties of dental materials.

DENTAL SCIENCE AND LITERATURE

Executive Officer: 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 and the critical point of view in the field.

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)

Staff of the Schools of Dentistry and Medicine

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 public speaking.

400, 401, 402 Applied Dental Science (1,2,2)

Staff of the Schools of Dentistry

and Medicine

Correlation of preclinical basic medical science and other preclinical study with clinical procedures and requirements. New findings and practices are submitted so that senior students may utilize such information.

403 Jurisprudence (1)

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, equipment, and personnel; records; patient-dentist business relationships; credit, collections, and fees; accounting, insurance, and investments; buying materials; Code of Ethics of the American Dental Association.

DENTISTRY

Executive Officer: ALTON W. MOORE, B337 Health Sciences Building

The courses listed here are for graduate 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

- 500-501 Advanced Oral Histology, Pathology, and Embryology (2-2)** Ingle, Ogilvie, Thomas
Lectures and seminar discussions on the details of development, histology, and pathology of cranial, facial, and oral structures, with emphasis on clinical application of basic knowledge. (Department of Periodontology)
- 510 Applied Osteology and Myology of the Head and Neck (2)** Moore, Riedel
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)** Bolton, Moore, Takano
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 studies of the head; 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)
- 521 Applied Dental Nutrition (1)** Hileman
Lectures and seminar discussions on pathogenesis, pathology, and clinical signs of nutritional deficiencies; functions of the essential nutrients; value of clinical laboratory tests. Practical qualitative and quantitative diet analysis is performed. (Department of Periodontology)
- 522 Dental Caries Control (2)** Law, Staff
Seminar on etiology and control of dental caries. Discussion based on assigned reading on physiology, composition of saliva, chemical composition of the teeth, oral microbiology, degradation of carbohydrates, systemic factors in the caries process, fluorides, enzyme inhibitors, and caries susceptibility tests. (Department of Pedodontics)
- 523 Public Health Dentistry (1)** Hoffman
- 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)** Stibbs, 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)** Stibbs, Staff
Metallography of cast metals; physical properties of waxes and investments. Control of shrinkage. Interrelationships of physical properties of metals and physiology of oral tissues; thermal conductivity and pulpal response; galvanism; tissue tolerance in respect to various metals. Direct and indirect technics. Principles of cavity preparation that apply specifically to cast restorations. (Department of Fixed Partial Dentures)
- 583 Reproduction of Oral Tissues (4)** Austin, Young
A seminar-laboratory-clinic in the various needs for reproduction of oral tissues in restorative dentistry. Physical requirements of various types of restoration; routines, materials, and equipment used; tissue responses to physical and functional stimuli. (Department of Prosthodontics)

FIXED PARTIAL DENTURES

Executive Officer: GERALD D. STIBBS, B404 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)** Mahan, Staff
Fixed partial denture fundamentals; construction of selected cases on technic models.
- 234, 235 Ceramic Technic (2,2)** Smith, Staff
Introduction to dental ceramics; technic assignments in production of porcelain inlays and porcelain veneer crowns.
- 300, 301, 302 Fixed Partial Dentures (1,1,1)** Guthrie
Lectures on various phases of typical crown and fixed partial denture construction.
- 346 Clinical Crowns and Fixed Partial Dentures (5)** Stibbs, Staff
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)**Hagen, Stibbs**

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)**Stibbs, Staff**

Continuation and advancement of clinical experience, including clinical ceramics, with treatment of more difficult clinical cases under close supervision.

COURSES FOR GRADUATES ONLY**561 Abutments and Distribution of Masticatory Stresses (4)****Stibbs, Staff**

Tissue responses of bone and periodontal membrane to increased masticatory loads; physical principles involved in replacements in different locations in the mouth; considerations involved in length of span; retention form and resistance form; study of broken-stress design and fixed removable attachments; esthetic considerations of abutment preparation.

562 Advanced Dental Ceramics (3)**Stibbs, 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 formations, 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.

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

Executive Officer: GERALD D. STIBBS, B404 Health Sciences Building

Operative dentistry is the general practice of dentistry, including cavity preparation and the use of restorative materials.

COURSES**131 Elementary Operative Dentistry Technic (4)****Morrison, Staff**

Fundamental principles of cavity preparation; training in digital skill.

132, 133, 134 Oral Anatomy (6,2,2)**Schroeter, Staff**

Detailed study of the human dentition from the standpoint of function, and of morphology of the component parts in detail, with attention to systematized nomenclature. Drawings and carvings of teeth are made and the relationship of their form to environment and functional association is studied.

231, 232, 233 Operative Dentistry Technic (4,4,5)**Ostlund, Staff**

Advanced application of the principles and requirements of operative procedures; exercises on manikins to further manual dexterity; consideration of instrumentation and of manipulation of restorative materials.

261 Clinical Orientation (3)**Hamilton, Staff**

Transition of thought and attention from technic and theory to clinical application in preparation for treatment of patients.

300, 301, 302 Operative Dentistry (1,1,1)**Hamilton**

Lectures on the clinical application of knowledge acquired in lower-division technic courses; introduction to professional conduct and clinical demeanor.

346 Clinical Operative Dentistry (8)**Stibbs, Staff**

Clinical procedures in all phases of operative dentistry; varied clinical experience under close supervision.

400, 401, 402 Advanced Operative Dentistry (1,1,1)**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, Staff**

Supervised opportunity to attain optimum experience and self-reliance so that each student may develop as an operator to the best of his ability.

COURSES FOR GRADUATES ONLY**561 Plastics As Restorative Materials (4)****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 preparations for foil: Black, Ferrier, Woodbury, True, etc. Procedures for condensation and finishing.

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

Executive Officer: 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 three acceptable full-mouth surveys.

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)

Staff

Opportunity for examining patients and observing diagnostic procedures; rendering emergency treatment to patients.

400, 401, 402 Advanced Oral Diagnosis and Treatment Planning (1,1,1)

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)

Staff

Advanced instruction in diagnosis and in the handling of patients. Typical cases of the various conditions in the oral cavity are presented.

ORAL SURGERY

Acting Executive Officer: 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.

COURSES

200 Local Anesthesia (1)

Gehrig

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)

Gehrig

General principles of oral surgery practice; history taking and the performance of oral examination; principles of asepsis and operative technique; armamentarium for surgical treatment; fundamental principles of surgical techniques in the extraction of teeth; pre- and postoperative care of the patient; types, prevention, and control of hemorrhage; diagnosis and treatment of complicated extractions and pathological conditions.

303 General Anesthesia (1)

Householder

Introduction to the use of general anesthesia for oral surgery; agents employed and the physiological action, including the stages of anesthesia; methods of administration; premedication of the patient; armamentarium; complications and accidents; agents designed primarily for administration to children. Lectures and clinical demonstrations.

346 Clinical Exodontia (2)

Gehrig, Staff

Dental extractions and minor oral surgery under local anesthesia. The student is responsible for the history, oral examination, X-ray diagnosis, clinical diagnosis, treatment planning,

treatment, and postoperative treatment, under supervision of the staff. He assists a senior student on the more difficult cases and manages the simpler cases under the close supervision of the oral surgery staff. Opportunity is given for practical application of the principles of sterilization of supplies and instruments as well as the administration of local anesthetics and antibiotic, sedative, and analgesic drugs.

- 400, 401, 402 Oral Surgery (1,1,1)** **Gehrig, Johnson**
Major types of oral surgery, including the diagnosis and treatment of fractures of the jaws; disturbances of the temporomandibular articulation; developmental deformities of the maxilla and mandible; fundamentals of prevention and treatment of shock; fundamentals of maxillofacial surgery.
- 403, 404 Maxillofacial Surgery (1,1)** **Gehrig, Wanamaker**
Major oncological surgery of head and neck region; fractures of jaws; cleft lip and palate surgery; fundamentals of maxillofacial, otolaryngological, and plastic surgery.
- 446 Clinical Oral Surgery (2)** **Gehrig, Staff**
Advanced application of the principles of exodontia and minor oral surgery; directly supervised treatment of multiple extractions and preparation of the mouth for dentures; removal of unerupted or impacted teeth; removal of benign cysts and tumors of the maxilla and mandible; biopsies; management of oral infections.

ORTHODONTICS

Executive Officer: ALTON W. MOORE, B337 Health Sciences Building

Orthodontics is the branch of dentistry whose objective is the prevention and correction of malocclusion of the teeth.

In addition to the courses for dental students, the Department of Orthodontics offers a graduate program for students working toward the degree of Master of Science in Dentistry with a major in orthodontics.

COURSES

- 300 Orthodontics (1)** **Moore**
Discussions and illustrations of the periodontal membrane, bone, and adjacent tissues as related to the forces of occlusion, of a balanced occlusion, and of the growth and development of the individual, with special emphasis on the head. Review of the major growth studies in the literature and their applications to dentistry and to orthodontics.
- 400, 401 Advanced Orthodontics (1,1)** **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)** **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.
- 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

Executive Officer: DAVID B. LAW, B343 Health Sciences Building

The Department of Pedodontics provides training in children's dentistry, public health dentistry, and the maintenance of dental health.

In addition to the courses for dental students, the Department of Pedodontics offers a graduate program for students working toward the Master of Science in Dentistry with a major in pedodontics.

COURSES

- 100 Public Health Dentistry (1)** **Hoffman**
Introduction to the field.
- 200, 201, 202 Preventive Dentistry (1,1,1)** **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)** **Staff**
Operative techniques applicable to primary and mixed dentitions: cavity preparations in primary teeth, construction of a functional space maintainer, and restoration of a fractured incisor.
- 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)** **Staff**
Diagnosis and examination of the child patient. Restorative procedures in primary and mixed dentitions, with special emphasis on application of the rubber dam.
- 400 Pedodontics and Public Health Dentistry (1)** **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)** **Staff**
Diagnosis and treatment planning, with emphasis upon preventive dentistry. Complete operative procedures, including vital pulp therapy, construction of space maintainers, bite planes, and restoration of fractured anterior teeth.

COURSES FOR GRADUATES ONLY

- 500, 501, 502, 503, 504 Pedodontics Seminar (2,2,2,2,2)** **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.
- 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.

PERIODONTOLOGY

Executive Officer: B.O.A. THOMAS, B410 Health Sciences Building

In this Department students are taught the basic knowledge and techniques necessary in diagnosing and treating diseases of the mouth.

COURSES

- 131 Oral Histology and Embryology (4)** **Ogilvie, Thomas, Staff**
Development of the facial region, with emphasis on nasal, pharyngeal, and oral structures. Histology of enamel, dentin, dental pulp, cementum, periodontal membrane, alveolar bone, oral mucous membrane, maxillary sinus, and temporomandibular articulation.
- 200 Introduction to Periodontology (1)** **Neilson, Staff**
Illustrated lectures on elementary material necessary for clinical work.
- 231-232 Endodontic Technic (1-2)** **Ingle, Staff**
Root canal treatment in terms of present-day concepts, with emphasis on a definite, simplified technic. Treatment of extracted teeth as practice for clinical cases.
- 261 Periodontology Orientation (1)** **Neilson, Staff**
Instruction in oral examination, diagnosis, and the technic of oral prophylaxis.

- 300-301, 302 Periodontology (1-1,1)** **Neilson, Staff**
 Illustrated lectures and discussions on fundamentals of periodontal disease and clinical problems in its treatment. Objectives of periodontal therapy; classification; diagnosis, prognosis, and treatment planning; treatment methods; interrelationships of periodontology and other phases of clinical dentistry.
- 304 Endodontics (1)** **Ingle**
 The differential diagnosis of facial pain; problems in pulp anesthesia; periapical surgery (root resection and periapical curettage); and systemic antibiotic therapy.
- 331 Oral Pathology (4)** **Ogilvie, Thomas, Staff**
 Clinical pathological problems, including dental caries, pulp reaction to filling materials, pulp and periapical pathology, histopathology of periodontal disease, unerupted teeth, tooth resorption, soft tissue lesions, cysts, and benign and malignant oral tumors.
- 346 Clinical Periodontics (3)** **Staff**
 Treatment of routine cases of periodontal disease; oral prophylaxis.
- 349 Clinical Endodontics (1½)** **Staff**
 Root canal therapy.
- 400 Advanced Periodontology (1)** **Neilson, Staff**
 Systemic factors in periodontal disease, clinical laboratory tests, nutritional deficiencies, occlusal dysfunction, preventive periodontics, and recent advances in periodontology.
- 446 Advanced Clinical Periodontics (3)** **Staff**
 Advanced and unusual cases of periodontal disease, including nutritional deficiencies, occlusal equilibration, and periodontal surgery.
- 449 Advanced Clinical Endodontics (1½)** **Staff**
 In addition to filling several root canals, the student performs periapical surgery, and at least three minor operations (pulp capping, pulpotomy, or bleaching).

PROSTHODONTICS

Executive Officer: HARRY A. YOUNG, C404 Health Sciences Building

The Department of Prosthodontics offers instruction in the construction and fitting of artificial dentures.

COURSES

- 131-132 Complete Denture Technic (*-*, maximum 8)** **Beder, Staff**
 Theories, principles, and technics of constructing complete dentures.
- 231, 232 Removable Partial Denture Technic (4,4)** **Austin, Staff**
 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)** **Austin, Special Lecturers**
 Evolution of clinical procedures and concepts; discussion of operative procedures employed in clinical removable partial denture treatments.
- 346 Junior Clinical Prosthodontics (8)** **Staff**
 Clinical treatment of edentulous and partial edentulous patients.
- 400, 401 Advanced Complete Denture Prosthodontics (1,1)** **Young, Special Lecturers**
 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)** **Austin**
 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)** **Staff**
 Clinical treatment of edentulous and partial edentulous patients. Construction of complete dentures and removable partial dentures; repairs of both types of dentures.

COURSES FOR GRADUATES ONLY

- 561 Immediate Dentures (4)** **Austin, Young**
 A seminar-clinic in removable partial denture treatments. Discussions of diagnosis and treatment planning; variations in basic denture procedures; the surgical operations of preparing the ridges for dentures; tissue reaction and wound healing; postoperative care; patient information. Clinical operations using procedures and equipment for denture construction.
- 562 Removable Partial Dentures (4)** **Austin, Young**
 A seminar-clinic in removable partial denture treatments. Discussions of diagnosis and treatment planning, stressing mucosa, bone, and abutment teeth, and the influence of natural

and modified tooth crown on abutment values. Clinical operations using procedures and equipment for removable partial denture construction.

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.

DENTAL HYGIENE

Director: ESTHER M. WILKINS, B324 Health Sciences Building

The Department of Dental Hygiene has been organized and developed to meet the standards of the Council on Dental Education of the American Dental Association.

Two curricula are offered. The basic curriculum, for undergraduate students, provides preparation for the professional practice of dental hygiene. It includes adequate clinical experience and theoretical study to enable its graduates to meet the requirements of a state board of dental examiners for licensure as registered dental hygienists. The other curriculum, for graduate dental hygienists, provides background and training for administrative work with specialization directed toward the field of practice selected by the student. Both curricula lead to the Bachelor of Science degree.

ADMISSION

Applications and all credentials should be sent to the Committee on Admissions of the School of Dentistry. On or before March 1, each applicant must submit the following: (1) formal application for admission on the form furnished by the School of Dentistry; (2) official transcript of previous academic record (sent directly to the Committee on Admissions from the registrar of the institution where study was completed) showing the complete record with grades and credits, subjects the applicant is taking or will take to complete her preprofessional training prior to registration in the Department of Dental Hygiene, and credit granted for high school study (as soon as grades are available at the close of subsequent terms, an official report must be sent covering the work pursued); (3) two unmounted recent photographs (2 by 3 inches); and (4) at least two letters of recommendation, one from a previous science instructor and one from a business or professional person.

The Committee on Admissions will consider as candidates for entrance to the basic curriculum of the Department of Dental Hygiene individuals who meet the entrance requirements of the University of Washington and the College of Arts and Sciences in the University, and have completed 90 academic quarter credits, together with the required quarters of physical education activity, in an accredited university or college. Minimum course requirements for entrance are: 9 quarter credits in English composition, 10 in biology, 5 in inorganic chemistry, 5 in organic chemistry, 5 in physics, 5 in psychology, 5 in public speaking, and 5 in sociology. Of the remaining 41 credits, 10 must be in the humanities and 20 in the social sciences. The basic curriculum is open only to women between the ages of eighteen and thirty-five. Before admission is granted, an interview is required. One class of dental hygiene students is admitted each spring.

Students who are taking their preprofessional training at the University follow the two-year pre dental hygiene program offered in the College of Arts and Sciences (see the *College of Arts and Sciences Bulletin*).

Candidates for admission to the graduate dental hygienist curriculum must be graduates of an approved school of dental hygiene.

TUITION AND FEES

Students in the dental hygiene curricula pay the regular tuition of the School of Dentistry (see pages 89-90).

BASIC CURRICULUM

MAJOR IN DENTAL HYGIENE. This program includes specific courses in the Schools of Dentistry and Medicine and the Colleges of Pharmacy and Arts and Sciences. The student takes in sequence all the courses offered for undergraduates in the Department of Dental Hygiene and the following additional courses: Chemistry 230 (Organic); Conjoint 317-318 (Elementary Anatomy and Physiology); Home Economics 300 (Nutrition); Microbiology 301 (General Microbiology); Pathology 310 (General Pathology); Physical Education 292 (First Aid and Safety); Pedodontics 200 (Preventive Dentistry); Pharmacy 352 (Pharmacy and Therapeutics for Dental Hygienists); Psychiatry 450, 451 (Principles of Personality Development); and Public Health 402 (Communicable Disease Control), 412 (Public Health Organizations and Services), 464 (Community Health Education Techniques), and 485J (School Health Problems).

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 pre dental hygiene requirements, courses listed for the basic curriculum, and the course requirements for one of the majors. Credit toward graduation is granted for academic and professional courses previously taken at an approved college or school of dental hygiene.

MAJOR IN DENTAL HYGIENE. Students must fulfill the requirements of the pre-professional program and the basic curriculum. They must have a total of 36 to 46 credits in dental hygiene, including a minimum of 10 taken with this Department.

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 Public Health and Preventive Medicine in the School of Medicine); and 36 in biological and physical sciences (including those taken in the preprofessional program).

COURSES FOR UNDERGRADUATES

- | | | |
|------------|--|--|
| 300 | Dental Procedures (3)
Lectures and demonstrations in dental procedures, with emphasis on the role of auxiliary personnel. | McCann, School of Dentistry Staff |
| 331 | Dental Anatomy (4)
Morphology of permanent and deciduous teeth; sketching and carving of essential units. | Hodson |
| 332 | Dental Materials (2)
Survey of the physical and chemical properties of dental materials, with laboratory experience in their manipulation. | Gaskill |
| 333 | Oral Radiographic Technique (2)
Principles and procedures in radiographic technique with clinical experience. | McCullough, Wilkins |
| 334 | Oral Histology (3)
Development and microscopic anatomy of structures of the oral cavity. | Ogilvie |
| 335 | Oral Prophylaxis (2)
Objectives and principles of oral hygiene; instrumentation and procedure of oral prophylaxis, topical fluoride application, oral inspection, and dental health education. | McCann, McCullough, Stickels, Wilkins |
| 346 | Clinical Dental Procedures (1)
Observation and clinical assisting in School of Dentistry clinics. | School of Dentistry Staff |
| 347 | Clinical Oral Prophylaxis (1)
Clinical experience in the performance of oral prophylaxis, topical application of fluoride, and dental health education for patients. | McCann, McCullough, Stickels, Wilkins |
| 401 | Office Procedure and Ethics (2)
Dental office and clinic procedure; dental and dental hygiene ethics. | McCullough |

- 402, 403, 404 Principles of Dental Hygiene Practice (1,1,1)** **Wilkins**
Presentation and analysis of dental health problems, with emphasis on advanced dental health education.
- 405, 406 Oral Pathology (1,1)** **Hileman, Ogilvie**
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)** **Hileman**
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)** **McCann, Reid, Wilkins**
Advanced clinical practice, including work in the University Child Health Center, in public health clinics, and hospitals.
- 447, 448, 449 Dental Hygiene Practice (2,2,2)** **McCann, McCullough, Stickels, Wilkins**
Advanced application of the principles of clinical dental hygiene.

COURSES FOR GRADUATE DENTAL HYGIENISTS

- 491 Seminar in Dental Hygiene (2)** **Wilkins, Staff**
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)** **Wilkins, Staff**
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)** **Wilkins**
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)** **Staff**
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 FOR DENTAL HYGIENE STUDENTS

- Chemistry 230 Organic Chemistry (5)** **Department of Chemistry Staff**
For home economics and nursing students and others taking only one quarter of organic chemistry. Prerequisite, 101.
- Conjoint 317-318 Elementary Anatomy and Physiology (See Conjoint Courses, page 68.)**
- Home Economics 300 Nutrition (2)** **Staff**
Importance of food to the maintenance of health; nutritive values and human needs emphasized. For nonmajors in home economics.
- Microbiology 301 General Microbiology (See page 62.)**
- Pathology 310 General Pathology (See page 63.)**
- Pedodontics 200 Preventive Dentistry (See page 97.)**
- Pharmacy 352 Pharmacy and Therapeutics for Dental Hygienists (3)** **Staff**
Principles of pharmacy; mathematics of pharmacy; pharmacological and therapeutic action of drugs pertaining to dentistry.
- Physical Education 292 First Aid and Safety (3)** **Staff**
The student may meet requirements for both standard and advanced American Red Cross first aid certification. Includes safety education in schools.
- Psychiatry 450, 451 Principles of Personality Development (See page 72.)**
- Public Health 402 Communicable Disease Control (See page 66.)**
- Public Health 412 Organizations and Services (See page 67.)**
- Public Health 464 Community Health Education Techniques (See page 67.)**
- Public Health 485J School Health Problems (See page 68.)**

ROSTER OF STUDENTS IN DENTISTRY

CLASS OF 1959

- ALLEN, Frank Hanes, Ellensburg
B.A., Central Washington College of Education
- BARRELL, George Edward, Seattle
University of Washington
- BARRETT, William Joseph, Seattle
University of Washington
- BATES, Richard Edward, Ellensburg
Central Washington College of Education
- BEAULIEU, Robert Charles, Seattle
Seattle University
- BERG, Douglas Ray, Spokane
Washington State College
- BORDEAUX, James Gilbert, Olympia
University of Washington
- BRAIN, Warren Eugene, Thorp
B. A., Central Washington College of Education
- BRANDON, Jack Harold, Seattle
University of Washington
- BREUM, Lawrence John, East Stanwood
B.S., Washington State College
- BRISCOE, De Wayne La Verne, Seattle
University of Washington
- BROOKE, Ralph Charles, Seattle
University of Washington
- BROWN, Allen Kenneth, Seattle
University of Washington
- CHANG, Thomas Gilmer Munwai, Kuai, Hawaii
University of Washington
- COOK, Robert Corwin, Seattle
B.A., Washington State College
- COSTLEY, John Marcellus, Rigby, Idaho
Utah State Agricultural College
- CRUIKSHANK, Ramon Arlen, Seattle
University of Washington
- CULVER, Norman Carl, Bremerton
University of Washington
- DAHL, Robert Lee, Seattle
University of Washington
- De FELICE, Armand Vincent, Spokane
Gonzaga University
- DEVERY, William James, Seattle
University of Washington
- DIER, Frederick Dale, Bellevue
Washington State College
- DOTY, Robert Le Roy, Seattle
B.A., University of Washington
- DUGGER, Glen Orin, Tacoma
College of Puget Sound
- GILBERT, Gerald Wayne, Longview
University of Washington
- GOURLEY, James Vincent, Tacoma
University of Washington
- HAMMER, Arild Rudolph, Ketchikan, Alaska
University of Washington
- HANSEN, Raymond Earl, Logan, Utah
Utah State Agricultural College
- HARKEN, James Henry, Forsyth, Mont.
University of Washington
- HASEGAWA, Fred Isamu, Seattle
University of Washington
- JERUE, Larry George, Cheney
University of Washington
- JOHN, Robert, Seattle
University of Washington
- JUNGLOV, Falker Christian, Seattle
University of Washington
- KAJIMURA, Saburo, Puyallup
University of Washington
- KENNAR, Patrick David, Seattle
B.S., University of Washington
- KYLLINGSTAD, Vernon Jack, Seattle
University of Washington
- Le VINE, Mervyn, Los Angeles
B.A., University of California (Los Angeles)
- LIPPERT, George Warren, Jr., Bremerton
University of Washington
- McCORMICK, Lawrence Patrick, Seattle
University of Washington
- McLEAN, Kenneth Jerome, Ashton, Idaho
University of Washington
- McQUEEN, Richard Miller, Richland
University of Washington
- MERRILL, Ralph George, Salt Lake City
University of Denver
- MONSON, William Theodore, Renton
University of Washington
- MORSE, Ronald Prescott, Seattle
B.S., University of Washington
- MURDOCK, Gerald Irwin, Raymond
College of Puget Sound
- NEFF, Desmond Guy, Pullman
Washington State College
- OWEN, Richard Wayne, Spokane
Gonzaga University
- PERRY, Arthur Eugene, Jr., Centralia
University of Washington
- PILOT, Ted Andrew, Seattle
University of Washington
- PULLIAM, James Arthur, Seattle
University of Washington
- RAWSON, Dearl Stanley, Sunnyside
Central Washington College of Education
- REDD, Keith Eugene, Yakima
University of Washington
- SANDER, Allan Lewis, Anchorage, Alaska
B.S., Midland College
M.S., Massachusetts Institute of Technology
- SAYLER, Hugh Donald, Longview
University of Washington
- SCHEYER, Warner Frederick, Seattle
B.S., University of Washington
- SKALABRIN, Nicholas Joseph, Seattle
Seattle University
- SMITH, Clifton Martin, Spokane
B.A., Louisiana State University
M.S., University of Southern California
B.A. (Education), Eastern Washington College of Education
- SMITH, Donald Earl, Spokane
B.S., Washington State College
- SONNEMAN, Warren Lee, Sioux Falls, S. D.
B.A., Yankton College
- SPERRY, Donald William, Wenatchee
B.A., University of Washington
- STEWART, Donald William, Spokane
Central Washington College of Education
- STOBIE, James Lee, Newport
Washington State College
- STRAWN, Alfred Dewey, Vancouver
B.S., University of Washington
- SUTTER, Edward George, Kelso
B.A., University of Washington
- TAYLOR, Dean Le Roy, Mesa
University of Washington

THOMPSON, John Lincoln, Bellevue
B.A., University of Washington
TYCZ, Joe Charles, Nampa, Idaho
B.A., College of Idaho
ULBRIGHT, Bruce Frederick, Bremerton
University of Washington
WEAVER, Dean Hedric, Salt Lake City
B.S., University of Utah
WIGGINS, Richard Lee, Seattle
University of Washington

CLASS OF 1958

ADAMS, Alan Duane, Port Angeles
B.A., Central Washington College of
Education
APELAND, Homer Donald, Seattle
University of Washington
ARCHER, Clyde Lawrence, Jr., Seattle
B.A., College of Idaho
BAKER, Duane Allen, Enumclaw
University of Washington
BATTIN, Richard Alan, Seattle
University of Washington
BIGGS, Jack Elton, Seattle
University of Washington
BIRDLEBOUGH, Harold, Seattle
University of Washington
BLACK, George Erwin, Kennewick
University of Washington
BLOSS, Albert Paul, Seattle
B.A., University of Washington
BLUHER, John Alfred, Falls City
Central Washington College of Education
BOLLINGER, Ronald George, Seattle
University of Washington
BRIGGS, Garth Thorley, Pocatello, Idaho
B.S., University of Utah
BRUMMITT, William Joseph, Seattle
University of Washington
BRYANT, James Trevor, Jr., Seattle
University of Washington
CARSON, Robert Edwin, Bremerton
University of Washington
CHAMBERS, Dean Laird, Seattle
University of Washington
CONTRERAS, Eligio, Jr., Seattle
B.A., University of Washington
COWAN, Everett Richard, Spokane
B.S., Gonzaga University
CRAWFORD, Douglas Gordon,
Vancouver, B. C.
University of British Columbia
CRUIKSHANK, Collen Clive, Seattle
University of Washington
DOWLING, George Aiken, Seattle
B.S., University of Washington
DUFFIN, Ralph Kenneth, Aberdeen, Idaho
Idaho State College
ERICKSON, Jack Kenneth, Arlington
University of Washington
FRALEY, George Thomas, Seattle
University of Washington
GUTHRIE, Frank Burns, Seattle
University of Washington
HARBOTTLE, John Frederick, Jr., Tacoma
Seattle University
HARDY, Leland Roger, Seattle
University of Washington
HILLSTAD, Garie H., Afton, Wyoming
University of Wyoming
HOWARD, William Lee, Kennewick
Washington State College
HUBLOU, Roland August, Everett
Seattle University

WILCOX, Robert Earl, Seattle
University of Washington
WILSON, Theron Duane, Olympia
University of Washington
WOOD, Don Carlos, Jr., Port Angeles
B.S., University of California
WRIGHT, Wellesley Horton, Seattle
University of Washington
YOSHIDA, Ronald Masashi, Spokane
Gonzaga University

JORGENSEN, Robert Firth, Seattle
B.A., University of Washington
JUDD, Warren Vernal, Clearfield, Utah
Weber College
KAZEN, Douglas Harry, Everson
B.A., Western Washington College of
Education
KEYES, Harry Truman, Vancouver, B. C.
University of Washington
KUMASAKA, Roland Shozo, Seattle
B.S., University of Washington
LAXTON, Harold Dean, Goldendale
Washington State College
LUDDINGTON, Dean Farley, Ogden, Utah
University of Utah
LYNCH, William Patrick, Seattle
University of Washington
MAR, Philip Leighton, Seattle
B.S., University of Washington
MECHAM, Lloyd Anderson, Logan, Utah
B.S., Utah State Agricultural College
MEEK, Glenn Pinson, Logan, Utah
Utah State Agricultural College
MELLOR, Joel Kimball, Idaho Falls, Idaho
B.A., Brigham Young University
MENDEL, Robert August, Seattle
University of Washington
MOHORIC, George Donald, Chehalis
University of Washington
NAKAMURA, Ken Kunihiro, Seattle
B.S., University of Washington
NASH, Brent Isaac, Weston, Idaho
Utah State Agricultural College
NELSON, Edward Allen, Prosser
B.A., University of Washington
NICHOLS, Murray C., Hiram, Utah
Utah State Agricultural College
NUGENT, Jack LeRoy, Centralia
University of Washington
OLDENBURG, Elizabeth Anne, Seattle
B.A., Occidental College
M.A., University of California
OSBORN, Herbert Hoover, Escalante, Utah
Brigham Young University
QUIGLEY, James Franklin, Coeur d'Alene,
Idaho
Washington State College
RAMAGE, Thomas Edward, Jr.,
Vancouver, B. C.
University of British Columbia
RANSOM, Vaughn Rendell, Seattle
B.S., University of Utah
M.S., University of Washington
RASANEN, Richard Alan, Aberdeen
University of Washington
RAYMOND, Reginald Robert, Seattle
University of Washington
REID, Bryan Embree, Victoria, B. C.
University of Washington
RICE, Frank Carol, Seattle
University of Washington

ROTH, Theodore Frank, Seattle
University of Washington
RYAN, James Edward, New
Westminster, B. C.
Clark Junior College
SHADDUCK, Glenn Deane, Seattle
B.A., Eastern Washington College of
Education
SIMONSMA, Bernard Alvin, Cordova,
Alaska
University of Washington
STROM, Robert Clifford, Hoquiam
B.S., University of Washington

THOMPSON, Robert William, Seattle
Washington State College
TRACY, Ronald Edwin, Seattle
University of Washington
VANCE, Robert Russell, Ellensburg
Central Washington College of Education
WESTIN, Richard Palmer, Seattle
Washington State College
WILSKIE, Gene Harlan, Odessa
University of Washington
ZWICK, Harold Henry, Tacoma
College of Puget Sound

CLASS OF 1957

ALLEN, Robert William, Kelso
University of Washington
ANDERSON, William Richard, Seattle
B.A., University of Washington
ARIMA, James Yoshita, Seattle
B.A., University of Washington
BALES, David, Klickitat
Central Washington College of Education
BINGHAM, Marriner Farley, Honeyville,
Utah
B.S., Utah State Agricultural College
BINGHAM, Richard Claude, Burley, Idaho
B.S., Utah State Agricultural College
BOTTON, John Charles, Seattle
University of Washington
BROWN, Ervin Lee, Coeur d'Alene, Idaho
University of Idaho
BUSEMEN, Ralph Henry, Seattle
B.A., University of Washington
CAMPBELL, Gene Irvin, Vancouver, Wash.
B.S., United States Naval Academy
CARTER, Robert Randall, Seattle
University of Washington
CLEMENT, Philip Edwin, Seattle
Seattle Pacific College
DAVIDSON, Gerhard B., Seattle
University of Washington
DEMOND, Melvin Ray, Boise, Idaho
University of Oregon
GUSA, Ronald Stuart, Bremerton
Washington State College
HAMILTON, Richard Dale, Billings, Mont.
University of Denver
HANFORD, Edwin Mathew, Oakesdale
Washington State College
HAVENICK, Robert John, Seattle
University of Washington
HAWKSLEY, Robert Locke, Seattle
University of Washington
HAYASHI, Tom Yoshihisa, Seattle
University of Washington
HAYES, Donald Clayton, Kirkland
University of Washington
HENNINGER, Frederick Lee, Issaquah
University of Washington
HOFFMAN, Robert LeRoy, Renton
B.A., University of Washington
HOFFMEISTER, William Walter, Seattle
University of Washington
HOUVENER, Donald Curtis, Honolulu
University of Washington
HUNGAR, Gordon Earle, Lake Stevens
B.S., University of Washington
IVERSEN, Ray Clifford, Poulsbo
University of Washington
JACOBSON, Floyd Edward, Seattle
University of Washington

JOHNSON, Allan Herbert, Centralia
University of Washington
JOHNSON, Paul Whitney, Walla Walla
Walla Walla College
JOHNSON, Peter Ward, Kirkland
University of Washington
JOHNSON, Richard Henry, Seattle
University of Washington
KELLER, Robert Ernest, Seattle
Seattle University
KORN, James Hammitt, Kalispell, Mont.
University of Washington
LAYTHAM, Joel Edgar, Seattle
University of Washington
LEWIS, Robert Porter, Mercer Island
University of Washington
LINDSKOG, Jack Allen, Olympia
University of Washington
LODMELL, Anton Miles, Walla Walla
Whitman College
LOUDON, Merle Eugene, Carlton
Central Washington College of Education
LUNSTRUM, Nelse Lavern, Ellensburg
Central Washington College of Education
MASON, Roscoe Leroy, Tremonton, Utah
Utah State Agricultural College
McCULLOUGH, Robert Verne, Salt Lake
City
University of Utah
McMAINS, Paul Eugene, Seattle
University of Washington
MICHELS, Peter Joseph, Jr., Great Falls,
Mont.
College of Great Falls
MILLER, Arbie Glenn, Jr., Anthony, Idaho
University of Idaho
MIRANTE, John Thomas, Seattle
Seattle University
MONAGHAN, Robert Douglas, Tacoma
University of Washington
NAUMAN, Alfred Garth, Salt Lake City
B.S., University of Utah
NIXON, Monte John, Jr., Seattle
University of Washington
PETERS, Donald Kenneth, Port Townsend
University of Washington
PETERSON, John Richard, Phoenix, Ariz.
B.S., Brigham Young University
PIERCE, Donald Charles, Seattle
B.S., University of Washington
PLOGER, William Joseph, Seattle
University of Washington
RADKE, Ryle August, Jr., Everett
University of Washington
RICKEITS, John Wilbur, Seattle
University of Washington
RIDENOUR, Donald Clyde, Seattle
University of Washington

RYAN, William Erick, Gig Harbor
College of Puget Sound

SAHLIN, Edward Renlund, Tacoma
College of Puget Sound

SHIBATO, Fumio, Seattle
University of Washington

SIM, Joseph Max, Kirkland
B.S., University of Washington

SMITH, Elwyn Eugene, Seattle
University of Washington

STRAND, Harvey Allen, Idaho Falls, Idaho
B.S., Idaho State College

THOMPSON, William Joseph, Seattle
University of Washington

VAN DERSCHELDEN, Richard Lee,
Puyallup
University of Washington

VELLING, Roy John, Seattle
University of Washington

WARR, Newell Edwin, Beaver, Utah
B.S., Utah State Agricultural College

WILKES, Truman Joseph, Jr., Kirkland
University of Washington

WILLIE, Ralph Grant, Brigham, Utah
B.S., Utah State Agricultural College

WORDEN, Jeremy Frederic, Bremerton
B.A., Vanderbilt University

ZELDENRUST, Richard Wallace, Seattle
University of Washington

CLASS OF 1956

Degree of Doctor of Dental Surgery Conferred June 9, 1956

BAKER, Cecil Richard, Logan, Utah
Utah State Agricultural College

BAUGH, Leland Ray, Jr., Seattle
University of Washington

BELCH, Harold Elliott, Jr., Ellensburg
Central Washington College of Education

BRAAFADT, Richard Price, Fairbanks,
Alaska
University of Washington

BROWN, Fred Richard, Seattle
University of Washington

CALAHAN, James Richard, Seattle
University of Washington

CLARK, Richard Charles, Tacoma
University of Washington

CLARK, Robert F., Tacoma
University of Washington

CLIFTON, Fred A., Seattle
B.S., University of Washington

CROW, Richard Glenn, Yakima
Central Washington College

CUSHEN, Robert Alan, Seattle
University of Washington

DENNISON, Norman Lee, Missoula, Mont.
Montana State University

DIETZ, Donald Russell, Yakima
University of Oregon

EHRET, William Walter, Centralia
University of Washington

ELVIN, Eugene Henry, Seattle
University of Washington

FRICKE, Harold Henry, Seattle
B.S., University of Idaho

GRILLO, Joseph C., Jr., Cle Elum
Washington State College

HANSEN, Robert William, Seattle
University of Washington

HEID, David William, Seattle
University of Washington

HEIGHTON, Robert Stanhope, Seattle
University of Washington

HITZ, James Richard, Bellingham
Washington State College

HOULE, James Donald, Seattle
B.A., Eastern Washington College of
Education

HUNT, James Harry, Spokane
Whitman College

HUTSON, M. Phillip, Winlock
B.S., Washington State College

JANISCH, Edward Robert, Seattle
University of Washington

JOHNSON, George Blaine, Tacoma
College of Puget Sound

KARREN, Keith Obray, Salt Lake City
University of Utah

KINNEAR, Ian Farquharson, Maui, T. H.
University of Washington

KISER, George Cluff, Salt Lake City
B.S., University of Utah

LLEWELLYN, John Grant, Kent
Seattle University

LOFLIN, Leonard Ernest, Tacoma
College of Puget Sound

LONG, Kenneth Carl, Port Angeles
University of Washington

MAR, Roy Sing, Seattle
Seattle University

MARTIN, John Alfred, Anacortes
University of Washington

MAYO, Jacque Lee, Seattle
University of Washington

MAYS, Edgar Deal, Coulee Dam
Washington State College

MERRILL, Reed Miller, Preston
University of Utah

MEYER, Gene Phillip, Seattle
University of Washington

MORIYASU, Victor Ichiro, Spokane
Washington State College

MORTON, Richard Allen, Richland
Washington State College

NELSON, Toyn O., Port Angeles
B.S., University of Washington

OMER, John Sutherland, Salt Lake City
University of Utah

POOLE, Robert E., Idaho Falls, Idaho
Utah State Agricultural College

PRICHARD, Paul D., Hoquiam
University of Washington

PRINCE, Jack Phillip, Tacoma
College of Puget Sound

PRINCE, Stanford Daniel, Spokane
B.A., University of Washington

REDMAN, Robert William, Seattle
University of Washington

REICHEL, Carrol Elroy, Everett
University of Washington

RIDDELL, Norman Albert, Bellevue
B.S., University of Washington

RUGG, Melvin Frederick, Kent
University of Washington

SCHNAIDT, Herbert John, Jr., Seattle
B.A., University of Washington

SCHREINER, Robert Francis, Seattle
Seattle University

SIMPSON, Thomas Howard, Seattle
B.S., University of Washington

SMITH, Charles E., Jr., Marysville
University of Washington
SORENSEN, Sigmund Harry, Tacoma
Pacific Lutheran College
SPINOLA, Joseph Sebastian, Seattle
University of Washington
STANTON, Paul Byron, Seattle
B.S., Oregon State College
SWENSON, Roger Neil, Seattle
University of Washington
TAYER, Harold Edward, Seattle
University of Washington
VIGG, John, Seattle
University of Washington

WEBB, Robert Taylor, Twin Falls, Idaho
B.S., University of Idaho
WHITE, Lynn Rutherford, McCleary
University of Washington
WILSON, Donald Woodrow, Seattle
B.S., Seattle Pacific College
WINTERS, John Rutledge, Puyallup
University of Washington
WISEMAN, Ray Duval, Tacoma
B.S., College of Puget Sound
YOSHINO, Keith Hiroshi, Seattle
University of Washington
YUNKER, Richard William, Seattle
University of Washington

CLASS OF 1955

Degree of Doctor of Dental Surgery Conferred June 11, 1955

ABLES, Thomas Lemuel, Seattle
B.S., University of Washington
BARCLAY, Ronald Loyd, Seattle
University of Washington
BEVERIDGE, Ed, Missoula, Mont.
Montana State University
BINNS, Farrell Newren, Richland
Washington State College
CLARK, Howard Earl, Richland
Gonzaga University
COPITHRONE, George Francis,
Vancouver, B. C.
B.A., University of British Columbia
CRASWELL, Bruce Arthur, Port Orchard
University of Washington
DALLY, Clifford Lawrence, Seattle
University of Washington
DEAN, Robert Wallace, Great Falls, Mont.
B.S., University of Washington
DELANEY, Ernest Norman, Seattle
University of Washington
DICKSON, John T., Tacoma
College of Puget Sound
DINGERSON, Gary Arthur, Kelso
University of Washington
DOWDLE, James Curtis, Pullman
Washington State College
DOWNEY, David Wilbur, Pullman
Washington State College
DUFFIN, Wallace Eugene, Aberdeen, Idaho
Utah State Agricultural College
DYE, Lawrence Lee, Olympia
University of Washington
EVANS, Charles Owen, Dryden
University of Washington
FARR, Caswell James, Seattle
B.S., University of Washington
FICKEL, Donald L., Bellingham
University of Washington
GALLANT, Frank Joseph, Seattle
University of Washington
GARDNER, Paul Gerber, Provo, Utah
Brigham Young University
GRUBIC, Lee Richard, Seattle
University of Washington
HAMPTON, Karl Andrew, Jr., Seattle
University of Washington
HANLEY, Clarence Merle, Seattle
University of Washington
HAWKINS, Robert Allen, Helena, Mont.
B.A., B.S., University of Washington
HEASLIP, William John, Seattle
University of Washington
HOFFMAN, Edward James, Seattle
University of Washington
HUNTER, Walter Jay, Spokane
B.S., Washington State College
JACKSON, Clyde Raymond, Raymond
Willamette University
JACKSON, William Karl, Jr., Seattle
B.S., University of Washington
JOHNSON, James August, Seattle
University of Washington
JOHNSON, Johnny Norman, Seattle
B.S., University of Washington
JOHNSON, Laurance Davis, Moscow, Idaho
University of Idaho
JOHNSON, Lloyd Allen, Idaho Falls, Idaho
Northwest Nazarene College
JOHNSON, Thomas Eugene, Livingston,
Mont.
University of Washington
JONES, Iorwerth Meirion, Seattle
B.S., University of Washington
KIMBLE, Gerald Norman, Kent
University of Washington
KNELL, James Karl, Salt Lake City, Utah
University of Utah
KOON, Howard Thomas, Jr., Mercer Island
University of Washington
LIND, John Church, Butte, Mont.
University of Washington
LOWRY, Van Lee, Tacoma
College of Puget Sound
McKAY, Herbert Patrick, Tacoma
College of Puget Sound
MICHAEL, Mike Peter, Seattle
University of Washington
MILLER, Ellis Weger, Seattle
Seattle University
MORRISON, Archie B., Seattle
B.A., B.S., University of Washington
OZEROFF, William, Castlegar, B. C.
University of Washington
PRINCE, Richard Daniel, Spokane
B.S., University of Washington
RIRIE, Morgan Jensen, Provo, Utah
Brigham Young University
RUSSON, George Albert, Seattle
University of Washington
SCHULTZ, Gerry Drysdale, Edmonds
University of Washington
SIEBERT, Leonard Anton, Washougal
University of Washington
SOBOTTKA, Hugh Charles, Seattle
University of Washington
STONE, Lawrence Richard, Seattle
University of Washington
SWANSON, Richard Dale, Issaquah
University of Washington

TAKANO, James Hiroshi, Seattle
University of Washington
TIMBERLAKE, Dale Lee, Seattle
University of Washington
ULREY, Richard Duane, Spokane
University of Washington
WALTERS, John Lawrence, Tacoma
University of Washington
WEIS, Virgil Glen, Kirkland
University of Washington

WHITE, William Willard, Prosser
Central Washington College
WILLEY, Robert Lisle, Seattle
University of Washington
WILSON, Billy Dick, Vancouver, B. C.
University of British Columbia
YATES, Ira Calvin, Jr., Opportunity
University of Washington
YOUNG, Richard Margetts, Salt Lake City,
Utah
University of Utah

CLASS OF 1954

Degree of Doctor of Dental Surgery Conferred June 12, 1954

BEALE, Tearle Milton, Salina, Utah
B.S., University of Utah
BEAUDREAU, David Eugene, Cheney
University of Washington
BENDZAK, Robert Joseph, Tacoma
College of Puget Sound
BLACK, Amos Ross, Port Blakely
University of Washington
BORG, Don Keith, Seattle
University of Washington
BOYD, Neil Paul, Pasco
University of Washington
CHANDLER, Ernest Edwin, Orondo
B.A., Central Washington College
CHANEY, Norman B., Jr., Yakima
B.S., University of Washington
CHUNN, Charles John, Jr., Seattle
University of Washington
COLLINS, Robert William, Seattle
B.A., University of Washington
COMPAAN, Donald Everett, Spokane
University of Washington
COX, Robert Melvin, White Sulphur
Springs, Mont.
Montana State College
DELORIE, John Thomas, Seattle
Seattle University
DYER, Homes Jennings, Jr., Shelley, Idaho
B.S., Oregon State College
ERICKSON, Leslie Clare, Tacoma
College of Puget Sound
ESTERLY, Daniel Monroe, Seattle
University of Washington
FERG, Paul William, Spokane
Whitworth College
GREGERSON, Leif Christian, Seattle
B.S., Washington State College
GROSS, Robert Donald, Seattle
B.S., University of Washington
GULLIKSON, John Sperry, Tacoma
B.S., Washington State College
HAMPSON, Floyd Franklin, Jr., Yakima
University of Washington
HATCHER, Perry Scott, Seattle
University of Washington
HENDERSON, Sidney Benson, Seattle
University of Washington
HENDRICKSON, Richard Dwain, Ogden,
Utah
Weber College
HENNESSY, George Patrick, Helena, Mont.
University of Washington
HOERSTER, Roy Donald, Hinsdale, Mont.
University of Washington
HOLMES, John Bernard, Coeur d'Alene,
Idaho
B.S., University of Idaho
HUNT, John Frederick, Bellingham
University of Washington

JESKE, Ernest W. J., Cashmere
B.A., Eastern Washington College
KELLEY, Robert Russel, Fort Benton,
Mont.
Montana State University
KELLY, Dennis William, Spokane
Gonzaga University
KENNEDY, Robert Aldrich, Tacoma
B.S., College of Puget Sound
LEE, Stuart Harmon, Seattle
University of Washington
LUKENS, Eugene Myrle, Everett
University of Washington
LUZZI, James Michael, Tacoma
B.S., College of Puget Sound
MacGEORGE, Thomas Hamilton, Seattle
University of Washington
McCANN, Raymond, Seattle
University of Washington
McDOUGALL, William Douglas,
Victoria, B. C.
University of British Columbia
MOONEY, Harold Ray, Spokane
Washington State College
MUIR, Richard James, Tacoma
University of Washington
MULLER, James Keith, Seattle
B.S., University of Washington
MURAKAMI, Ken Kin, Auburn
B.S., University of Washington
MURCHIE, Kenneth Edgar, Duncan, B. C.
B.S., University of Washington
O'BRYANT, Eldon Haws, Salt Lake City,
Utah
B.S., University of Washington
OLSON, Wayne Andrew, Klamath
Falls, Ore.
B.S., University of Washington
OOMS, Adrian, Lynden
B.S., University of Washington
PARKER, Robert Hal, Seattle
B.S., University of Washington
PATE, Kenneth LeRoy, Tacoma
Pacific Lutheran
RAISLER, Gordon Duane, Chehalis
University of Washington
RICHKOFF, Dimitry Peter, Seattle
B.S., University of Washington
ROSIER, Thomas Robert, Rawlins, Wyo.
B.S., University of Washington
RUFF, James Warren, Tacoma
College of Puget Sound
SABOE, Donald Ballard, Seattle
University of Washington
SANDALL, Donald Bernard, Seattle
B.S., University of Washington
SAURIOL, John Allen, Tacoma
St. Martins

SCHARMAN, Edward James, Seattle
B.S., Seattle University
SMEAD, John Buckley, Spokane
University of Washington
SNYDER, David Edward, Seattle
University of Washington
STAMEY, Arthur Frederick, Seattle
University of Washington
STENBERG, Ralph Goodman, Seattle
University of Washington
STIEFEL, Doris Johanna, Seattle
University of Washington
STONE, Wesley Beard, Spokane
University of Washington

GRADUATE SCHOOL, ENTERED 1954

Orthodontics

CLEMENTS, Blaine S., Salt Lake City
B.S., University of Utah
D.D.S., College of Physicians and
Surgeons
DAVIS, Roland M., Glendale, Calif.
B.S., D.D.S., University of Southern
California
ESPOSITO, Russell P., Spokane
D.M.D., University of Oregon (North
Pacific)
FOSTER, Robert E., Bellingham
D.M.D., University of Oregon (North
Pacific)

Pedodontics

LEWIS, Thompson M., Bonners Ferry,
Idaho
B.S., D.D.S., Northwestern University

GRADUATE SCHOOL, ENTERED 1955

Orthodontics

BARRINGER, Frank E., Spokane
D.D.S., University of Washington
DAVIS, John R., Pocatello, Idaho
D.M.D., University of Oregon
FLINT, Willard L., Pittsburgh, Pa.
B.S., Allegheny College
D.D.S., University of Pittsburgh
INOUE, Stanley Y., Lihue, Hawaii
B.S., University of Hawaii
D.D.S., University of Maryland
KNELL, James K., Salt Lake City, Utah
D.D.S., University of Washington
MEINHOLD, Gareth L., Valparaiso, Calif.
D.D.S., College of Physicians and
Surgeons

Pedodontics

SMITH, Walter H., Seattle
D.D.S., University of Pennsylvania

Degree of Master of Science in Dentistry Conferred December 18, 1953

Orthodontics

TAYLOR, Robert F., Franklin, Tenn.
B.S., D.D.S., University of Tennessee

Degree of Master of Science in Dentistry Conferred March 19, 1954

Orthodontics

BARNES, James Q., Santa Anna, Texas
D.D.S., University of Texas
BAXTER, Donald H., Syracuse, N. Y.
D.D.S., University of Buffalo

TEEL, Walter Stephen, Harrington
B.S., Seattle Pacific College
TIMBERLAKE, Wayne Jack, Seattle
University of Washington
TOEVS, Howard O., Aberdeen, Idaho
University of Idaho
TSALAKY, Theophilus John, Provo, Utah
B.S., Brigham Young University
WALLER, Richard Elmo, Tacoma
College of Puget Sound
WARD, Charles Irvin, Seattle
B.S., University of Washington
GATTI, Sherwood E., San Antonio, Texas
D.D.S., Baylor University
HASSTEDT, Charles W., Denver, Colorado
D.D.S., Northwestern University
PEAY, Wayne L., Mesa, Arizona
D.D.S., University of Kansas City
RAYNES, John G., Seattle
D.D.S., University of Washington
WASHBON, Robert E., Fullerton, Calif.
D.D.S., University of Southern California
WOOFER, C. Rolland, Cleveland Heights,
Ohio
B.S., D.D.S., Western Reserve University

O'RIELLY, William C., Santa Cruz, Calif.
D.D.S., University of Southern California
OVENS, John P., Phoenix, Ariz.
B.S., Loyola University
M.S., University of Notre Dame
D.D.S., University of Pennsylvania
SEAL, William M., Oahu, Hawaii
B.S., University of Oregon
D.D.S., College of Physicians and
Surgeons
TELFORD, Robert F., Madison, Wis.
B.S., University of Wisconsin
D.D.S., Marquette University

BLAKE, Samuel R., Altadena, Calif.
B.A., University of Redlands
D.D.S., University of Southern California
DRAKE, John V., Milwaukee, Wis.
D.D.S., Marquette University

FAILOR, Richard O., Seattle
D.D.S., University of Washington
PETERSON, Archie E., Salinas, Calif.
D.D.S., University of California

ROBERTS, Kenneth M., Seattle
D.D.S., University of Pennsylvania

Degree of Master of Science in Dentistry Conferred June 12, 1954

Orthodontics

GIBBS, Kenneth E., Lewiston, Idaho
D.D.S., University of California

McGOVERN, William C., Tacoma
D.D.S., University of Washington

Restorative

SCHNEPPER, Harold E., Everett
D.M.D., University of Oregon

Degree of Master of Science in Dentistry Conferred December 17, 1954

Pedodontics

SHEPHARD, Stanley L., Lake Stevens
B.S., University of Washington
D.M.D., University of Oregon

Degree of Master of Science in Dentistry Conferred March 18, 1955

Orthodontics

ANDERSON, John P., Portland, Ore.
B.S., D.M.D., University of Oregon

SCHULZ, Jerold D., Kent, Wash.
D.M.D., University of Oregon

JOHNSON, Gordon K., Payson, Utah
B.S., Brigham Young University
D.D.S., University of Washington

THURSTON, James L., Oakland, Calif.
B.S., D.D.S., University of California

LUNDELL, Lowell C., Palo Alto, Calif.
D.D.S., College of Physicians and
Surgeons

WENDORFF, Theodore K., Manhattan
Beach, Calif.
B.S., D.D.S., University of Southern
California

RUDEE, Donald A., San Francisco, Calif.
B.S., D.D.S., University of California

Degree of Master of Science in Dentistry Conferred June 11, 1955

Orthodontics

MORAN, Joseph R., Butte, Mont.
B.S., D.D.S., Creighton University

SUPERNAW, Eugene W., Petoskey, Mich.
D.D.S., Marquette University

Degree of Master of Science in Dentistry Conferred December 23, 1955

Pedodontics

LEWIS, Thompson M., Bonners Ferry,
Idaho
B.S., D.D.S., Northwestern University

STUDENTS IN DENTAL HYGIENE

CLASS OF 1957

BAKER, Arloene Ann, Elmer City
University of Washington

CHARTRAND, Carolyn Ann, Coeur
d'Alene, Idaho
University of Idaho

CHONZENA, Mona Irene, Anacortes
University of Washington

CONGDON, Roberta Ann, Tacoma
University of Washington

FREESE, Carol Joy, Bremerton
University of Washington

HAMLIN, Susan Emma, Seattle
University of Washington

HARRISON, Susan Etta, Seattle
University of Washington

HOMMA, Kumiko, Seattle
University of Washington

MASTON, June Hazel, Seattle
University of Washington

McGEE, Sally Jo, Tacoma
University of Washington

MORGANTHALER, Mary Lynn, Everett
University of Washington

O'CONNOR, Sharon Frances, Seattle
University of Washington

ROOP, Madeleine, Seattle
University of Washington

CLASS OF 1956

ANDERSON, Jan, Seattle
University of Washington

BEESON, Beverly Elaine, Edmonds
University of Washington

DONALDSON, Sally Ellen, Seattle
University of Washington

DUNN, Muriel May, Seattle
University of Washington

HILLMAN, Lona Lee, Seattle
University of Washington
PIHA, Rae, Seattle
University of Washington
RASANEN, Irene Ann, Aberdeen
University of Washington
ROSS, Sharon Ann, Seattle
University of Washington
RYAN, Margaret Mary, Seattle
University of Washington

SMITH, Nancy Kenfield, Mercer Island
University of Washington
STICKELS, Claudette Marlene, Seattle
D.H., Northwestern University
STOLLER, Barbara Ann, Richland
B.A., Washington State College
TRONQUET, Alice Ann, Seattle
University of Washington

CLASS OF 1955

Degree of Bachelor of Science Conferred June 11, 1955

BORGENDALE, Glen C., Seattle
University of Washington
BROWN, Mabel Jennerson, Seattle
University of Washington
FINSTAD, Sharlene R., Seattle
University of Washington
MARSHALL, Geneanne M., Seattle
University of Washington
MURCHIE, Sheila M., Duncan, B. C.
Victoria College

RICHTER, Jacklyn M., Puyallup
University of Washington
SAITO, Fumiko Ida, Berkeley, Calif.
University of Washington
SEGLINS, Biruta, Seattle
University of Washington
STRIEFF, Mary T., Cheney
University of Washington
WILSON, Laura J., Seattle
University of Washington

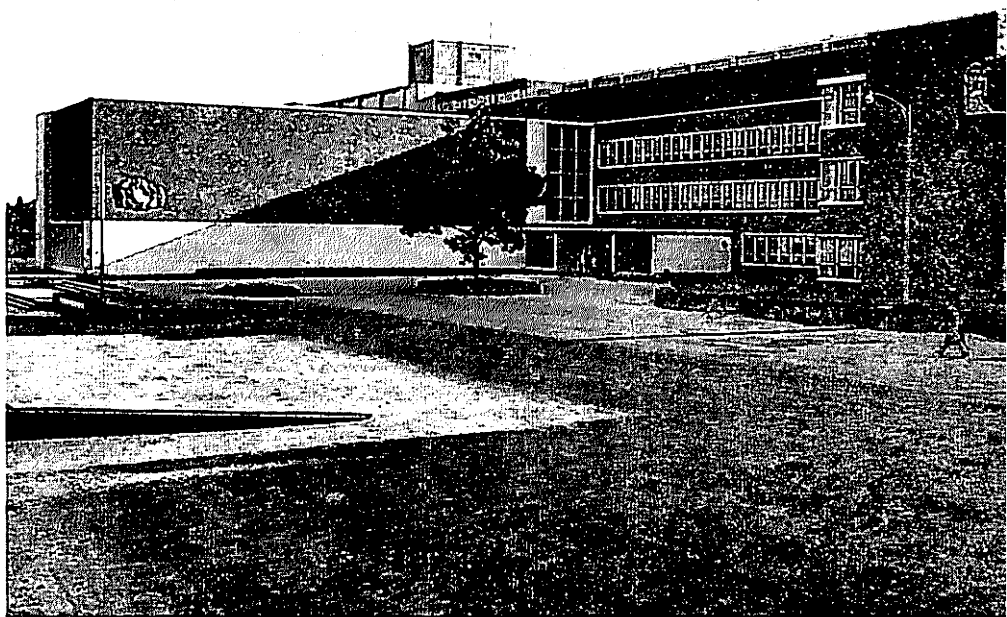
CLASS OF 1954

Degree of Bachelor of Science Conferred June 12, 1954

ATWOOD, Marilyn, Kenfield, Calif.
University of California
BERGER, Elaine, Seattle
University of Washington
CARLSON, Jo Ann, Seattle
University of Washington
EBERLEIN, Barbara J., Tonasket
University of Washington
GRABOW, Barbara B., Sutherlin, Ore.
University of Washington
HOYDAL, Astrid N., Seattle
University of Washington
LA GRANDEUR, Marilyn, Seattle
Seattle University

McCARTER, Shirley J., Seattle
University of Washington
REYNOLDS, Barbara J., Seattle
University of Washington
WEIDINGER, Mary Ann, Portland, Ore.
Marquette University
VERTTEMBERGER, Joyce A., Seattle
University of Washington
WHETSTONE, Emily J., Seattle
University of Washington
WIENIR, Rochelle J., Seattle
University of Washington

BULLETIN • UNIVERSITY OF WASHINGTON



SCHOOL OF NURSING

1956-1958

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes two general bulletins; bulletins of the colleges and schools; two Summer Quarter announcements; and publications of the Division of Adult Education and Extension Services, the correspondence study and extension class announcements.

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 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.

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.

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General Bulletins

UNIVERSITY REGULATIONS (FOR REGISTERED STUDENTS ONLY)

INTRODUCTION TO THE UNIVERSITY

Bulletins of the Colleges and Schools

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF BUSINESS ADMINISTRATION

COLLEGE OF EDUCATION

COLLEGE OF ENGINEERING

COLLEGE OF FORESTRY

GRADUATE SCHOOL

SCHOOL OF LAW

SCHOOLS OF MEDICINE AND DENTISTRY

SCHOOL OF NURSING

COLLEGE OF PHARMACY

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT

SUMMER QUARTER ANNOUNCEMENT

CORRESPONDENCE STUDY

EXTENSION CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 894
October, 1955

Published monthly at Seattle, Washington, by the University of Washington from October to July, inclusive. No issues in August and September. Entered as second-class matter December 18, 1947, at the post office at Seattle, Washington, under the Act of August 24, 1912.

CONTENTS

CALENDAR 4

ADMINISTRATION 10

 Board of Regents

 Officers of Administration

 School of Nursing Faculty

 Medical Lecturers

GENERAL INFORMATION 21

 Philosophy and Objectives

 Facilities

 Admission

 World War II and Korean Veterans

 Registration

 Tuition and Fees

 Estimate of Yearly Expenses

 Student Activities and Services

THE PROGRAMS IN NURSING 37

 Bachelor's Degree

 Bachelor of Science in Nursing

 Courses for Basic Degree and Basic Research Students

 Courses for Other Undergraduate Students

 Courses for Graduate Nurse Students

 Graduate Programs

 Courses for Post-Bachelor's and Master's Degree Students

 Required Courses in Allied Fields

CALENDAR

All fees must be paid at the time of registration. Registration is by appointment only.

WINTER QUARTER, 1956

REGISTRATION PERIOD

- Nov. 21-DEC. 9 Registration for students in residence Autumn Quarter, 1955. (*Registration appointments will be issued on presentation of ASUW cards beginning October 21.*)
- DEC. 28-DEC. 30 Registration for former students not in residence Autumn Quarter, 1955. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 21.*)
- DEC. 28-DEC. 30 Registration for new students. (*New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Winter Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

- DEC. 19—MONDAY Instruction begins for teaching units
- DEC. 26—MONDAY Instruction begins for clinical divisions
- JAN. 3—TUESDAY Instruction begins for other nursing students
- JAN. 9—MONDAY Last day to add a course
- FEB. 22—WEDNESDAY Washington's Birthday and Founder's Day holiday
- MAR. 11—SUNDAY Instruction ends for teaching units and clinical divisions
- MAR. 16—FRIDAY Instruction ends for other nursing students

SPRING QUARTER, 1956

REGISTRATION PERIOD

- FEB. 23-MAR. 9 Registration for students in residence Winter Quarter, 1956. (*Registration appointments will be issued on presentation of ASUW cards beginning January 20.*)
- MAR. 21-MAR. 23 Registration for former students not in residence Winter Quarter, 1956. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 20.*)
- MAR. 21-MAR. 23 Registration for new students. (*New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

MAR. 12—MONDAY	Instruction begins for teaching units
MAR. 19—MONDAY	Instruction begins for clinical divisions
MAR. 26—MONDAY	Instruction begins for other nursing students
MAR. 30—FRIDAY	Last day to add a course
MAY 18—FRIDAY	Governor's Day
MAY 30—WEDNESDAY	Memorial Day holiday
JUNE 3—SUNDAY	Baccalaureate Sunday
JUNE 3—SUNDAY	Instruction ends for teaching units and clinical divisions
JUNE 8—FRIDAY	Instruction ends for other nursing students
JUNE 9—SATURDAY	Commencement

SUMMER QUARTER, 1956

REGISTRATION PERIOD

MAY 29—JUNE 1	<i>Registration for all students. (Registration appointments for students in residence Spring Quarter, 1956, and for former students not in residence Spring Quarter, 1956, may be obtained from the Registrar's Office beginning April 16. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.)</i>
JUNE 11—JUNE 15	

ACADEMIC PERIOD

JUNE 4—MONDAY	Instruction begins for teaching units
JUNE 11—MONDAY	Instruction begins for clinical divisions
JUNE 18—MONDAY	Public health nursing field practice begins
JUNE 18—MONDAY	Instruction begins for other nursing 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
JULY 4—WEDNESDAY	Independence Day holiday
JULY 18—WEDNESDAY	First term ends
JULY 19—THURSDAY	Second term begins
JULY 20—FRIDAY	Last day to add a course for the second term
AUG. 17—FRIDAY	Instruction ends for other nursing students
AUG. 26—SUNDAY	Instruction ends for teaching units and clinical divisions
AUG. 31—FRIDAY	Public health nursing field practice ends

AUTUMN QUARTER, 1956

REGISTRATION PERIOD

SEPT. 11-OCT. 2	Registration for students in residence Spring Quarter, 1956. (<i>Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 21, but no later than September 21.</i>)
SEPT. 14-OCT. 2	Registration for former students not in residence Spring Quarter, 1956. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 21, but no later than September 21.</i>)
SEPT. 17-SEPT. 28	Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (<i>August 31 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.</i>)
SEPT. 17-OCT. 2	Registration for new transfer students with at least full sophomore standing. (<i>August 31 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

OCT. 1—MONDAY	Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing.
OCT. 1—MONDAY	Instruction begins for teaching units and clinical divisions
OCT. 3—WEDNESDAY	Instruction begins (8 a.m.) for other nursing students
OCT. 9—TUESDAY	Last day to add a course
NOV. 12—MONDAY	State Admission Day holiday
NOV. 21—NOV. 26	Thanksgiving recess (6 p.m. to 8 a.m.)
DEC. 16—SUNDAY	Instruction ends for clinical divisions
DEC. 21—FRIDAY	Instruction ends (6 p.m.) for other nursing students
DEC. 23—SUNDAY	Instruction ends for teaching units

WINTER QUARTER, 1957

REGISTRATION PERIOD

NOV. 26-DEC. 14	Registration for students in residence Autumn Quarter, 1956. (<i>Registration appointments will be issued on presentation of ASUW cards beginning October 26.</i>)
JAN. 2-JAN. 4	Registration for former students not in residence Autumn Quarter, 1956. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 26.</i>)

JAN. 2-JAN. 4

Registration for new students. (*New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Winter Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

DEC. 24-MONDAY

Instruction begins for teaching units

DEC. 31-MONDAY

Instruction begins for clinical divisions

JAN. 7-MONDAY

Instruction begins for other nursing students

JAN. 11-FRIDAY

Last day to add a course

FEB. 22-FRIDAY

Washington's Birthday and Founder's Day holiday

MAR. 17-SUNDAY

Instruction ends for teaching units and clinical divisions

MAR. 22-FRIDAY

Instruction ends for other nursing students

SPRING QUARTER, 1957

REGISTRATION PERIOD

FEB. 27-MAR. 15

Registration for students in residence Winter Quarter, 1957. (*Registration appointments will be issued on presentation of ASUW cards beginning January 25.*)

MAR. 27-MAR. 29

Registration for former students not in residence Winter Quarter, 1957. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 25.*)

MAR. 27-MAR. 29

Registration for new students. (*New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

MAR. 18-MONDAY

Instruction begins for teaching units

MAR. 25-MONDAY

Instruction begins for clinical divisions

APR. 1-MONDAY

Instruction begins for other nursing students

APR. 5-FRIDAY

Last day to add a course

MAY 24-FRIDAY

Governor's Day

MAY 30-THURSDAY

Memorial Day holiday

JUNE 9-SUNDAY

Baccalaureate Sunday

JUNE 9-SUNDAY

Instruction ends for teaching units and clinical divisions

JUNE 14-FRIDAY

Instruction ends for other nursing students

JUNE 15-SATURDAY

Commencement

SUMMER QUARTER, 1957

REGISTRATION PERIOD

JUNE 5-JUNE 7

JUNE 17-JUNE 21

Registration for all students. (*Registration appointments for students in residence Spring Quarter, 1957, and for former students not in residence Spring Quarter, 1957, may be obtained from the Registrar's Office beginning April 22. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.*)

ACADEMIC PERIOD

JUNE 10-MONDAY

JUNE 17-MONDAY

JUNE 24-MONDAY

JUNE 24-MONDAY

JUNE 25-TUESDAY

JUNE 28-FRIDAY

JULY 4-THURSDAY

JULY 24-WEDNESDAY

JULY 25-THURSDAY

JULY 26-FRIDAY

AUG. 23-FRIDAY

SEPT. 1-SUNDAY

SEPT. 6-FRIDAY

Instruction begins for teaching units

Instruction begins for clinical divisions

Public health nursing field practice begins

Instruction begins for other nursing students

Last day to add a course for the first term

Last day to add a course for the full quarter

Independence Day holiday

First term ends

Second term begins

Last day to add a course for the second term

Instruction ends for other nursing students

Instruction ends for teaching units and clinical divisions

Public health nursing field practice ends

AUTUMN QUARTER, 1957

REGISTRATION PERIOD

SEPT. 9-OCT. 1

SEPT. 13-OCT. 1

SEPT. 16-SEPT. 27

Registration for students in residence Spring Quarter, 1957. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 24, but no later than September 20.*)

Registration for former students not in residence Spring Quarter, 1957. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 24, but no later than September 20.*)

Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (*August 30 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)

SEPT. 16-OCT. 1

Registration for new transfer students with at least full sophomore standing. (*August 30 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

SEPT. 30-MONDAY

Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing.

SEPT. 30-MONDAY

Instruction begins for teaching units and clinical divisions

OCT. 2-WEDNESDAY

Instruction begins (8 a.m.) for other nursing students

OCT. 8-TUESDAY

Last day to add a course

NOV. 11-MONDAY

State Admission Day holiday

NOV. 27-DEC. 2

Thanksgiving recess (6 p.m. to 8 a.m.)

DEC. 15-SUNDAY

Instruction ends for clinical divisions

DEC. 20-FRIDAY

Instruction ends (6 p.m.) for other nursing students

DEC. 22-SUNDAY

Instruction ends for teaching units

WINTER QUARTER, 1958

REGISTRATION PERIOD

NOV. 25-DEC. 13

Registration for students in residence Autumn Quarter, 1957. (*Registration appointments will be issued on presentation of ASUW cards beginning October 25.*)

JAN. 2-JAN. 3

Registration for former students not in residence Autumn Quarter, 1957. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 25.*)

JAN. 2-JAN. 3

Registration for new students. (*New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Winter Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

DEC. 23-MONDAY

Instruction begins for teaching units

DEC. 30-MONDAY

Instruction begins for clinical divisions

JAN. 6-MONDAY

Instruction begins for other nursing students

JAN. 10-FRIDAY

Last day to add a course

FEB. 22-SATURDAY

Washington's Birthday and Founder's Day holiday

MAR. 16-SUNDAY

Instruction ends for teaching units and clinical divisions

MAR. 21-FRIDAY

Instruction ends for other nursing students

ADMINISTRATION

BOARD OF REGENTS

MRS. J. HERBERT GARDNER, <i>President</i>	La Conner
CHARLES M. HARRIS, <i>Vice-President</i>	Entiat
GRANT ARMSTRONG	Chehalis
THOMAS BALMER	Seattle
DONALD G. CORBETT	Spokane
CHARLES F. FRANKLAND	Seattle
WINLOCK W. MILLER	Seattle

HELEN HOAGLAND, *Secretary*

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NELSON A. WAHLSTROM, B.B.A.	<i>Comptroller and Business Manager</i>
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MARY S. TSCHUDIN, R.N., M.S.	<i>Dean of the School of Nursing</i>

SCHOOL OF NURSING FACULTY

(As of May 6, 1955)

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.

AIRTH, ANNABELLE MARGARET, 1946.....	<i>Instructor in Outpatient Nursing</i>
R.N., B.S., 1946, Washington	
ANDERSON, HELEN CORNELIA, 1945 (1951).....	<i>Assistant Professor of Nursing</i>
R.N., 1934, Bishop Johnson College of Nursing, California; C.P.T., 1934, Children's Hospital, California; B.S., 1945, C.P.H.N., 1947, Washington	
ANDERSON, JULIA M., 1950.....	<i>Assistant Professor of Public Health Nursing</i>
B.S., 1931, Minnesota; R.N., 1936, Huntington Memorial School of Nursing, California; C.P.H.N., 1938, M.N., 1942, Washington	
BELCHER, HELEN CAMP, 1952.....	<i>Assistant Professor of Nursing; Assistant</i>
A.B., 1942, Mount Holyoke College;	<i>Director of the Basic Nursing</i>
R.N., 1944, Massachusetts General Hospital	<i>Research Program</i>
School of Nursing; M.N., 1952, Washington	
BIRKBECK, LYNDALL HELEN, 1954 (1955).....	<i>Assistant Professor of</i>
R.N., 1942, Pennsylvania Hospital School of Nursing; Tuberculosis Nursing	
B.S., 1946, Minnesota (PHN); M.A., 1954, Teachers College, Columbia	
BLACKMAN, HELEN MARIE, 1945.....	<i>Instructor in Tuberculosis Nursing;</i>
R.N., 1929, St. Luke's School of Nursing, Iowa; Director of Nurses, Firland	
B.S., 1942, C.N.S., 1942, Washington	<i>Sanatorium</i>
BRANDT, EDNA MAE, 1954 (1955).....	<i>Assistant Professor of Nursing Arts</i>
R.N., 1939, St. Joseph's Hospital School of Nursing, Bloomington, Illinois;	
B.A., 1952, Redlands; M.N., 1953, Washington	
BRECKENRIDGE, FLORA JANE, 1953.....	<i>Instructor in Operating Room Nursing</i>
R.N., 1941, Evanston Hospital School of Nursing;	
B.S., 1952, Western Reserve	

- BROWN, ELEANOR AILEEN, 1955..... *Instructor in Public Health Nursing;*
R.N., 1939, Indianapolis General *Supervising Nurse of the Bremerton-*
Hospital School of Nursing; *Kitsap County Department*
B.S., C.P.H.N., 1949, Washington *of Public Health*
- BROWN, VIOLA JOYCE, 1953..... *Instructor in Surgical Nursing*
R.N., B.S., 1950, Washington (PHN)
- BRUGGEMAN, GENEVIEVE MARGARET, 1953..... *Instructor in Public Health Nursing;*
R.N., 1928, St. Joseph's Hospital School *Education Director of the Seattle-*
of Nursing, Marshall, Minnesota; *King County Health Department and*
B.S., 1947, Michigan; *Visiting Nurse Service*
M.A., 1953, Teachers College, Columbia
- BRYSON, SYLVIA, 1953..... *Instructor in Public Health Nursing; Director of Public*
R.N., 1923, Wesley Memorial Hospital *Health Nursing, Seattle-King County*
School of Nursing, Chicago; B.S., 1942, C.P.H.N., 1942, *Health Department*
George Peabody; M.A., 1955, *and Visiting Nurse*
Teachers College, Columbia *Service*
- BURKE, A. EVELYN, 1943 (1953)..... *Associate Professor of Public Health Nursing*
B.S., 1930, Akron Municipal; R.N., 1930, M.A., 1941, Western Reserve;
C.P.H.N., 1943, Washington
- CHINQUE, KATHERINE, 1951..... *Assistant Professor of Nursing (Child Health*
R.N., 1931, Providence Hospital; B.S., 1946, *and Development)*
Wayne (PHN); M.A., 1951, Michigan
- COBB, MARY MARGUERITE, 1953..... *Instructor in Public Health Nursing*
R.N., B.S., 1949, Washington (PHN)
- CROSS, HARRIET, 1932 (1941)..... *Assistant Professor of Nursing*
R.N., 1921, Columbia Hospital, Wisconsin; B.S., 1925, Minnesota;
C.P.H.N., 1938, M.N., 1940, Washington
- DIKE, BARBARA, 1953..... *Instructor in Psychiatric Nursing*
R.N., 1937, Port Angeles General Hospital School of Nursing;
B.S., 1948, M.N., 1953, Washington
- ELY, BETTY JANE, 1952 (1954)..... *Assistant Professor of Psychiatric Nursing*
R.N., 1945, Presbyterian Hospital School of Nursing, Pennsylvania;
B.S., 1951, Virginia; M.N., 1953, Washington
- ENOS, LUCY DEBEID, 1954..... *Instructor in Nursing Arts*
R.N., 1942, Pennsylvania Hospital School of Nursing;
B.S., 1946, M.A., 1954, Minnesota
- ERICKSON, EVA HELEN, 1954..... *Assistant Professor of Nursing (Hon.);*
R.N., 1933, Michael Reese Hospital School of *Administrator of Children's*
Nursing; B.S., 1939, Teachers College, Columbia; *Orthopedic Hospital*
M.S.H.A., 1947, Northwestern
- FRANZ, VESTA LORRAINE, 1953..... *Instructor in Surgical Nursing*
R.N., 1948, Samaritan Hospital School of Nursing, Idaho; B.S., 1953, Oregon
- GANNON, MARGARET ELIZABETH, 1949..... *Instructor in Nursing (Diet Therapy)*
B.A., 1932, Montana
- GLYNN, DOROTHY ELIZABETH, 1948..... *Assistant Professor of Nursing; Director*
B.A., 1926, Colorado School of Education; *of Nursing Service, Harborview-*
R.N., 1932, Kahler Hospitals School of Nursing *King County Hospital System*
- GOERTZ, LEAH, 1953..... *Instructor in Psychiatric Nursing*
R.N., 1945, Wichita Hospital School of Nursing; B.S., 1951, Washington
- GRAY, FLORENCE IRENE, 1945 (1952)..... *Assistant Professor of Nursing;*
R.N., B.S., 1945, M.S., 1950, *Educational Director of*
Washington *the Harborview Division*
- HANSEN, JULIA ANNE, 1953..... *Instructor in Medical Nursing*
B.A., 1939, Redlands; R.N., B.A., 1942, Stanford; M.N., 1955, Washington
- HAY, STELLA IDA LEADER, 1955..... *Instructor in Nursing Arts*
R.N., 1942, Eitel Hospital School of Nursing, Minneapolis;
B.S., 1944, M.A., 1951, Minnesota

- HEINEMANN, MARGOT EDITH, 1954 *Instructor in Tuberculosis Nursing*
R.N., B.S., 1945, Seattle; M.N., 1954, Washington
- HILDE, ELAINE NADENE, 1954 *Instructor in Psychiatric Nursing*
R.N., B.S., 1947, Washington
- HOFFMAN, KATHERINE JANET, 1942 (1951) *Associate Professor of Nursing;*
A.B., 1929, College of Puget Sound; R.N., 1934, *Assistant Dean of the*
Tacoma General Hospital School of Nursing; *School of Nursing*
M.N., 1941, Washington
- HOPKINS, RAMONA, 1953 *Instructor in Public Health Nursing; Director of*
R.N., 1929, Stanford; B.S., P.H.N., *Public Health Nursing, Alameda County*
1938, California; *Health Department,*
M.P.H., 1948, Minnesota *San Leandro, California*
- HUDSON, EVELYN MARIE, 1952 *Instructor in Obstetric Nursing*
R.N., B.S., 1951, Washington (PHN)
- HUNTINGTON, VIVIAN GENEVIEVE, 1952 *Instructor in Operating Room Nursing*
R.N., 1940, St. Peter's School of Nursing, Olympia; B.S., 1949, Washington
- IRVING, SUSAN ETHEL, 1954 *Instructor in Psychiatric Nursing*
R.N., B.S., 1944, Iowa; M.S., 1954, California
- KINNEY, CAROLYN ELIZABETH, 1950 *Assistant Professor of Nursing*
R.N., 1935, University of Colorado School of Nursing; *(Mental Hygiene)*
B.S., 1939, C.P.H.N., 1939, California; M.A., 1949, Teachers College, Columbia
- KINTNER, NANCY JANE, 1942 *Instructor in Psychiatric Nursing; Director of*
R.N., B.S., 1940, Washington *Nurses, Northern State Hospital*
- KITTELSBY, ROMA MARIE, 1953 *Instructor in Medical Nursing*
R.N., B.S., 1943, Minnesota; M.N., 1955, Washington
- KYNOCHE, RUTH CECILIA, 1953 *Instructor in Pediatric Nursing (Child*
R.N., 1946, Santa Rosa Junior College School of Nursing; *Health Center)*
C.N.S., 1949, B.S., 1950, Washington
- LACHAPPELLE, PATRICIA ANNE, 1953 *Instructor in Orthopedic Nursing*
R.N., B.S., 1948, Washington
- LAXSON, LOIS ELIZABETH, 1955 *Instructor in Medical Nursing*
R.N., B.A., 1951, Iowa
- LEAHY, KATHLEEN M., 1935 (1949) *Professor of Public Health Nursing*
R.N., 1921, Stanford; A.B., 1926, C.P.H.N., 1927, Oregon;
M.S., 1931, Washington
- LEWIS, GARLAND KATHRYN, 1951 *Instructor in Psychiatric Nursing*
R.N., 1934, Christ's Hospital School of Nursing, Kansas;
B.S., 1951, Washington
- LILLEOREN, INEZ INGEBORG, 1953 *Instructor in Operating Room Nursing*
R.N., B.S., 1950, Washington (PHN)
- LITTLE, DOLORES EMMA, 1951 *Instructor in Surgical Nursing*
R.N., B.S., 1946, Washington
- LUCAS, PAULINE, 1953 (1954) *Assistant Professor of Psychiatric Nursing*
R.N., 1937, Newark Beth Israel Hospital School of Nursing;
B.S., 1952, M.N., 1954, Washington
- MACK, VIRGINIA ANN, 1954 *Instructor in Nursing Arts*
R.N., 1943, St. Joseph's Hospital, Tacoma; B.S., 1945, Seattle
- MANSPERGER, MARGUERITE, 1952 *Instructor in Nursing; Director of Nurses,*
R.N., 1932, Seattle General Hospital School of *Virginia Mason Hospital*
Nursing; B.S., 1939, Washington
- MITCHELL, EDITH LAUBSCHER, 1947 *Instructor in Public Health Nursing;*
R.N., 1929, General Hospital of Everett *Supervising Nurse, Tacoma-Pierce*
School of Nursing; C.P.H.N., 1929, *County Public Health Nursing*
B.S., 1929, Washington *Association*
- MOODY, ADELINE LUCILLE, 1952 *Assistant Professor of Nursing (Hon.); Director*
R.N., 1929, Saskatoon City Hospital *of Nurses, The Doctors Hospital*

- NASH, SHIRLEY ISTAS, 1952 *Instructor in Nursing; Educational Director of the*
R.N., 1941, Virginia Mason Hospital School of Nursing; B.S., 1949, Washington *Virginia Mason Hospital Division*
- NELSON, MARGARET FLORENCE, 1951..... *Instructor in Public Health Nursing; Chief*
R.N., B.S., C.P.H.N., *of Public Health Nursing, San Jose City Health Department, San Jose, California*
1930, Minnesota
- NORTHROP, MARY WATSON, 1931..... *Instructor in Nursing (Diet Therapy)*
B.A., 1920, Vassar College; M.S., 1923, Teachers College, Columbia
- O'BOYLE, MYRTLE I., 1953 (1955)..... *Assistant Professor of Nursing Service*
R.N., 1939, Fergus Falls State Hospital School of Nursing; B.S., 1952, M.N., 1954, Washington *Administration*
- OELWEIN, RUTH ANNE, 1955 *Instructor in Medical Nursing*
R.N., 1953, Wesley Memorial Hospital School of Nursing, Chicago,
B.A., 1954, Idaho State College
- OLCOTT, VIRGINIA, 1931 (1945)..... *Associate Professor of Nursing*
R.N., 1926, Peter Bent Brigham Hospital School of Nursing, Massachusetts;
B.S., 1927, M.S., 1931, C.P.H.N., 1949, Washington
- OLSEN, BETTY MARIE, 1954 *Instructor in Nursing Arts*
R.N., B.S., 1953, Washington (PHN)
- OSMOND, THELMA WOOD, 1952 *Instructor in Obstetric Nursing*
R.N., 1949, Tacoma General Hospital School of Nursing;
B.S., 1952, Washington
- PITTMAN, ROSEMARY JEANNE, 1954 *Instructor in Public Health Nursing;*
R.N., B.S., 1940, Iowa; *Supervising Nurse of the Clark-Skamania District Health Department*
M.S., 1947, Chicago (PHN)
- POOL, MARION ESTELLE, 1953 *Instructor in Public Health Nursing*
R.N., 1938, St. Joseph's Hospital School of Nursing, Arizona; B.S., 1941,
C.P.H.N., 1941, George Peabody; M.S., 1947, Western Reserve
- POTTER, SHIRLEY MAE, 1955 *Instructor in Surgical Nursing*
B.S., 1949, St. Lawrence; R.N., M.N., 1952, Yale (PHN)
- ROHWEDER, ANNABELLE WILLRICH, 1954 *Research Associate (Basic Nursing*
R.N., 1948, Virginia Mason Hospital School of Nursing; *Research)*
B.S., 1950, M.N., 1954, Washington
- ROSE, PATRICIA ANN, 1952 *Instructor in Obstetric Nursing*
R.N., 1946, St. Joseph's Hospital School of Nursing, Tacoma;
B.S., 1949, Washington
- SMITH, ELIZABETH MARY, 1954 *Assistant Professor of Nursing (Hon.); Director*
R.N., 1928, Presbyterian Hospital School of Nursing; *of Nursing Service, Children's Orthopedic Hospital*
Nursing, Illinois
- SMITH, HARRIET HOLBROOK, 1949 *Assistant Professor of Nursing Service*
A.B., 1918, Mount Holyoke College; *Administration*
R.N., 1920, Seattle General Hospital School of Nursing
- SOULE, ELIZABETH STERLING, 1920 (1950) .. *Professor Emeritus of Nursing; Dean*
R.N., 1907, Malden Hospital School of Nursing, *Emeritus of the School of*
Massachusetts; B.A., 1926, M.A., 1931, Washington; *Nursing*
D.Sc. (Hon.), 1944, Montana State College
- STEWART, LUCILLE BLANCHE, 1954 *Instructor in Pediatric Nursing*
R.N., 1949, Evanston Hospital School of Nursing, Illinois;
B.S., 1952, Washington
- STOKES, PRISCILLA SENTER, 1953 *Instructor in Surgical Nursing*
B.A., 1946, Connecticut College for Women; R.N., M.N., 1949, Yale (PHN)
- SVELANDER, KATHERINE GUSTAFSON, 1946..... *Assistant Professor of Nursing;*
R.N., 1928, Swedish Hospital School of Nursing; *Educational Director of The Swedish Hospital Division*
Nursing; B.S., 1928, Washington
- THOEN, WILLA DEE TROESTER, 1953..... *Instructor in Poliomyelitis Nursing*
R.N., 1947, Lincoln General Hospital School of Nursing, Nebraska;
B.S., 1950, Boston

- TITUS, MADELYN LUCILE, 1953.....*Assistant Professor of Nursing*
 R.N., 1945, Massachusetts General Hospital School of Nursing;
 B.S., 1953, Simmons College; M.S., 1953, Boston
- TJELTA, INGA TOMINE, 1954.....*Instructor in Medical Nursing*
 R.N., 1946, Swedish Hospital School of Nursing, Minnesota;
 B.S., 1954, Washington (PHN)
- TSCHUDIN, MARY STICKELS, 1942 (1955).....*Professor of Nursing; Dean of the*
 R.N., B.S., 1935, C.P.H.N., 1936, *School of Nursing*
 M.S., 1939, Washington
- WASSON, LOUISE, 1951 (1952).....*Assistant Professor of Clinical Nursing*
 R.N., 1937, Samaritan Hospital School of Nursing, Idaho;
 B.S., 1947, Ohio State; M.A., 1951, Teachers College, Columbia
- ZALESKI, FRANCES HOLLENBACK, 1954.....*Instructor in Pediatric Nursing*
 R.N., 1929, Bryn Mawr Hospital School of Nursing, Pennsylvania;
 B.S., 1952, New York

MEDICAL LECTURERS IN THE SCHOOL OF NURSING

- BAKER, JOEL W.....*Consultant in Surgery; Director of Medical Student Surgical*
 M.D., 1928, Virginia *Teaching, Virginia Mason Hospital; Lecturer in Nursing*
- BANKS, ALBERT LAWRENCE.....*Lecturer in Nursing*
 A.B., 1940, M.D., 1943, Duke
- BARNES, ROBERT H., JR.....*Clinical Instructor in Medicine; Lecturer in Nursing*
 B.S., 1940, Virginia Military Institute; M.D., 1943, Virginia
- BENHAM, SHIRLEY, JR.....*Lecturer in Nursing*
 A.B., 1935, DePauw; M.D., 1939, Indiana; M.P.H., 1942, Michigan
- BILL, ALEXANDER H., JR.....*Clinical Associate in Surgery; Lecturer in Nursing*
 A.B., 1935, M.D., 1939, Harvard
- BILLINGTON, SHEROD M.....*Clinical Associate Professor of Pediatrics;*
 A.B., 1932, M.D., 1935, Vanderbilt *Lecturer in Nursing*
- BINGHAM, JAMES.....*Clinical Assistant Professor of Medicine;*
 B.S., 1935, M.D., 1937, Wisconsin *Lecturer in Nursing*
- BOISSEAU, DAVID W.....*Lecturer in Nursing*
 B.S., 1940, Chicago; M.D., 1944, Boston
- BROWN, ROBERT WHITCOMB.....*Clinical Affiliate in Psychiatry; Lecturer in Nursing*
 B.A., 1923, Wisconsin; M.D., 1928, Harvard; M.S., 1940, Minnesota
- BRUENNER, BERTRAM F.....*Clinical Instructor in Medicine; Lecturer in Nursing*
 B.S., 1926, M.D., 1929, Minnesota
- CAMPBELL, ALEXANDER DUNCAN.....*Clinical Instructor in Medicine; Lecturer*
 B.A., 1930, Whitman College; M.D., 1934, Johns Hopkins *in Nursing*
- CAMPBELL, ROBERT M.....*Clinical Instructor in Obstetrics and Gynecology;*
 B.S., 1942, Washington; M.D., 1945, *Lecturer in Nursing*
 M.S., 1949, Michigan
- CANTREL, SIMEON T.....*Clinical Associate Professor in Radiology; Lecturer*
 A.B., 1929, Dartmouth College; M.D., 1932, Harvard *in Nursing*
- CHISM, CARL E.....*Clinical Associate in Surgery; Lecturer in Nursing*
 B.S., 1936, M.D., 1941, Nebraska
- CLARKE, EDMUND R., JR.....*Clinical Associate in Medicine; Lecturer in Nursing*
 B.A., 1940, Denver; M.D., 1943, Colorado
- CLEVELAND, FRED EDWARD.....*Clinical Associate in Medicine; Lecturer in Nursing*
 B.S., 1937, M.D., 1941, Virginia
- CLINE, FRANK, JR.....*Clinical Associate in Medicine; Lecturer in Nursing*
 A.B., 1939, Dartmouth College; M.D., 1943, Pennsylvania
- COE, HERBERT E.....*Senior Consultant in Surgery; Lecturer in Nursing*
 A.B., 1904, M.D., 1906, Michigan
- COLE, HAROLD CECIL.....*Lecturer in Nursing*
 B.B.A., 1928, B.S., 1934, Washington; M.D., 1939, Creighton

- CRYSTAL, DEAN K. *Clinical Associate in Physiology and Biophysics; Lecturer*
 B.S., 1936, Washington; B.A., 1938, Oxford; *in Nursing*
 M.D., 1941, Johns Hopkins
- DAY, CHARLES WARD *Clinical Instructor in Obstetrics and Gynecology;*
 B.S., 1939, Washington; M.D., 1942, Oregon *Lecturer in Nursing*
- DIRSTINE, MORRIS J. *Clinical Associate in Surgery; Lecturer in Nursing*
 Ph.G., 1926, Washington State College; B.S., 1932, Washington;
 M.D., 1937, Northwestern
- DOCTER, JACK MERTON *Clinical Instructor in Pediatrics; Lecturer in Nursing*
 B.S., 1937, Washington; M.D., 1941, Columbia
- EMMEL, HARRY E. *Clinical Associate in Orthopedic Surgery; Lecturer in Nursing*
 B.S., 1936, Willamette; M.D., 1940, Oregon
- FARGHER, CECIL RHODES *Lecturer in Nursing; Medical Director of the Tacoma-*
 B.A., 1924, M.D., 1928, Oregon; *Pierce County Health Department*
 M.P.H., 1938, Harvard
- FINLAYSON, MALCOLM *Lecturer in Nursing*
 B.A., 1938, Yale; M.D., 1942, Rush Medical College
- FLASHMAN, FORREST L. *Clinical Associate in Orthopedic Surgery; Lecturer*
 M.D., 1941, Northwestern *in Nursing*
- FODOR, OSCAR A. *Clinical Associate in Medicine; Lecturer in Nursing*
 B.S., 1938, Franklin and Marshall College, Pennsylvania; M.D., 1942, Indiana
- GERAGHTY, THOMAS P. *Clinical Instructor in Medicine; Lecturer in Nursing*
 B.S., 1934, Washington; M.D., 1939, Oregon
- GIEDT, WALVIN R. *Lecturer in Nursing*
 B.S., 1933, South Dakota; M.D., 1937, Rush Medical College;
 M.P.H., 1941, Johns Hopkins
- GREENLEAF, RICHARD CRANCH *Clinical Instructor in Medicine; Lecturer*
 B.S., 1939, Yale; M.D., 1942, Columbia *in Nursing*
- GUNTNER, MARTIN JULIAN. *Lecturer in Nursing*
 B.A., 1939, Columbia; M.S., Ph.D., 1947, Northwestern; M.D., 1948, Illinois
- HAGEN, JOHN M. V. *Assistant in Medicine; Lecturer in Nursing*
 B.A., 1942, Wyoming; M.D., 1950, Rochester
- HAMES, GEORGE H. *Clinical Instructor in Medicine; Lecturer in Nursing*
 B.A., 1926, Victoria College (Canada); M.D., 1929, Toronto
- HARTLEY, RICHARD BENJAMIN *Lecturer in Nursing*
 B.S., 1950, Lewis and Clark College; M.A., 1952, Denver
- HAVEN, HALE A. *Consultant in Neurosurgery; Lecturer in Nursing*
 B.S., 1927, M.D., 1928, M.S., 1930, Ph.D., 1933, Northwestern
- HAVILAND, JAMES WEST *Clinical Associate Professor of Medicine; Assistant*
 A.B., 1932, Union College, New York; *Dean of the School of Medicine;*
 M.D., 1936, Johns Hopkins *Lecturer in Nursing*
- HOFFMAN, ROBERT W. *Instructor P.T. in Pediatrics; Lecturer in Nursing*
 M.D., 1946, St. Louis
- HOGAN, RAYMOND LOYOLA *Lecturer in Nursing*
 M.D., 1937, Columbia
- HOGNESS, JOHN R. *Clinical Associate in Medicine; Lecturer in Nursing*
 B.S., 1943, M.D., 1946, Chicago
- JACKSON, STANLEY WEBBER *Lecturer in Nursing*
 B.Comm., 1941, M.D., C.M., 1950, McGill
- JAQUETTE, WILLIAM ALDERMAN, JR. *Clinical Assistant Professor of Pediatrics;*
 A.B., 1932, Harvard; M.D., 1936, Pennsylvania *Lecturer in Nursing*
- JARVIS, FRED J. *Consultant in Surgery; Lecturer in Nursing*
 B.A., 1928, M.D., 1932, Iowa
- JENSEN, OLE J. *Clinical Associate in Urology; Lecturer in Nursing*
 B.S., 1934, Washington; M.D., C.M., 1939, McGill;
 D.Med.Sc., 1944, Columbia

- JOBB, EMIL *Clinical Instructor in Medicine; Lecturer in Nursing*
B.S., 1941, M.D., 1942, Wayne
- JOFFE, JOY RUTH *Clinical Associate in Medicine; Lecturer in Nursing*
M.D., 1945, Women's Medical College of Pennsylvania
- JOHNSON, ARTHUR DEAN *Clinical Instructor in Medicine; Lecturer in Nursing*
B.A., 1934, Iowa; M.D., 1939, Northwestern
- JOHNSON, ROGER H. *Clinical Associate in Surgery; Lecturer in Nursing*
B.S., 1937, M.D., 1939, Wisconsin; M.S., 1944, Minnesota
- JONES, CHARLES HERBERT *Clinical Affiliate in Psychiatry; Lecturer in Nursing*
B.S., 1940, Washington; M.D., 1943, Oregon
- JONES, HUGH WARREN *Clinical Instructor in Pathology; Lecturer in Nursing*
B.S., 1936, M.D., 1938, Arkansas
- KAPLAN, CHARLES *Clinical Instructor in Pediatrics; Lecturer in Nursing*
B.A., 1934, M.D., 1937, Toronto
- KIMBALL, CHARLES DUNLAP *Clinical Instructor in Obstetrics and Gynecology;*
M.D., 1934, Buffalo *Lecturer in Nursing*
- KING, ROBERT L. *Lecturer in Nursing*
M.D., 1928, B.S., 1931, Virginia
- KRETZ, ALEXANDER WALTER *Lecturer in Nursing*
B.S., 1938, Washington; M.D., 1941, Oregon
- LEEDE, WILLIAM EDWARD *Clinical Instructor in Medicine; Lecturer in Nursing*
B.S., 1934, M.D., 1937, Oregon
- LEHMAN, SANFORD PAGE *Lecturer in Nursing; Medical Director of the Seattle-*
B.S., 1928, Wooster College; M.S., 1934, *King County Health Department*
University of Cincinnati Medical School; M.P.H., 1941, Michigan
- LINELL, MICHAEL AMBROSE *Lecturer in Nursing*
L.R.C.P., 1938, Westminster Hospital (England)
- MACMAHON, CHARLES E. *Clinical Instructor in Surgery; Lecturer in Nursing*
B.S., 1932, Washington; M.D., 1936, Harvard
- MCDONALD, VIRGINIA CAROLINE VAIL *Lecturer in Nursing*
B.A., 1940, Wellesley College; M.D., 1944, Chicago
- McELMEEL, EUGENE F. *Clinical Instructor in Surgery; Lecturer in Nursing*
B.A., 1930, College of St. Thomas, Minnesota;
B.S., 1933, M.D., 1936, Minnesota
- MCGAFFEY, HAZEL LOUISE *Lecturer in Nursing*
B.S., 1946, M.D., 1949, Minnesota
- MICHEL, JEAN C. *Clinical Associate in Medicine; Lecturer in Nursing*
B.S., 1943, Bowdoin College; M.D., 1946, Columbia
- MILLER, JAMES W. *Clinical Instructor in Orthopedic Surgery; Lecturer*
A.B., 1936, M.D., 1939, Michigan *in Nursing*
- MILLER, ZANE EDWARD *Lecturer in Nursing*
M.D., 1945, Hahnemann Medical College, Pennsylvania
- MOLL, FREDERIC C. *Associate Professor of Pediatrics; Lecturer in Nursing*
A.B., 1937, M.D., 1940, Rochester
- MORGAN, EDWARD H. *Clinical Instructor in Medicine; Lecturer in Nursing*
B.A., 1938, DePauw; B.M., M.D., 1943, Northwestern
- MORTON, ROBERT J. *Clinical Instructor in Medicine; Lecturer in Nursing*
A.B., 1939, M.D., 1943, Kansas
- NELSON, JACK N. *Clinical Instructor in Urology; Lecturer in Nursing*
M.D., 1932, College of Medical Evangelists
- NEWKIRK, PAUL R. *Clinical Affiliate in Psychiatry; Lecturer in Nursing*
M.D., 1911, Heidelberg
- PAINE, ROBERT L. *Clinical Associate in Medicine; Lecturer in Nursing*
B.S., 1942, Bowdoin College; M.D., 1946, Columbia
- PALMER, LESTER J. *Clinical Professor of Medicine; Lecturer in Nursing*
M.D., 1914, Northwestern

PEARSON, CLARENCE C. *Clinical Instructor in Medicine; Lecturer in Nursing*
 B.A., 1934, M.D., 1937, Texas; M.S., 1947, Minnesota

PILLOW, RANDOLPH *Clinical Associate in Medicine; Lecturer in Nursing*
 B.A., 1941, M.D., 1944, Virginia

POMMERENING, ROBERT A. *Clinical Instructor in Medicine; Lecturer in Nursing*
 A.B., 1938, M.D., 1942, Michigan

POTTER, ROBERT T. *Clinical Instructor in Medicine; Lecturer in Nursing*
 B.S., 1937, M.B., 1939, M.D., 1940, Minnesota; M.P.H., 1944, Johns Hopkins

RANKIN, ROBERT M. *Clinical Instructor in Medicine; Lecturer in Nursing*
 B.S., 1937, Washington; M.D., 1942, Johns Hopkins

REEVES, ROBERT L. *Clinical Associate in Medicine; Lecturer in Nursing*
 M.D., 1946, Virginia

ROBERTS, WARREN D. *Lecturer in Nursing*
 B.A., 1950, M.A., 1953, Denver

RODKEY, GEORGE WILLIAM *Lecturer in Nursing*
 A.B., 1945, Whitman College; M.D., 1948, Wayne

ROHRER, PIUS ALOYSIUS *Lecturer in Nursing*
 A.B., 1910, M.A., 1912, Gonzaga; M.D., 1914, St. Louis

RUPRECHT, ARCHIBALD LOWELL *Lecturer in Nursing*
 A.B., 1943, Harvard; M.D., 1946, Columbia

RUTHERFORD, ROBERT N. *Clinical Instructor in Obstetrics and Gynecology;*
 A.B., 1932, Illinois; M.D., 1936, Harvard *Lecturer in Nursing*

RUUSKA, PAUL E. *Clinical Associate in Orthopedic Surgery;*
 M.D., 1940, Oregon *Lecturer in Nursing*

SCHROEDER, HERMAN J. *Clinical Instructor in Obstetrics and Gynecology;*
 Ph.C., 1931, Washington; M.D., 1940, Oregon *Lecturer in Nursing*

SHEEHY, THOMAS F., JR. *Clinical Associate in Medicine; Lecturer in Nursing*
 B.S., 1942, Villanova College; M.D., 1945, Temple

SHERIDAN, ALFRED *Clinical Associate in Surgery; Lecturer in Nursing*
 B.S., 1938, Washington; M.D., 1943, Northwestern

SHERWOOD, KENNETH K. *Clinical Assistant Professor of Medicine; Lecturer*
 B.S., 1923, B.M., 1925, M.D., 1926, Minnesota *in Nursing*

SKINNER, ALFRED LORING *Lecturer in Nursing*
 A.B., 1947, Harvard; M.D., 1951, Harvard Medical School, Boston

SPARKMAN, DONALD ROSS *Clinical Assistant Professor of Medicine; Lecturer*
 B.S., 1930, Washington; M.D., 1934, Pennsylvania *in Nursing*

SPEIR, EDWARD B. *Consultant in Surgery; Lecturer in Nursing*
 B.A., 1929, M.D., 1933, Kansas

STAFFORD, DONALD E. *Clinical Instructor in Neurosurgery; Lecturer in Nursing*
 B.A., 1932, Park College, Missouri; M.D., 1935, Harvard;
 M.S., 1941, Minnesota

STEENROD, WILLIAM J. *Clinical Associate in Medicine; Lecturer in Nursing*
 B.S., 1943, Western Michigan College; M.D., 1946, Michigan

STONE, CALEB *Consultant in Surgery; Lecturer in Nursing*
 B.S., 1922, Washington; M.D., 1926, Washington University, St. Louis;
 M.S., 1934, Virginia

STROH, JAMES E. S. *Clinical Assistant Professor of Medicine; Lecturer in Nursing*
 B.S., 1928, South Dakota; M.D., 1931, Illinois

THOMAS, GERALD FREDERICK *Lecturer in Nursing*
 M.D., 1933, Nebraska

THOMPSON, EVERETT FREDERICK *Lecturer in Nursing*
 A.B., 1950, Lewis and Clark College; M.A., 1953, Denver

TIDWELL, ROBERT A. *Clinical Assistant Professor of Pediatrics; Lecturer*
 B.S.M., 1935, M.D., 1937, Oklahoma *in Nursing*

TOLAN, JOHN F. *Consultant in Surgery (Otolaryngology); Lecturer in Nursing*
 B.S., 1931, M.D., 1933, Michigan

TRUEDELL, DUANE EARL.....	<i>Lecturer in Nursing</i>
B.S., 1943, Washington; M.D., 1949, Northwestern	
VAN AELSTYN, EDWARD LESLIE.....	<i>Lecturer in Nursing</i>
B.A., 1931, Utah; M.D., 1934, Louisville; C.P.H., 1937, California	
VENNESLAND, KIRSTEN.....	<i>Lecturer in Nursing</i>
B.S., 1934, M.D., 1942, Chicago	
WALKER, JOHN H.....	<i>Clinical Instructor in Radiology; Lecturer in Nursing</i>
B.S., 1936, Washington; M.D., 1940, Michigan	
WANAMAKER, FRANK HERMAN.....	<i>Consultant in Surgery; Lecturer in Nursing</i>
D.D.S., 1922, M.D., 1929, Northwestern	
WATTS, WILLIAM E.....	<i>Clinical Assistant Professor of Medicine;</i>
B.S., 1938, Washington; M.D., 1942, Harvard	<i>Lecturer in Nursing</i>
WELTI, WALTER B.....	<i>Instructor in Psychiatry; Lecturer in Nursing</i>
B.A., 1943, M.D., 1946, Utah	
WILDERMUTH, ORLISS.....	<i>Lecturer in Nursing</i>
A.B., 1939, B.S., 1941, Missouri; M.D., 1943, Cincinnati	
YORE, RICHARD WILLIAM.....	<i>Lecturer in Nursing</i>
A.B., 1939, M.D., 1943, Washington University, St. Louis	
ZAHN, DANIEL W.....	<i>Clinical Assistant Professor of Medicine;</i>
B.S., 1934, M.D., 1938, Glasgow	<i>Lecturer in Nursing</i>

CHANGES IN UNIVERSITY REGULATIONS

The University and its colleges and schools reserve the right to change the rules regulating admission to, instruction in, and graduation from the University and its various divisions, and to change any other regulations affecting the student body. 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 and change fees at any time.



GENERAL INFORMATION

GENERAL INFORMATION

THE UNIVERSITY OF WASHINGTON's School of Nursing, whose beginning in 1917 represented a pioneer effort in university nursing education, is an independent professional school within the Division of Health Sciences. Its program is integrated with the University's program and meets all University standards and requirements.

The School had its origin during the first World War. The President of the University, Henry Suzzallo, was interested in developing vocational fields for women and, recognizing the state's wartime need for nurses, appointed a faculty committee to develop a prenursing curriculum. The first curriculum, designed to cover a period of five years, granted a Bachelor of Science degree after three years of study at the University and two years of work in a selected hospital. After the introduction of the prenursing program, the University, with the cooperation of the Washington Tuberculosis Association, established a public health nursing course, and it was with this course that Mrs. Elizabeth Sterling Soule, who was to be the first Dean of the School, became associated with nursing on the University campus.

Nursing was so successful as a University curriculum that, in 1921, the Department of Nursing Education was organized, offering both the basic five-year combined program and a public health nursing course. Realization of a continuously growing need for young women in both hospital and public health nursing led to the development of a program of study for graduate nurses which combined additional professional education with academic work and granted a Bachelor of Science degree.

In 1931, the four-year integrated degree course, in which the student was registered in the University throughout the entire nursing course, was developed and resulted in the creation of the Harborview Division of the School of Nursing. The Department of Nursing Education became a School of Nursing in the College of Arts and Sciences in 1934. That same year the Association of Collegiate Schools of Nursing was organized, and the University of Washington School was one of its charter members. In 1938, the School of Nursing instituted a master's degree program for nurses who wished to obtain additional academic and professional preparation. In 1945, the School became an autonomous professional school of nursing with its own administrative organization, dean, and faculty. When the

Division of Health Sciences was created, cooperative and comprehensive planning for the education of all students in nursing, medicine, dentistry, and pharmacy was made possible. In 1946, the Swedish Hospital Division was included in the School of Nursing on the same basis as the Harborview Division.

Since 1948, when the University of Washington School of Nursing became the fourth school in the country to receive joint accreditation by the National League of Nursing Education and the National Organization for Public Health Nursing, graduates of the basic curriculum have been prepared to take first-level positions in public health nursing.

In 1952, the Bachelor of Science program for graduate nurses was reorganized. Today, all students meeting requirements for the Bachelor of Science in Nursing degree have completed a program that prepares them professionally for both public health and hospital nursing. In 1952, the Virginia Mason Hospital School of Nursing became another division of the School. The Basic Nursing Research Program is offered through this division.

PHILOSOPHY AND OBJECTIVES

After thoughtful study, the philosophy adopted by the faculty and students of the School of Nursing is as follows:

"The School of Nursing acknowledges its responsibility for promoting complete nursing service for the people of the state of Washington through teaching, research, and public service. Complete nursing care embodies the recognition of the patient's physical, emotional, and spiritual needs. Kindness, tolerance, and understanding are essential to the fulfillment of a therapeutic patient-nurse relationship.

"The School of Nursing believes 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 parts of the professional nursing curriculum.

"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 her 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 followed by graduate professional experience prepares the nurse for advanced levels of service.

"The School of Nursing believes that the professional nurse is characterized by the ability to give complete nursing care in all fields; to use the basic communication skills competently in organizing, planning, and directing the work of others; to cooperate democratically with allied professional and citizen groups for the improvement of total health services; to maintain her personal identity; and to attain individual satisfactions in her daily life at the same time as she serves her community. These responsibilities she accepts in contributing to nursing research,

in upholding the ideals of the nursing profession, and in working toward its continued improvement and growth."

In keeping with this philosophy, the School of Nursing works toward the attainment of the following objectives in the various bachelor's curricula:

"The School of Nursing endeavors to develop a nurse who is a mature, adjusting person capable of directing her own life, assuming responsibility for her own actions, and accepting her responsibility as a contributing member of social groups.

"The School of Nursing endeavors to develop a nurse who is a professionally and technically competent person possessing an understanding of the physical, biological, and social sciences and the humanities essential to effective nursing practice and who is skillful in meeting the nursing needs of the individual and community for care during illness and in the conservation of health.

"The School of Nursing endeavors to develop a nurse who is a responsible professional person, as an individual and as a member of the health team, and who is capable of maintaining effective interpersonal, professional, and inter-professional relationships.

"The School of Nursing endeavors to develop a nurse who is a responsible citizen capable of accepting her role as a contributing member of society and who is able to interpret her profession and professional activities to the community.

"The School of Nursing endeavors to develop a nurse who is a creative individual capable of making her unique contribution to the improvement of nursing and who accepts responsibility for self-directed activity toward her own established goals."

FACILITIES

The Health Sciences Building, which houses the Schools of Nursing, Medicine, and Dentistry, is a modern, functional structure with well-equipped classrooms, laboratories, recreational facilities, administrative offices, and a library in which students in the basic and health sciences study and work together. The teaching and research hospital, presently under construction, which will adjoin this building and in which students will receive part of their experience, will extend the facilities.

The School of Nursing uses all resources of the University in planning for its various curricula. Courses outside the professional field are taken with students in other disciplines.

LIBRARIES

All University library facilities are available to students in the School of Nursing. The Health Sciences Library, which serves faculty and students in nursing, medicine, and dentistry, and is used in much research work done in other sections of the University, has about 57,000 carefully selected volumes (with stack space for 40,000 more) and subscribes to more than 800 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.

There are libraries in each of the teaching units of the School of Nursing. Each division maintains a carefully selected library: Harborview, 1225 volumes; Swedish Hospital, 1397 volumes; and Virginia Mason Hospital, 937 volumes. Emphasis is placed on the clinical fields, and professional periodicals are on file. In addition, all teaching units maintain libraries in the specific clinical area of that unit. Ward libraries are kept on each clinical service in the hospital or public health agency.

TEACHING UNITS

To provide the best experience in all clinical fields, the School of Nursing utilizes a wide variety of hospitals and other health agencies. Students in all curricula, basic and graduate, and affiliates from other schools of nursing, receive experience in these agencies under the direction of the School. These agencies and their fields are:

ALL HOSPITAL CLINICAL FIELDS (including outpatient departments): Harborview-King County Hospital, Harborview Division, capacity, 560 beds; The Doctors Hospital, capacity, 187 beds; The Swedish Hospital, capacity, 404 beds; and Virginia Mason Hospital, capacity, 208 beds.

PEDIATRIC NURSING: Harborview-King County Hospital and Children's Orthopedic Hospital, capacity, 200 beds.

TUBERCULOSIS NURSING: Firland Sanatorium, capacity, 1,268 beds.

PSYCHIATRIC NURSING: Northern State Hospital, Sedro Woolley, capacity, 2,273 beds; Western State Hospital, Fort Steilacoom, capacity, 3,007 beds; and Pinel Foundation, Seattle, capacity, 32 beds.

PUBLIC HEALTH NURSING: Seattle-King County Health Department and Visiting Nurse Service; Tacoma-Pierce County Health Department and Public Health Nursing Association; Bremerton-Kitsap County Department of Public Health; and Clark-Skamania District Health Department.

Other community hospital and health agencies are used as necessary to accommodate students.

ADMISSION

The University Board of Admissions gives first preference to applications from legal residents of Washington and Alaska and to out-of-state applicants who are sons and daughters of University of Washington alumni. The School of Nursing, like most colleges and schools in the University, admits qualified out-of-state students and encourages those with good scholarship records to apply.

Applications for admission must be submitted by prescribed deadlines and must be substantiated by certain credentials and reports submitted in accordance with University rules and practices. It is important that the student's application be submitted by the proper time, for the University can accept no responsibility for applicants who come to the campus before their credentials have been forwarded or before they have been notified of acceptance.

Correspondence regarding requirements for admission to and graduation from any college or school of the University should be addressed to the Registrar.

It is the student's responsibility to make sure that complete credentials covering all her previous secondary and college education are submitted to the University. To be official they must be forwarded by the principal or registrar of the last school 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.

For admission in Autumn Quarter, the required credentials should be forwarded after high school graduation and before July 15. *The last day for new students to submit applications with complete credentials for admission in Autumn Quarter is August 31, 1956, August 30, 1957, or September 1, 1958.* For admission in the other quarters, applications and credentials should be submitted at least thirty days before the opening of the quarter. This applies to all new students seeking admission as graduates or undergraduates. *It is imperative that students observe this deadline in order to insure prompt attention to credentials and replies to correspondence.*

Before notice of admission is given, a medical questionnaire, on a form supplied by the Registrar, is issued to new out-of-state students. This should be completed by a doctor of medicine and returned by him to the Registrar's Office.

ADMISSION FROM ACCREDITED HIGH SCHOOLS TO THE BASIC NURSING PROGRAM

Graduates who earn diplomas of graduation from accredited high schools and who meet the University unit and scholarship requirements for entrance are eligible for admission as freshmen with regular standing.

No out-of-state student will be accepted for admission who would not be accept-

able to the university of her own state (see Scholarship Requirement below).

All entering freshmen are required to submit from an accredited high school an official application-for-admission blank (obtainable from any high school principal or from the Registrar) which includes all credits and grades and a statement that the student has completed her high school course with a diploma of graduation. A high school diploma may not be substituted for the official blank. Accredited high schools in Washington are those accredited by the State Department of Public Instruction; in Alaska, by the Northwest Association of Secondary and Higher Schools; in other states, by the state university of the state or a regional accrediting association.

UNIT REQUIREMENT. The University unit¹ requirement is 16 high school units (or 15 units exclusive of activity credit in physical education, debate, etc.) with grades certifiable for university entrance. The 16 units should include at least 9 units in academic subjects (a unit equals two semester credits, or one full year of high school study). No unit which received lower than the lowest passing grade as defined by the high school itself may be included in the required total. Requirements for admission to the School of Nursing are as follows:

English	3 units	Social science	1 unit
One foreign language	2 units	One laboratory science	1 unit
Algebra	1 unit	Electives (minimum)	7 units
Plane geometry or second-year algebra	1 unit		

Less than 1 unit in a foreign language will not be counted.

SUBJECT MATTER DEFICIENCIES. Applicants with diplomas of graduation from accredited high schools who meet the scholarship requirement and have at least 3 units in English and 6 in other academic subjects, including either 1 unit of algebra or 1 unit of plane geometry, may petition the Dean of the School for permission to enter. (Typical academic subjects are English, foreign languages, mathematics, science, history, and economics. Some nonacademic courses are those in commerce, manual training, home economics, and band.) Students who are permitted to enter with provisional standing must register each quarter for make-up courses in the subject they lack until the entrance deficiency is removed. Those deficient in both first-year algebra and plane geometry are seldom admitted on this basis. Provisional standing continues until the student has satisfied the entrance requirements of the School in which she is enrolled. *No application for a degree may be accepted until all entrance deficiencies have been removed.* Deficiencies may be made up with university credit if college courses covering the high school material are available; 10 college credits are considered the equivalent of 1 high school unit, except that for foreign languages 15 quarter credits of college work are considered the equivalent of 2 units (4 semesters) of high school credit. No student may receive credit for repetition of work at the same or at a more elementary level, if credit has been granted in the earlier course. This rule applies whether the earlier course was taken in high school or in college, and whether, in the latter case, course numbers are duplicated or not. University credits earned by removing a deficiency cannot be used to satisfy college group requirements. First-year algebra and plane geometry are offered by the Division of Adult Education and Extension Services (fee \$18.00 per course) and do not carry University credit.

SCHOLARSHIP REQUIREMENT. The University scholarship requirement is a high school grade point of 2.00 (equivalent to a C average on the state of Washington grading system). Students from high schools in other states which use different grading systems will find their scholarship averages adjusted to the Washington four-point system (see Admission from Accredited High Schools, page 24).

Graduates of accredited high schools in Washington and Alaska who cannot

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

meet the 2.00 scholarship standard may petition the Board of Admissions for permission to enter on probation if they meet all unit requirements of the University and the School. A petition for admission on probation must be accompanied by evidence that the applicant is able to do better work than is indicated by her school record.

The student who is admitted on probation may continue her attendance at the University at the discretion of the Dean of the School but may not (1) be pledged to or initiated into a sorority, or engage in those other student activities in which her right to participate is restricted by the regulations of the Committee on Student Welfare; (2) engage in those athletic activities in which her right to participate is restricted by the regulations of the University Athletic Committee. She will be removed from probation when she has earned a minimum of 12 credits exclusive of those in lower-division physical education activity with a 2.00 grade average, except that if she carries less than 12 credits in one quarter, she may not be removed from probation unless she has earned at least a 2.00 average for the current quarter, as well as a minimum cumulative average of 2.00 for her total quarters in attendance. A student removed from probation under these provisions then is subject to the regular scholarship rules.

ADMISSION BY EXAMINATION

Graduates of nonaccredited high schools in Washington and Alaska may petition the Board of Admissions for permission to enter if they meet other entrance requirements and are recommended by their high school principals. The Board will require these students to take special entrance examinations.

Prospective students who are not high school graduates must pass College Entrance Board Examinations and without deficiency meet requirements for admission to the University and the School. Those who plan to take entrance examinations should write for information to the Educational Testing Service, Box 592, Princeton, New Jersey, or Box 9896, Los Feliz Station, Los Angeles 27, California.

ADMISSION WITH ADVANCED UNDERGRADUATE STANDING

Applicants are admitted to the University and to the School of Nursing by transfer from accredited colleges, universities, and junior colleges under the following conditions:

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

2. Applicants who have completed a year or more of college work must have a 2.00 (C) grade-point average in their entire college records and in the last term. Those with less than a year of college work must have a 2.00 (C) average in both their college and high school records.

3. Complete transcripts and letters of honorable dismissal must be sent directly to the University Registrar by the registrar of the former school. Failure to supply complete college credentials will be considered a serious breach of honor and may result in permanent dismissal from the University.

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

5. A maximum of 45 credits earned in extension and correspondence courses

at other institutions may be transferred, but none of these credits can apply toward the work of the senior year. Extension and correspondence credits from schools that are members of the National University Extension Association are accepted without examination; credits from schools that are not members are accepted only after examination.

6. The maximum number of credits obtainable by acceptance of Armed Forces training school 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.

7. Credits earned in extension 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 correspondence credits is acceptable; the 90 credits may include the 45 extension or correspondence credits allowable from other institutions or may consist entirely of courses taken in this University's Division of Adult Education. All credits earned by advanced-credit examination must be counted in the 90-credit maximum. Up to 10 extension or correspondence credits from this University can apply toward the work of the senior year.

8. The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted. Definite advanced standing is not determined until 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. No transfer credit will be allowed in the senior year.

For work done 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.

No credit will be granted to a student for courses taken in another institution 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 and from the Dean of the School. This written permission is effective only if obtained before registration. Nothing in this rule makes mandatory the granting of any credit by the University.

ADMISSION TO THE GRADUATE NURSE PROGRAM

Candidates for admission to the graduate nurse program must be graduates of an accredited high school and an approved school of nursing, and must be registered to practice nursing in a state or country. High school preparation should include: 3 units of English; either 1 unit of algebra and 1 of plane geometry or 2 units of Algebra; and 1 unit each of laboratory science and social science. All deficiencies should be made up before entrance to the School.

Prospective students should request from the University Registrar an application for admission to advanced standing in the University. The form should be completed and returned to the Registrar, and the following should be sent directly to the Registrar from the principal or registrar of each institution: (1) an official transcript of subjects and grades from the high school; (2) an official transcript from any college or university previously attended; (3) an official transcript of grades and practice days from the school of nursing, with a statement of the date of graduation signed by the director and bearing the seal of the school. Any work which a student has taken at a junior college, college, or university must be reported on the application for admission to the University, even though this work may have been taken during the time the student was in a school of nursing. Failure to comply with this regulation may result in permanent dismissal from the University.

In addition to the application for admission to the University, a separate application for admission to the School of Nursing is required. This form should be obtained from and returned directly to the School.

The graduate nurse student is allowed a maximum of 65 credits toward the degree of Bachelor of Science in Nursing for a basic nursing program taken at an approved school of nursing. These credits are withheld until the student has satisfactorily completed 30 credits of college work, 15 of them in residence at this University, and has removed any deficiencies in high school preparation, and has satisfactorily completed the National League for Nursing Graduate Nurse Qualifying Examination required of all students during the first quarter in residence. If this examination indicates areas in the student's background which should be strengthened, an individual program will be worked out by the student and her adviser. This program may include work experience in clinical areas. The background program must be completed before the clinical or field experience during the senior year.

A test for public health nursing will be required of all students in the final quarter of residence.

ADMISSION TO POST-BACHELOR'S AND MASTER'S DEGREE PROGRAMS

Candidates for admission to the post-bachelor's and master's degree programs must be graduates of an accredited college or university and an approved school of nursing, and must be registered to practice nursing in a state or country. They must meet the admission requirements of the Graduate School as outlined in the *Graduate School Bulletin*.

Prospective students should request from the University Registrar an application for admission to the Graduate School. The form should be completed and returned to the Registrar, and the following should be sent directly to the Registrar from the principal or registrar of each institution: (1) two official transcripts from the college or university; (2) two official transcripts of grades and practice days from the school of nursing, with a statement of the date of graduation signed by the director and bearing the seal of the school.

In addition to the application for admission to the Graduate School, a separate application for admission to the School of Nursing is required. This form should be obtained from and returned directly to the School.

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Students educated entirely or partially in foreign countries must meet the same general requirements as those educated in American schools and must demonstrate a satisfactory command of the English language. The official record of Canadian students is the matriculation certificate or university admission certificate of their province. A student who has graduated from a school system that provides less than twelve years of instruction may be required to take additional high school work. Students who have been in university attendance must have official transcripts forwarded (see Admission, page 24).

WORLD WAR II AND KOREAN VETERANS

ADMISSION

The University welcomes veterans under the G.I. Bill, the Vocational Rehabilitation Act, and the Korean Bill, provided they can meet the University of Washington entrance requirements.

ENTITLEMENT TO EDUCATIONAL BENEFITS

Veterans who are accepted for entrance to the School of Nursing and who expect to study under the provisions of Public Laws 16, 894, or 346 should apply to a Veterans Administration regional office for a Certificate of Eligibility at least one month prior to registration. This certificate should be presented at the Veterans Division, 1B Administration Building, the day of registration. Those who do not have this certificate at the time they register must pay all charges; they will receive refunds when authorization from the Veterans Administration is established.

Korean veterans entering under the provision of Public Law 550 should apply to a Veterans Administration regional office for a Certificate for Education and Training at least one month prior to registration. This certificate should be presented at the Veterans Division, 1B Administration Building, the day of registration or during the first week of instruction. Under this law, students receive an educational allowance and pay their own tuition and fees. Korean veterans should be prepared to meet all their own expenses as well as the cost of tuition, fees, and supplies for at least two months. Educational allowances are not paid until a full month's attendance has been established.

REGISTRATION

All students must have definite registration appointments each quarter. New students are given appointments when they are notified of admission and receive complete directions for registering on the day of their appointments.

After notification of admission and before registration, new students should visit or write to the School of Nursing for help in planning their course programs.

Students expecting to return to the University after an absence of a quarter or more (excluding Summer Quarter) may obtain registration appointments by writing or telephoning the Registrar's Office at the time specified in the Calendar (see page 4). Students in residence may obtain appointments at the time announced in the Calendar.

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 Dean's consent.

REGULAR STUDENTS

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

APTITUDE TESTS

New students of freshman standing (including transfer students with less than 45 quarter credits exclusive of credits in physical education activity) will take college aptitude tests at a time to be announced each quarter.

The aptitude tests consist of a battery of several tests selected on the basis of their proven value for the prediction of grades most likely to be earned by each student. Thus, the results of testing may be used in advisement of the student and are used as an aid in assigning students to appropriate sections in English composition and other subjects. Little can be gained by preliminary study for these tests. Sample copies are not available. Special, exchange, and blind students and auditors will be exempted. Also, foreign students who have markedly inadequate previous training in the use of English may be exempted.

MEDICAL EXAMINATIONS

All new students, and all former students who have not attended the University within the preceding calendar year, must take a medical examination, including a chest X ray. For out-of-state students, this examination is in addition to the medical questionnaire required of them as part of the application for admission. An annual chest X ray is required of all students.

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 Announcement*.

Tuition

Resident students, per quarter \$25.00

A resident student is one who has been domiciled in Washington or Alaska for at least a year immediately before registration. The domicile of a minor is that of his parents.

Nonresident students, per quarter 75.00

Prospective students are classified as nonresidents when their credentials come from schools outside Washington and Alaska. If they believe they are residents, they may petition the Nonresident Tuition Office for a change of classification.

Veterans of World Wars I and 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, University Comptroller's Office. Nonresident students who meet one of these requirements pay one-half the nonresident tuition.

This exemption is not granted to Summer Quarter students.

Incidental Fee, per quarter

Full-time resident students 27.50

Part-time resident students (registered for 6 credits or less) 10.00

Full-time nonresident students 52.50

Part-time nonresident students (registered for 6 credits or less) 35.00

ASUW Fees

Membership, per quarter 8.50

Optional for part-time students.

Athletic admission ticket (optional for ASUW members) 3.00-5.00

Autumn, Winter, and Spring Quarters, \$5.00; Winter and Spring Quarters, \$3.00;

Spring Quarter, \$3.00.

Breakage Ticket Deposit 3.00

Required in some laboratory courses; ticket is returnable for full or partial refund.

Grade Sheet Fee .25

One grade sheet is furnished each quarter without charge; the fee is charged for each additional copy.

Transcript Fee .50

One transcript is furnished without charge; the fee is charged for each additional copy. Supplementary transcripts are 25 cents each.

Graduation Fee 10.00

SPECIAL FEES

From \$2.00 to \$5.00 is charged for late registration; \$2.00 for each change of registration; \$5.00 for a late medical examination; and \$1.00 for a late X ray. The fee for a special examination is \$1.00; for an advanced-credit examination, \$2.00 per credit; and for removal of an Incomplete, \$2.00.

PHYSICAL EDUCATION ACTIVITY FEES, per quarter are: Bowling, \$3.00. Canoeing, \$2.50. Golf Instruction, \$3.00 per quarter; Season Ticket, \$5.00 per quarter, a season ticket is good on the golf course for play and may be purchased alone or in addition to golf instruction fee. Riding Fee is payable to riding academy and varies in amount. Skiing, for transportation and tow charge, \$19.75.

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 a year. Living costs and personal expenses vary widely with the needs of the individual student.

BASIC NURSING DEGREE PROGRAM

FIRST AND SECOND YEARS (ANNUAL COST, THREE QUARTERS EACH)

Tuition, Incidental, and ASUW Membership Fees

Full-time resident student	\$183.00
Full-time nonresident student	408.00

Athletic Admission Ticket (optional) 3.00-5.00

Accident Insurance (optional) 4.95

Laboratory Fee 7.00

Books and Supplies 75.00

Board and Room

Room and meals in Women's Residence Halls single \$600.00, double 525.00

Room and meals in student cooperative houses 445.00-460.00

Room and meals in sorority house 660.00-700.00

The cost of sorority membership is not included; this information may be obtained from the Panhellenic Council.

Uniforms and Equipment for Entrance to Clinical Division 125.00

EXPENSES IN THE CLINICAL DIVISION

Books (each year) 50.00

Transportation

Students should be prepared to bear the costs of transportation between the University campus and the clinical units. This amount will vary from quarter to quarter.

PUBLIC HEALTH NURSING

Uniforms 30.00

Lunches 30.00

BASIC NURSING RESEARCH PROGRAM

FIRST YEAR (FOUR QUARTERS)

Tuition, Incidental, and ASUW Membership Fees

Full-time resident student \$244.00

Full-time nonresident student 544.00

Athletic Admission Ticket (optional) 3.00-5.00

Accident Insurance (optional) 4.95

Laboratory Fee 3.50

Books and Supplies 100.00

Room and Board

Room and meals in Women's Residence Halls single \$760.00, double 665.00

Room and meals in student cooperative houses
(three quarters only) 445.00-460.00

Room and meals in sorority house (three quarters only) 660.00-700.00

The cost of sorority membership is not included; this information may be obtained from the Panhellenic Council.

SECOND AND THIRD YEARS, CLINICAL DIVISION (FIFTH THROUGH TWELFTH QUARTERS)

FIFTH QUARTER

Uniforms and Equipment for Entrance to Clinical Division 125.00

Tuition

Part-time resident student	25.00
Part-time nonresident student	75.00

Incidental Fee

Part-time resident student	10.00
Part-time nonresident student	35.00

Laboratory Fee

3.50

Books and Supplies

10.00

Accident Insurance (optional)

1.65

Transportation (to and from campus three days weekly)

25.00

Lunches

25.00

SIXTH THROUGH TWELFTH QUARTERS**Books**

50.00

Transportation

Students should be prepared to bear the costs of transportation between the University campus and the clinical units. This amount will vary from quarter to quarter.

FOURTH YEAR (THREE QUARTERS)**Tuition, Incidental, and ASUW Membership Fees**

Full-time resident student	183.00
Full-time nonresident student	408.00

Athletic Admission Ticket (optional)

3.00-5.00

Accident Insurance (optional)

4.95

Books and Supplies

75.00

The student assumes all education and living costs including those related to public health nursing.

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.

CLUBS, HONORARY AND FRATERNAL SOCIETIES

Students enrolled in nursing are eligible for all University activities, including scholastic honoraries, sororities, clubs, student government, sports, and recreational events.

The national professional nursing sorority, Alpha Tau Delta, is represented on the campus by Delta chapter. All nursing students are eligible for membership in the Nurses' Club and Caduceans.

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. A handbook listing the current awards may be obtained from the Office of the Dean of Students.

Scholarships and loans specifically for nursing students are listed below.

BASIC NURSING DEGREE PROGRAM. A limited number of scholarships are available to students enrolled in nursing. Awarded on the basis of scholarship, need, and professional ability, annual scholarships include: the University of Washington

Nurses' Alumnae Award, the Swedish Hospital Alumnae Association Award, the Elizabeth Sterling Soule Scholarship, the Evelyn H. Hall Memorial Scholarship, and the Kellogg Foundation Scholarship and Loan Fund. Additional scholarships are available from time to time.

BASIC NURSING RESEARCH PROGRAM. Scholarships are the Mason Clinic and the Jane Angove scholarships. A faculty loan fund is also available in the division.

GRADUATE NURSE DEGREE, POST-BACHELOR'S, AND MASTER'S DEGREE PROGRAMS. A limited number of scholarships and loans are available including: the Wealthy Ann Robinson Scholarship, awarded biennially to a student in public health nursing; the Evelyn H. Hall Memorial Award, granted to a graduate of the University of Washington School of Nursing, Harborview Division; the Swedish Hospital Board of Directors Award, granted to a graduate of the Swedish Hospital Division; the Grace Harter Nelson Scholarship Award, granted to a graduate of the Virginia Mason Hospital Division; the May S. Loomis Loan Fund; and the Washington State Nurses' Association Loan Fund, available in the amount of \$200 to graduate nurses who have satisfactorily completed one or more quarters of study at the University of Washington. A limited number of fellowships in teaching, research, and administration are available to students in master's degree programs.

An emergency loan fund available to all University students is administered by the Office of the Dean of Students.

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 Office of the Dean of Students also provides current information on Selective Service regulations.

The Counselor for International Services, a member of the Dean of Students' staff, offers 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 counselor. 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 offers vocational and personal counseling to students who need help in their adjustments to college living. The staff of the Center, which includes vocational counselors, psychiatric social workers, and clinical psychologists, works closely with other student services and supplements the academic advisory program.

HOUSING

Housing for women is available in the Women's Residence Halls on the campus. Interested students should write to the Business Manager of the Women's Residence Halls. The Students' Cooperative Association, 1114 East Forty-fifth Street, Seattle 5, provides housing for women students. Information about sororities can be obtained from the Panhellenic Council.

It is required that women students under twenty-one who are not living at home will live in approved group residences, such as the Women's Residence Halls, student cooperatives, sorority houses, and church-sponsored living groups. Other living arrangements must be approved by the Office of the Dean of Students.

The Office of Student Residences keeps listings of rooms, rooms with board, housekeeping rooms, and a few apartments and houses. These listings must be consulted in person.

During the period basic students are in the clinical divisions, maintenance is provided in the residences of the clinical facilities.

HEALTH SERVICES

The University maintains a health center and infirmary which help to 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.

All students in the School of Nursing are required to take a special health examination, chest X rays, and inoculation for smallpox, typhoid, and diphtheria before entrance to the clinical division and previous to the public health nursing field quarter. Defects must be corrected at the student's own expense. Serious defects will bar the student from entrance to the clinical division and may terminate her program at any time on recommendation of the University Health Service.

Medical and health care for students in the basic curriculum, including annual physical examination and hospitalization not to exceed two weeks at any one time, are provided during the clinical portion of the program. Hospitalization is provided, subject to hospital regulations. No responsibility is assumed in case of illness arising from defects which existed at the time of entrance, and students must sign statements releasing the hospital from any responsibility at the time of admission to the clinical unit. Students are responsible for expenses for their own eyeglasses and dental care.

PART-TIME WORK

Hospitals in Seattle and adjacent communities offer many opportunities for part-time employment for graduate nurses. Nursing assignments can be adjusted to the student's academic schedule. The student who plans to work part time as a nurse during her University program must be registered currently in the state of Washington. She should write to the Professional Division, Department of Licenses, Olympia, Washington, for an application blank and a list of state requirements.

Part- and full-time work off campus may be obtained at the University Placement Office. Because job listings change rapidly, application should be made in person after residence in Seattle has been established. Placement in jobs on the campus is handled by the Nonacademic Personnel Office and the ASUW Personnel Office. The basic nursing student is allowed to work a limited amount of time, dependent on satisfactory academic and ward performance.



THE PROGRAMS IN NURSING

THE PROGRAMS IN NURSING

THE SCHOOL OF NURSING offers a basic degree curriculum, a basic nursing research program, and a degree curriculum for the graduate nurse, all leading to the degree of Bachelor of Science in Nursing; and curricula leading to the degrees of Master of Arts and Master of Nursing. In addition, post-bachelor's programs in selected clinical areas and public health nursing are presented for graduate nurses. All programs leading to the degree of Bachelor of Science in Nursing include preparation for beginning positions in public health nursing.

The School presents courses of general interest open to any University student, and courses in specific clinical fields available to undergraduate students in other schools of nursing.

BACHELOR'S DEGREE

Students working toward the bachelor's degree in nursing must meet certain general requirements of the University and the School as well as the particular course requirements of the nursing curriculum. These general requirements include scholarship and minimum credits, physical education, course requirements, and senior-year residence.

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 her entry into the school in which she is to graduate, provided that not more than ten years have elapsed since that date. As an alternative, she may choose to fulfill the graduation requirements as outlined in the school bulletin published most recently before the date of her graduation. All responsibility for fulfilling graduation requirements will rest with the student concerned. No student whose standing is provisional because she has not removed her entrance deficiencies can have an application for degree accepted until the deficiency is cleared.

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.

Women students must complete one quarter of swimming, unless the safety swimming test has been passed, and one of the fundamental movement courses prescribed by the Department during the three quarters.

Exemptions from the activity requirement are granted to:

1. Students who are twenty-five or older at the time of original entrance.
2. Special students.
3. Part-time students, those registered for 6 credits or less.

4. Students who because of physical condition are exempted by the Graduation Committee upon the recommendation of the Dean of the School. 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 School of Physical Education. All other students who are reported by the University Health Officer as unfitted to join regular classes will be assigned by the Executive Officer of the School of Physical Education to special programs adapted to their needs.

5. Students who are veterans of military service. Complete exemption is granted for six months or more of active service. Veterans with less than six months of service receive no exemption.

6. 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 COURSE. Women students who enter the University as freshmen are required to take Physical Education 110, a course in health education, within the first three quarters of residence. This requirement may be satisfied by passing a health-knowledge examination given during the Autumn Quarter registration period for women entering the University for the first time.

SCHOLARSHIP AND CREDITS

Freshman students in their first three quarters, and transfer students in their first quarter, must maintain a grade-point average of at least 1.80. All other students must maintain an average of 2.00, and a cumulative average of 2.00 is required for graduation.

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. 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 number of credits the course carries, totaling these values for all courses, and dividing by the total number of credits for which the student is registered.

The University credit requirement for graduation is 180 academic credits (including Physical Education 110) and the required quarters of physical education activity.

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

SENIOR-YEAR RESIDENCE

Senior standing is attained when 135 credits, plus the required quarters of physical education, have been earned. In 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 at this University or in this University's extension or correspondence courses.

BACHELOR OF SCIENCE IN NURSING

BASIC DEGREE

The seventeen-quarter program includes a six-quarter preclinical period and an eleven-quarter clinical period which is spent in either the Harborview or Swedish Hospital Division of the School of Nursing. The first three quarters of the pre-

clinical period may be taken at any accredited junior college, college, or university. During the second three quarters of this period, the student must be enrolled at the University. Following are the course requirements (for course titles and descriptions, see pages 41-50):

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
English 101	3	Chemistry 101	5	Chemistry 230	5
Physical		English 102	3	English 103	3
Education 110 ..	2	Psychology 100	5	Electives	7
Sociology 110 or		Electives	2	Physical education	
Anthropology 102	5	Physical education		activity	1
Electives	5	activity	1		
Physical education					16
activity	1		16		
	16				

Electives may be chosen from among many different freshman courses. Since the School of Nursing program includes a number of science courses, it is best to select electives from the social sciences or the humanities (such as art, home economics, literature, music, psychology, or sociology). It is extremely important that any deficiencies in high school units required for entrance to the nursing curriculum be removed during the first year. A plan for the removal of deficiencies should be worked out with an adviser at the time of the first registration.

The following portion of the basic curriculum must be taken at the University of Washington. The requirements are:

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS	SUMMER QUARTER	CREDITS
Home Economics		Conjoint 317-	6-	Nursing 291	5	Nursing 295	3
119	3	Microbiology 301 .	5	Conjoint -318	6	Nursing 296	5
Physics 170	5	Pharmacy 251	2	Pharmacy 261	3	Nursing 297	2
Psychology 320	2	Psychiatry 267	2			Pathology 303- ...	1-
Electives	5				14		11
	15		15				

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS	SUMMER QUARTER	CREDITS
Nursing 300	5	Nursing 303	5	Nursing 220	3	Nursing 306	5
Nursing 301	5	Social Work 300 ..	3	Nursing 302	4	Nursing 330	5
Home Economics		Electives	3	Nursing 305	5		
305	3						10
Pathology -304	-1		11		12		
	14						

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS	SUMMER QUARTER	CREDITS
Nursing 331	5	Nursing 333	5	Nursing 400	5	Nursing 402	2
Nursing 332	5	Electives	4	Nursing 401	5	Nursing 403	3
Nursing 339	2		9		10	Nursing 404	4
	12						9

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS
Nursing 405	3	Nursing 407	3
Nursing 406	5	Nursing 408	5
Public Health 412- ..	3	Nursing 409	2
	11		10

BASIC RESEARCH

The School of Nursing offers a second degree program which permits the student to interrupt her education at the end of the junior year and qualify for licensure as a registered nurse. If she chooses to continue, the student may, on a full- or part-time basis, complete studies for the Bachelor of Science in Nursing degree including preparation in public health nursing. This program, as well as the basic degree program, endeavors to prepare a nurse with a broad professional background as well as general competence in nursing. The plan and organization of the two curricula differ.

This program of fifteen quarters is called the Basic Nursing Research Program. Studies are directed toward improving methods of learning. Both the Washington State Department of Licenses and the Accrediting Service, National League for Nursing, have approved the plan for research.

Requirements for admission are similar to those of the basic degree program and all students are enrolled in the University throughout the program.

During the four quarters of the first year, the student enrolls in introductory courses in nursing in addition to courses in the physical, biological, and social sciences which contribute to the development of the broad background of a professional nurse.

The second and third years of the program are devoted largely to clinical nursing courses at the Virginia Mason Hospital Division and other teaching units of the School. The student continues to take some science courses on the campus. At the end of the third year (twelfth quarter) the student is eligible for the Certificate in Nursing and is eligible to take the state licensing examination to become a registered nurse and may, if she chooses, work as a registered nurse before continuing with the last year of the program.

During the fourth year, the student returns to the campus. Public health nursing aspects are included throughout the curriculum, but particular emphasis is given to this area of nursing during the fourth year, and field experience in public health nursing is provided.

Students must enroll in the basic research program Autumn Quarter and register each subsequent quarter at the University of Washington. If necessary, a plan for removal of deficiencies is made at the time of first registration. (For course titles and descriptions, see pages 41-50.)

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS	SUMMER QUARTER	CREDITS
Art 100	5	Chemistry -131	3	Nursing 222	3	Nursing 223	3
Chemistry 130-	3	Conjoint 295	2	English 103	3	Conjoint 317-	6
English 101	3	English 102	3	Home Economics		Home Economics	
Physical		Sociology 110	5	119	3	305	3
Education 110 ..	2	Electives	2	Microbiology 301 ..	5	Pharmacy 251	2
Physical		Physical Education -114 ..	-1	Physical education			
Education 113-..	1			activity	1		14
	14		16		15		
AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS	SUMMER QUARTER	CREDITS
Nursing 220	3	Nursing 254	5	Nursing 255	5	Nursing 330	5
Nursing 224	6	Nursing 256	5	Nursing 257	5	Nursing 331	5
Conjoint -318	-6	Pharmacy 261	3	Conjoint 296	2	Nursing 339	2
	15		13		12		12
AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS	SUMMER QUARTER	CREDITS
Nursing 302	4	Nursing 332	5	Nursing 400	5	Nursing 407	3
Nursing 402	2	Nursing 333	5	Nursing 401	5	Nursing 408	5
Nursing 403	3		10			Nursing 409	2
Nursing 410	3				10	Nursing 412	2
Nursing 411	3						12
	15						

For completion of requirements for the Bachelor of Science in Nursing degree, the student registers for the fourth year, which includes one quarter of public health nursing field experience. The student is responsible for her own expenses including tuition and maintenance. There is some flexibility in planning the program during certain quarters which may enable the student to work part of the time as a registered nurse.

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Social Work 300 ..	3	Nursing 405	3	Social science	
Electives	11	Nursing 406	5	elective	5
	14	Public Health 412-.	3	Electives	10
			11		15

GRADUATE NURSE

The University offers a Bachelor of Science in Nursing for graduate nurses who are seeking a broad background of general and professional education as preparation for further professional practice. Designed to extend the previous preparation of the nurse, the curriculum develops increasing ability to give complete nursing care and to assist in prevention and control of disease and in promotion of health in work with individual patients, families, and community health groups. The content of professional nursing courses includes new medications and treatments and recent developments in the special fields of nursing, health teaching, and nursing supervision. Public health nursing preparation is an integral part of the curriculum. Students are given the opportunity to apply these concepts to the care of patients and family groups in hospital and other health agencies.

The graduate nurse candidate for a bachelor's degree is advised to select proportionately those scientific and cultural courses which will strengthen her major field of nursing and to establish a minor as a basis for future graduate study. The student's interest should govern her selection of a minor field. The major program of 180 credits plus the required physical education activity courses (see page 37) is set up as follows: 9 credits each in English composition and required public health and social work courses; 15 credits in biological and physical science and 15 credits in social science; 90 credits in professional courses including credit from a school of nursing; and 42 credits in electives. The following is a suggested curriculum (for course titles and descriptions, see pages 41-50):

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS	FOURTH QUARTER	CREDITS
Nursing 365	2	Biological or physical science . . .	5	Nursing 417	3	Nursing 418	3
Biological or physical science . . .	5	English 102	3	English 103	3	Biological or physical science . . .	5
English 101	3	Sociology 310	5	Public Health 402 ..	3	Social Work 300 ..	3
Psychology 100 .. .	5	Electives	2	Public Health 412 ..	3	Electives	5
	<u>15</u>		<u>15</u>	Electives	3		<u>16</u>
					<u>15</u>		
FIFTH QUARTER	CREDITS	SIXTH QUARTER	CREDITS	SEVENTH QUARTER	CREDITS	EIGHTH QUARTER	CREDITS
Social science elective	5	Nursing 361	2	Nursing 366	2	Nursing 406	5
Electives	10	Electives	14	Nursing 419	3	Nursing 428	5
	<u>15</u>		<u>16</u>	Electives	8		<u>10</u>
					<u>13</u>		

COURSES

Courses numbered 200 through 299 are lower-division courses, for sophomores; those numbered from 300 through 499 are upper-division courses, for juniors and seniors. Courses open to graduate students only are numbered 500 and above, though courses numbered 430 through 499 may carry graduate credit for graduate students.

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 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 quarterly *Time Schedule and Room Assignments*.

COURSES FOR BASIC DEGREE AND BASIC RESEARCH STUDENTS**220 History of Nursing (3)**

A study of nursing from earliest times, with emphasis on the place of nursing in world history and the present social order.

Loahy, Nash

- 222 Basic Elements of Nursing (3)** **Olsen**
An introduction to nursing aspects of the prevention of illness and promotion of health, including practice in elementary nursing activities. One-hour lecture, four-hour demonstration laboratory, and two hours of clinical practice. For students in the basic nursing research program.
- 223 Nursing Arts (3)** **Olsen**
The principles of nursing applied to the care of moderately ill and convalescent patients. One-hour lecture, four-hour demonstration laboratory, and two hours of clinical practice. For students in the basic nursing research program.
- 224 Advanced Nursing Arts (6)** **Olsen**
Advanced principles and practice of nursing including medical treatments and surgical techniques. Two hours of lecture, two hours of group conference, three hours of laboratory, six hours of supervised clinical laboratory practice, and six hours of nursing activities. For students in the basic nursing research program.
- 225 Introduction to Clinical Nursing (1)** **Belcher**
Orientation to the field of nursing. Weekly lecture period. Optional two weeks of observation in hospitals; students observe ward situations and practice elementary nursing skills. Open to any university student.
- 254 Introduction to Medical-Surgical Nursing (5)** **Huntington, Oelwein, Potter**
An introduction to the nursing care of patients with medical and surgical conditions of the cardiovascular and gastro-intestinal systems of the body. Lectures, nursing classes, demonstrations, and discussions. For students in the basic nursing research program.
- 255 Medical-Surgical Nursing (5)** **Huntington, Oelwein, Potter**
The nursing care of patients with medical and surgical conditions of the eye, ear, nose, and throat, respiratory, endocrine, and musculoskeletal systems of the body. For students in the basic nursing research program.
- 256 Introduction to Medical-Surgical Nursing Practice (5)** **Huntington, Oelwein, Potter**
Fifteen hours of selected supervised laboratory practice correlated with Nursing 254. Two hours of group conference and fifteen hours of nursing activities. For students in the basic nursing research program.
- 257 Medical-Surgical Nursing Practice (5)** **Huntington, Oelwein, Potter**
Fifteen hours of selected supervised laboratory practice correlated with Nursing 255. Two hours of group conference and fifteen hours of ward nursing activities. For students in the basic nursing research program.
- 291 Principles and Practice of Elementary Nursing (5)** **Brandt, Enos, Hay, Mack**
Elementary nursing techniques; practice in elementary nursing. Two lectures, two two-hour laboratories, and four hours of supervised clinical practice weekly. Not open to students who have taken 290 or who have taken 225 previous to 1950.
- 295 Advanced Nursing Procedures and Methods of Planning Individualized Nursing Care (3)** **Brandt, Enos, Hay, Mack**
Advanced general nursing procedures; clinical nursing care study; practice in planning nursing care with reference to physical, emotional, social, and economic needs of patients.
- 296 Principles of General Medicine, Surgery, Otolaryngology, and Nursing Care (5)** **Franz, Hansen, Kittelsby, Little, Stokes**
Diseases of the cardiovascular system; malignant neoplasms; diseases of the blood; diseases of the gastrointestinal system; diseases of the endocrine and integumentary system; medical conditions of the genitourinary tract; eye, ear, nose, and throat conditions. Survey of fields, with etiology, pathology, symptoms, complications, treatment, prevention, and specialized nursing care of each condition. Medical lectures, nursing demonstrations, and clinics; recording and nomenclature.
- 297 Practice in Elementary Nursing and Special Hospital Departments (2)** **Brandt, Enos, Hay, Mack**
Elementary surgical nursing practice correlated with laboratory, X ray, pharmacy, and central supply experience. One-hour conference and twelve hours of hospital practice weekly.
- 300 Principles of Medical and Surgical Specialties and Their Nursing Care (5)** **Staff**
Survey of the fields of ophthalmology; allergic conditions; orthopedics; neurology and neurosurgery; surgical urology and gynecology; emergency and first-aid treatment. Etiology, pathology, symptoms, complications, treatment, prevention, and specialized nursing care of the various conditions. Medical lectures, nursing demonstrations, and clinics; recording and nomenclature.
- 301 Medical Nursing Practice (5)** **Hansen, Kittelsby, Sorenson**
Application of principles of nursing care in medical diseases. One quarter of experience in general medical nursing, including geriatrics and dermatology. Experience in teaching class for diabetic patients. Case assignment and ward rounds. One-hour clinic, one-hour conference, and thirty hours of hospital practice weekly.
- 302 Principles of Preventive Medicine and Nursing Care in Communicable Disease (4)** **Kittelsby, Tjeltna**
Etiology, modes of transmission, symptomatology, complication, treatment, and methods of prevention and control of acute communicable and venereal diseases. Emphasis is on medical aseptic technique and specialized nursing care as it relates to community health. Orientation to other community agencies concerned. Medical lectures, nursing demonstrations, and clinics.

- 303 Operating Room Practice (5)** Breckenridge, Lilleoren, Sorenson
One quarter of experience in operating-room nursing and emergency cases. Care of the anesthetized patient. One-hour conference, one-hour clinic, and thirty hours of hospital practice weekly.
- 305 Communicable Disease Nursing and Dietary Practice (5)** Airth, Gannon, Kittelsby, Northrop, Tjelha
One quarter of experience, including six weeks of segregated communicable disease nursing; two weeks of food clinic or four weeks of diet therapy practice; four weeks in outpatient and special departments. One-hour clinic, one-hour conference, and thirty hours of hospital practice weekly.
- 306 Surgical Nursing Practice (5)** Franz, LaChapelle, Stokes
One quarter of experience in general surgical nursing, including orthopedics and physical therapy. Case and team assignment. Diet therapy practice is integrated. One-hour clinic, one-hour conference, and thirty hours of hospital practice weekly.
- 330 Principles of Obstetrics and Obstetric Nursing (5)** Hudson, Osmond, Rose
Anatomical, physiological, and psychological aspects of prenatal and postpartum periods; care during normal, operative, and complicated labor; nursing care of mother and baby in home and hospital; introduction to community agencies concerned with prenatal care. Medical lectures and nursing demonstrations.
- 331 Obstetric Nursing Practice (5)** Hudson, Osmond, Rose, Sorenson
One quarter of experience in obstetric nursing. Nursing care of patients during prenatal, labor, and postpartum periods, including care of the newborn; experience in prenatal and postpartum clinics. Formula room, one week. Diet therapy practice is integrated. One-hour clinic, one-hour conference, and thirty hours of hospital practice weekly.
- 332 Principles of Pediatrics and Pediatric Nursing (5)** Stewart, Zaleski
Development of well children; principles of care; prevention of illness. Medical and nursing care of sick infants and children in home and hospital; introduction to community agencies concerned with child care. Medical lectures and nursing demonstrations.
- 333 Pediatric Nursing and Nursery School Practice (5)** Stewart, Zaleski
One quarter of experience in pediatric nursing, including nursery school; experience in related well-baby clinic. Diet therapy practice is integrated. Case assignments; one-hour clinic, one-hour conference, and thirty hours of hospital practice weekly.
- 339 Introduction to Health Teaching (2)** Burke
Orientation to teaching functions of the nurse in both hospital and community situations.
- 340 Public Health Nursing and Community Health Agencies (3)** Burke
Principles and trends in public health nursing as they affect the responsibilities of the nurse; organization, function, and interrelationship of community health agencies; basic techniques used by the nurse as a community health worker in planning health programs and in acting as family health consultant and health teacher. Discussion, field trips, and demonstrations.
- 400 Principles of Psychiatry and Psychiatric Nursing (5)** Irving
Major concepts of psychiatric nursing and mental health used in planning the nursing care of mentally ill patients, including special therapies and rehabilitation measures. Lectures, demonstrations, and nursing conferences.
- 401 Psychiatric Nursing Practice (5)** Irving
Practical development of basic principles of psychiatric nursing, with supervision in solving selected patient-care problems. One quarter of clinical practice with rotation through departments of the mental hospital, including men's and women's active and continued treatment, patient services, and special medical and rehabilitative therapies departments. One-hour ward clinic, one-hour nursing conference, and thirty hours of hospital practice weekly, with psychiatric staff conference and written projects.
- 402 Principles of Tuberculosis Nursing Care (2)** Birkbeck
Use of special therapies; rehabilitation; prevention and control; public health and social aspects. Lectures and demonstrations.
- 403 Tuberculosis Nursing Practice (3)** Birkbeck
Supervised experience in developing principles for solving selected problems in care of tuberculosis patients. Six weeks of clinical practice in the medical and surgical treatment of tuberculosis, with planned rotation through the departments in a tuberculosis sanatorium, including use of community agencies and clinics. One-hour ward clinic, one-hour nursing conference, and thirty hours of hospital practice weekly, with nursing projects and staff conferences.
- 404 Nursing in Surgical Specialties (4)** Brown, Little
Six weeks of experience in urology, gynecology, eye, ear, nose and throat, head injury, and emergency surgical nursing. Diet therapy practice is integrated. Case assignment, one-hour clinic, one-hour conference, and thirty hours of hospital practice weekly.
- 405 Public Health Nursing (3)** Cobb
Presentation and analysis of family and community health problems and current programs related to special fields of public health nursing. Selected nursing techniques for solving family health problems and implementing community health programs, with emphasis on the dynamics of personality and utilization of the self in the development of a good working relationship with patients and co-workers. Case discussion and group and individual conferences. To be taken concurrently with 406.
- 406 Public Health Nursing Practice (5)** Bruggeman, Cobb, Staff
Experience in generalized public health nursing with an opportunity to apply basic principles and skills as a family health consultant and health teacher. Includes morbidity; maternal,

- infant, and child care; mental hygiene; and nutrition. Experience in homes and clinics, health conferences in schools, and health classes, as well as conferences with professional workers in related community agencies; participation in community health planning. Family case assignment. Two-hour weekly conference.
- 407 Principles of Ward Management and Bedside Teaching (3)** **O'Boyle, Smith**
Problems of ward administration. Emphasis is upon the supervisory and teaching functions of the charge nurse, with attention to the provision for and supervision of patient teaching; human relations in the ward situation are stressed. To be taken concurrently with 408.
- 408 Senior Nursing Practice (5)** **Gray, Nash, Svelander, Staff**
One quarter of advanced nursing practice in one field (of student's choice, if possible). Opportunity for advanced patient care; experience as team leader and as assistant head nurse; charge nurse on days, evenings, and nights; experience in arranging basic clinics and leading basic conferences. Individual projects, weekly conferences, and thirty hours of hospital practice weekly. To be taken concurrently with 407.
- 409 Professional Problems in Nursing (2)** **Gray, Nash, Svelander**
Responsibilities of the professional nurse to the community. Study of professional organizations, opportunities in various fields of nursing, legislation, accreditation, and professional literature.
- 410 Advanced Medical-Surgical Nursing (3)** **Huntington, Oelwein, Potter**
Six weeks of classes devoted to the care of patients with medical and surgical conditions of the excretory, nervous, skin, and integumentary systems of the body. For students in the basic nursing research program.
- 411 Advanced Medical-Surgical Nursing Practice (3)** **Huntington, Oelwein, Potter**
Six weeks of experience correlated with Nursing 410. Fifteen hours of selected supervised laboratory practice, two hours of group conference, and fifteen hours of ward nursing activities. For students in the basic nursing research program.
- 412 Scientific Principles in Nursing Care (2)** **Rohweder, Titus, Staff**
A study of selected problems in nursing care in terms of the principles from the social, physical, biological, and health sciences involved. Two hours of group conference. For students in the basic nursing research program.

COURSES FOR OTHER UNDERGRADUATE STUDENTS

The School of Nursing offers selected courses which are open to any University student and courses in specific clinical fields which are available to undergraduate students enrolled in other accredited schools of nursing. Students enrolled in these courses must meet the admission requirements of the University of Washington.

COURSES FOR ANY UNIVERSITY STUDENT

- 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.
- 225 Introduction to Clinical Nursing (1)** **Belcher**
Orientation to the field of nursing. Weekly lecture period. Optional two weeks of clinical observation in hospitals; students observe ward situations and practice elementary nursing skills.
- 492J Problems in International Health (2)** **Leahy**
Conference and discussion based on a survey of international health organizations and the services offered by regions and countries. Offered jointly with the Department of Public Health and Preventive Medicine. Open to any senior or graduate university student. Prerequisite, permission.

COURSES FOR BASIC NURSING AFFILIATE STUDENTS

- 250 Introduction to Psychiatry and Psychiatric Nursing (5)** **Goertz, Hilde**
Elementary psychiatric nursing and mental health concepts used in the nursing care of mentally ill patients, including special therapies and rehabilitation programs. Lectures and demonstrations.
- 251 Selected Psychiatric Nursing Practice (5)** **Goertz, Hilde**
Orientation to the nursing care of selected patients. One-quarter clinical practice with rotation through departments of the mental hospital; men's and women's active and continued treatment, patient services; special medical and rehabilitative therapies departments; one-hour ward clinic, one-hour nursing conference, and thirty hours of hospital practice weekly, with psychiatric staff conferences.
- 252 Introduction to Nursing Care and Treatment of Tuberculosis (2)** **Heinemann**
Basic concepts of treatment, rehabilitation, prevention, and control. Lectures and demonstrations.
- 253 Selected Tuberculosis Nursing Practice (3)** **Heinemann**
Elementary principles of care applied to treatment and management of selected patients with tuberculosis. Six weeks of clinical practice in medical and surgical nursing of tuber-

culosis, with planned rotation through the departments in a tuberculosis sanatorium, including use of community agencies and clinics. One-hour ward clinic, one-hour conference, and thirty hours of hospital practice weekly, with nursing care study and staff conferences.

COURSES FOR GRADUATE NURSE STUDENTS

- 361 Survey of Trends in Contemporary Nursing (2)** **Olcott**
Particular emphasis on current problems in nursing.
- 365 Therapeutics and Nursing Care (2)** **Gray**
The nurse's responsibilities in the use of selected therapeutic agents, treatment, and diagnostic tests in the care of patients. Individual needs of the students determine the course content.
- 366 Special Problems in Nursing Care (2)** **Kinney**
Two-hour weekly discussions and case conferences based on the contribution of special fields of nursing in the solution of specific patient care problems. Faculty members from the various specialty areas present cases for the discussions, which are coordinated by a public health faculty member in order to bring out the public health and mental health aspects. To be taken concurrently with 419.
- 406 Public Health Nursing Practice (5)** **J. Anderson, Staff**
Experience in generalized public health nursing with opportunity to apply basic principles and skills as a family health consultant and health teacher. Includes morbidity; maternal, infant, and child care; mental hygiene; and nutrition. Experience in homes and clinics, health conferences in schools, and health classes, as well as conferences with professional workers in related community agencies; participation in community health planning. Family case assignment. Two-hour weekly conference.
- 417 Principles of Teaching Nursing and Health (3)** **Wasson**
Application of learning principles to effective teaching methods and nursing techniques.
- 418 Supervision in Nursing (3)** **O'Boyle**
Principles of supervision as they apply to nursing and health services. Emphasis is placed upon an understanding of the importance of interpersonal relations, as well as the use of effective supervisory techniques.
- 419 Contemporary Nursing in the Hospital (3)** **Kinney, Wasson**
Two-hour weekly conferences or clinics and four-hour weekly clinical laboratory experience in nursing situations in the hospital. Conferences and experience are based on the needs of the individual student and emphasize fundamental and unique problems in nursing care. To be taken concurrently with 366.
- 428 Principles and Organization of Public Health Nursing (5)** **J. Anderson, Leahy**
Analysis of principles of public health nursing; organization and administration of public health nursing in local, state, and national health agencies; and study of the responsibilities of public health nursing in community programs for health and social welfare and in health guidance of individuals and families.

FIELD INSTRUCTION

Public health nursing field instruction is offered in cooperating public health agencies. Each student's field placement is planned on an individual basis, with consideration given to the amount and type of previous experience. In general, during the field instruction quarter the student lives in the area to which she has been assigned. She is responsible for providing her own uniforms and her own transportation to and from the agency. Any student planning to use a personally owned car for transportation during this quarter must have a current driver's license and meet the state requirements for insurance protection.

During the time the student is in the public health agency, she averages not more than a forty-hour week, including classes, conferences, and field practice.

GRADUATE PROGRAMS

The School of Nursing offers post-bachelor's programs and two master's degree programs designed to assist the student in the development of superior competence in the major field. Students in these programs must meet graduate admission requirements as outlined in the *Graduate School Bulletin* (see also page 28). The choice of bulletin (see page 37) does not apply to advanced degrees.

The applicant for either the post-bachelor's program or master's degree programs is advised to study the available offerings in order to determine which program will meet her needs. Majors are offered in nursing education, nursing service administration, mental health and psychiatric nursing, public health nursing, and other selected clinical areas.

Within the first quarter the student should plan her program with her major adviser in order to insure the best possible sequence of major and minor courses.

POST-BACHELOR'S

Post-bachelor's programs of study are offered to graduate nurses who are seeking advanced preparation for supervision or teaching in an area of special interest or who wish to increase their skills in providing expert nursing care in a clinical area. Field or clinical courses are designed to meet individual student needs for guided experience. For the most part these programs are planned on a two-quarter basis. They emphasize increased professional competence, additional facility in leadership roles, and guided experience in administrative and instructional techniques and in use of community facilities. Selected courses from the post-bachelor's program may apply toward the master's degree. The student is advised to select from available offerings those courses which will best meet her professional objectives. A supplementary program in public health nursing is also offered. Suggested plans for specific programs will be sent upon request.

MASTER'S DEGREES

Curricula are offered leading to the following advanced degrees in nursing:

MASTER OF ARTS, an academic degree with a minor in the arts or social sciences.

MASTER OF NURSING, a professional degree with emphasis on advanced preparation in a nursing specialty. Supporting courses are elected rather than a minor, and there is no foreign language requirement.

These curricula provide for graduate study and advanced professional preparation and research in a selected clinical area, in teaching or administration in schools of nursing, or nursing services in hospitals, or public health agencies. They are designed to develop superior professional competence and prepare the graduate for positions of administrative, teaching, or advanced clinical responsibility and for assumption of leadership in nursing.

All students enrolled in these programs carry out original research in nursing and present written theses. The student has the opportunity to select from the total University offerings those courses which enrich personal life and professional practice. It is assumed that the student has prior understanding, either through experience or education, of the field of nursing in which she wishes to specialize.

Most master's degree programs are four quarters in length, but will vary with the program selected and the number of credits carried each quarter. Candidates must complete 45 credits as follows: 18 credits in major courses, 12 credits in minor or supporting courses, and 15 credits in research and thesis. The majority of the major courses should be in nursing, although occasionally another department offers related courses which can be incorporated into the major plan. Minor courses are in the student's secondary area of interest and are planned with the minor department. This area should be one in which the student has the necessary prerequisites and which, if desired, might serve as the basis for future advanced study. Supporting courses may be selected from a variety of areas and are determined by the student's interest and departmental prerequisites.

COURSES FOR POST-BACHELOR'S AND MASTER'S STUDENTS

- | | | |
|------------|--|---------------------------|
| 382 | Field Practice in Public Health Nursing (5)
Health teaching and nursing. To be taken concurrently with 383. | J. Anderson, Staff |
| 383 | Field Practice in Public Health Nursing (5)
Administrative activities and record work. To be taken concurrently with 382. | J. Anderson, Staff |
| 430 | Advanced Nursing Field Work (3)
Practical development of advanced principles of nursing with supervision in solving selected patient problems. Planned experience in nursing care of patients involved in active medical and rehabilitative treatment programs in special clinical areas. Seminars, clinics, nursing conferences, and medical staff conferences. | Staff |
| 431 | Advanced Nursing Field Work (2)
Practical development of advanced principles of nursing care. Emphasis on development of nursing skills. Selected supervised experience in developing personal proficiency in team situations. Prerequisite, Nursing 430. | Staff |
| 432 | Principles of Advanced Nursing (2)
Integration of all aspects of nursing in the solution of nursing problems in special clinical fields. | Lucas, Wasson |

- 435 Practice Supervision in Nursing (3)** **Smith, Staff**
One quarter of experience in a selected clinical field. Opportunity for planned practice in administrative functions of the head nurse and supervisor. Prerequisite, 454, experience in field, or permission.
- 436 Practice Teaching in Nursing (3)** **Wasson, Staff**
One quarter of experience in a selected clinical field with opportunity for planned practice in formal and clinical teaching. Prerequisites, 417 and experience in clinical field or permission.
- 441 Advanced Field Practice in Public Health Nursing (12)** **J. Anderson, Staff**
Experience in public health nursing supervision or special fields. Prerequisite, permission.
- 454 Administration in Nursing (2)** **Smith**
Principles of administration related to nursing. Administrative behavior, personnel administration; coordinating functions of the nursing administrator; control of facilities in the nursing situation and budgetary techniques. Prerequisite, 418 or permission.
- 455 Administration of Schools of Nursing (3)** **Hoffman**
Application of principles of administration to the school of nursing. Includes consideration of over-all administrative functions as they relate to organization, student and faculty personnel, curriculum facilities, finance, records, and reports. Prerequisite, 454 or permission.
- 456 Nursing Service Administration (3)** **Smith**
Application of fundamentals of administration and organization to nursing service in the hospital. Includes discussion of selection, assignment, supervision, and evaluation of hospital nursing personnel, techniques for control of equipment and supplies, methods of communication, and interdepartmental and interpersonal relations. Prerequisite, 418, 454, or permission.
- 459 Current Literature in Nursing (2)** **Staff**
Reading and discussion of current literature in nursing, including a survey of background material. Emphasis is on generally accepted concepts and on those which are developmental or experimental.
- 462 Teaching in Schools of Nursing (3)** **Wasson**
Principles and methods and their application to the specific field of nursing arts teaching; group development of objectives and course content; practice in pertinent methods, with emphasis on teaching of skills; techniques of ward follow-up; instructional aids; evaluation of textbooks in the field. Prerequisites, 417 and Psychology 100.
- 463 Personnel Guidance Programs in Nursing (3)** **Lucas**
The development, aims, and objectives of personnel guidance programs. Major areas are developed to enable the nurse to apply principles in the organization, administration, and function of guidance in nursing. Prerequisite, Education 447 or permission.
- 464 The Role of the Nurse in Mental Hygiene (2-3)** **Kinney**
Lecture and discussion in prevention of emotional problems as they relate to the role of the nurse in her contacts with families and community agencies. Three credits are allowed if an approved clinical or field project is completed. Prerequisite, permission.
- 466 In-Service Education in Nursing (3)** **Smith**
Programs for in-service education in nursing involving various groups of workers in different institutions and agencies.
- 467 Evaluation of Performance in Nursing (3)** **Olcott**
Underlying philosophy and principles of performance evaluation for nurses with administrative and supervisory responsibility in various health agencies. The purposes of evaluation as they relate to guidance of the staff, to increased satisfaction in one's work, and to improved patient care are stressed.
- 492J Problems in International Health (2)** **Leahy**
Conference and discussion based on a survey of international health organizations and the services offered by regions and countries. Offered jointly with the Department of Public Health and Preventive Medicine. Open to any senior or graduate university student. Prerequisite, permission.
- 493 Public Health Nursing Aspects of Adult Hygiene (3)** **Kinney**
Community facilities and public health nursing care of the adult and aging population.
- 498 Methods of Supervision in Public Health Nursing (3)** **Leahy**
Principles and methods of supervision in public health nursing and their relationship to administration. Prerequisites, preparation and experience in public health nursing and permission.
- 501 Development of Nursing Procedures (2)** **Wasson**
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.
- 502J Applied Group Development Principles (3)** **Burke, 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 Department of Public Health and Preventive Medicine. Prerequisites, permission, Speech 332 or equivalent, and background in the health field.
- 505 Seminar in Administration of Schools of Nursing (3)** **Hoffman, Tschudin**
Discussion, analysis of situations in administration of schools of nursing. Prerequisite, 455 or equivalent.

- 506 Seminar in Nursing Service Administration (3)** **Smith**
Includes over-all planning for the nursing department with study of administrative problems; policy making, budget planning, control, and other administrative practices. Prerequisite, 456 or equivalent.
- 507 Seminar in Nursing Problems in Mental Hygiene (2)** **Kinney**
Nursing case material analyzed to provide a working concept of the principles of mental hygiene and to clarify the functions of the nurse in this area. Prerequisite, permission.
- 508 Seminar in Advanced Psychiatric Nursing (2)** **Lewis, Lucas**
Weekly two-hour seminar in exploration of interpersonal relations and the complex system of forces affecting these relationships in a psychiatric setting. Emphasis is placed upon the nurse's role in the total therapeutic milieu and upon identification and development of interpersonal experiences to promote emotional growth of the individual psychiatric patient. Case material is drawn from student experiences in current advanced psychiatric nursing practice.
- 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 Nursing and Psychosomatic Conditions (3)** **Ely**
Attention will be focused on the solution of nursing problems in the care of patients whose problems are primarily psychophysiologic in nature. Three hours of conference and four hours of clinical laboratory experience weekly. Prerequisites, basic course in psychiatric nursing and permission.
- 512 Advanced Fields in Psychiatric Nursing (3)** **Lucas**
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.
- 515 Special Fields in Public Health Nursing (3)** **J. Anderson**
Investigation of public health nursing responsibilities in special fields such as rheumatic fever and cerebral palsy. 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.
- 600 Research (*)** **Hoffman, Staff**
Thesis (*) **Hoffman, Staff**

REQUIRED COURSES IN ALLIED FIELDS

ART

- 100 Introduction to Art (5)** **Staff**
Lectures and studio work. For nonmajors.

CHEMISTRY

- 101 General Chemistry (5)** **Staff**
For students in home economics, nursing, and others preparing for 230. Periodic system, reactions, and principles.
- 130-131 Elementary Chemistry (3-3)** **Staff**
An introduction to general and organic chemistry. For nursing students only.
- 230 Organic Chemistry (5)** **Staff**
For home economics and nursing students. Fundamental reactions of simple organic compounds; carbohydrates, fats, proteins, and other compounds of biological importance. Prerequisite, 101 or 111.

CONJOINT

- 295 Introduction to Normal Growth and Development (2)** **Staff**
Study of the child from the standpoint of normal growth and development and nutritional and emotional needs. Offered jointly by the Departments of Pediatrics and Public Health and Preventive Medicine. For nonmedical students. Prerequisite, permission.
- 296 Introduction to Normal Growth and Development (2)** **Staff**
This course is an introduction to normal growth and development of children from school age through adolescence, including preparation of case material. Offered jointly by the Departments of Pediatrics and Public Health and Preventive Medicine. Prerequisite, Conjoint 295.
- 317-318 Elementary Anatomy and Physiology (6-6)** **Staff**
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)****Staff**

Fundamentals of effective exposition; collecting, organizing, and evaluating materials for writing; reading contemporary writings for meaning and form.

HOME ECONOMICS**119 Nutrition and Food Preparation (3)****Staff**

Demonstrations in preparing food, planning and serving meals; nutritive needs of different age groups and types. For student nurses.

305 Diet in Health and Disease (3)**Staff**

Practical applications of nutrition principles to feeding problems and to dietary modifications necessitated by disease. For student nurses. Prerequisite, 119.

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. Prerequisites, two quarters of general chemistry.

PATHOLOGY**303-304 General and Clinical Pathology for Nurses (1-1)****Staff**

Lectures, demonstrations, and tests concerned with the practical aspects of clinical pathology as they involve the nurse in her hospital duties. Study of causes, processes, and effects of important diseases.

PHARMACY**251 Elementary Pharmacy (2)****Staff**

Fundamental theory of dispensing pharmacy and pharmacy arithmetic. For students in the School of Nursing.

261 Pharmacology and Therapeutics (3)**Staff**

General study of the action and uses of drugs. For students in the School of Nursing.

PHYSICAL EDUCATION**110 Health Education (Women) (2)****Staff**

Health problems of freshman women. Required of all freshmen.

111 through 267 Physical Education Activities (Women) (1 each)**Staff**

111, adapted activities; 113-114, basic activities; 115, archery; 118, badminton; 121, bowling (fee, \$3.00 per quarter); 124, fencing; 126, golf (fee, \$3.00 per quarter); 128, riding (fee); 129, sailing; 131, ski conditioning; 132, elementary skiing (fee); 133, stunts and tumbling; 135, tennis; 141, basketball; 142, field sports; 143, hockey; 144, softball; 145, volleyball; 148, folk and square dancing; 149, international folk dance; 151, modern dance; 154, social dance; 155, tap dance; 157, canoeing (fee, \$2.50 per quarter); 160, adapted swimming; 161, beginning swimming; 162, elementary swimming; 215, intermediate archery; 218, intermediate badminton; 221, intermediate bowling (fee, \$3.00 per quarter); 222, advanced bowling (fee, \$3.00 per quarter); 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 dancing; 251, intermediate modern dance; 252, advanced modern dance; 257, intermediate canoeing (fee, \$2.50 per quarter); 263, intermediate swimming; 264, advanced swimming; 265, rhythmic swimming; 266, diving; 267, lifesaving.

PHYSICS**170 Physics for Nurses (5)****Staff**

Selected physical theories and principles and their applications to various nursing situations and to hospital equipment.

PSYCHIATRY**267 Introduction to Mental Hygiene (2)****Staff**

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 Psychiatry 450.

PSYCHOLOGY**100 General Psychology (5)****Staff**

Introduction to the principles of human behavior.

320 Directed Observation of Child Behavior in the Nursery School (2)**Staff**

Analysis of developmental trends and age-level expectancies of the preschool-age child with interpretations of typical behavior manifestations. Prerequisite, 100 or equivalent.

PUBLIC HEALTH**402 Communicable Disease Control (3)****Staff**

Public health methods for the control of common communicable diseases. For science majors. Prerequisite, Microbiology 301 or equivalent.

412 Public Health Organizations and Services (3)**Staff**

Study of local, national, and international public health services. Prerequisite, 301, 402, or permission.

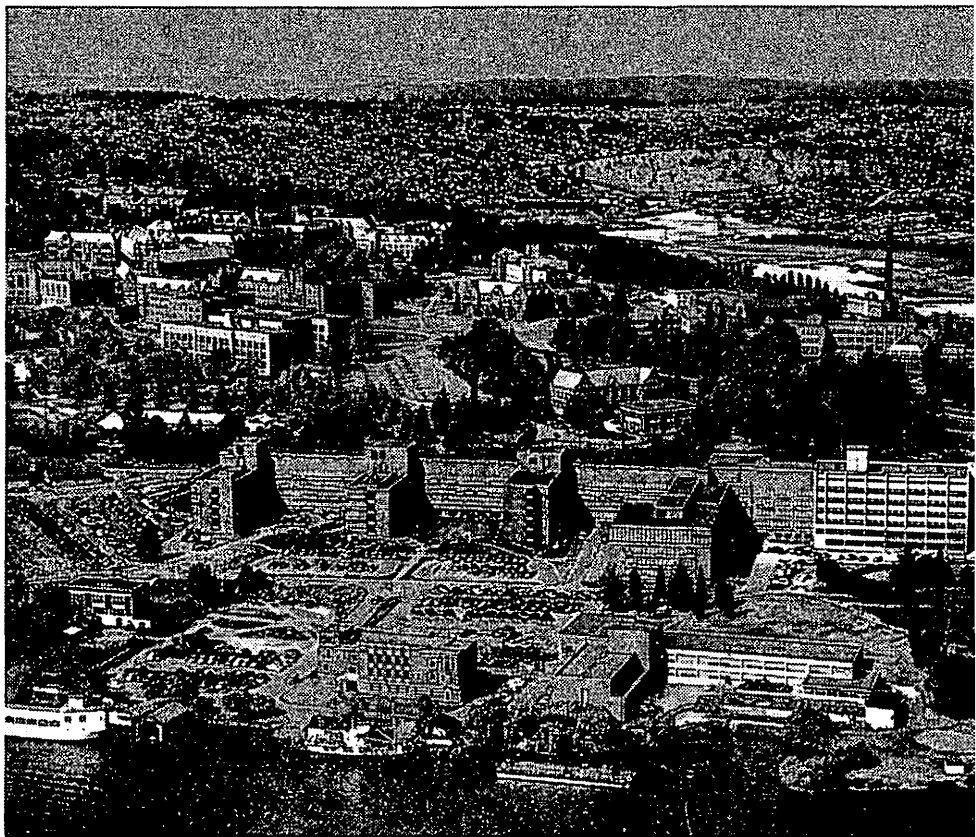
SOCIAL WORK**300 Field of Social Work (3)****Staff**

Principles and practices in the field of social work, with a comprehensive picture of available services and future needs. Prerequisite, upper-division standing.

SOCIOLOGY**110 Survey of Sociology (5)****Staff**

Basic principles of social relationships. Primarily for freshmen and sophomores. Not open to students who have taken 310.

BULLETIN • UNIVERSITY OF WASHINGTON



COLLEGE OF PHARMACY
1956-1957

BULLETIN, UNIVERSITY OF WASHINGTON is the title of the series of official announcements describing the University's programs. The series includes two general bulletins; bulletins of the colleges and schools; two Summer Quarter announcements, and publications of the Division of Adult Education and Extension Services, the correspondence study and extension class announcements.

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 REGULATIONS**, the second general bulletin, contains complete statements of University rules and scholastic requirements. It is designed for administrators and officials as well as students.

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

UNIVERSITY REGULATIONS (FOR REGISTERED STUDENTS ONLY)
INTRODUCTION TO THE UNIVERSITY

Bulletins of the Colleges and Schools

COLLEGE OF ARTS AND SCIENCES
COLLEGE OF BUSINESS ADMINISTRATION
COLLEGE OF EDUCATION
COLLEGE OF ENGINEERING
COLLEGE OF FORESTRY
GRADUATE SCHOOL
SCHOOL OF LAW
SCHOOLS OF MEDICINE AND DENTISTRY
SCHOOL OF NURSING
COLLEGE OF PHARMACY

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT
SUMMER QUARTER ANNOUNCEMENT
CORRESPONDENCE STUDY
EXTENSION CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 900
April, 1956

Published monthly at Seattle, Washington, by the University of Washington from October to July, inclusive. No issues in August and September. Entered as second-class matter December 18, 1947, at the post office at Seattle, Washington, under the Act of August 24, 1912.

CONTENTS

ADMINISTRATION	4
Board of Regents	
Officers of Administration	
College of Pharmacy Faculty	
CALENDAR	5
GENERAL INFORMATION	9
Announcement	
College Facilities	
Admission	
Registration	
Tuition and Fees	
Estimate of Yearly Expenses	
Student Activities and Services	
THE PROGRAMS IN PHARMACY	23
Bachelor of Science in Pharmacy	
Advanced Degrees	
Courses	

CHANGES IN UNIVERSITY REGULATIONS

The University and its colleges and schools reserve the right to change the rules regulating admission to, instruction in, and graduation from the University and its various divisions, and to change any other regulations affecting the student body. 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 and change fees at any time.

ADMINISTRATION

BOARD OF REGENTS

CHARLES M. HARRIS, <i>President</i>	Entiat
WINLOCK W. MILLER, <i>Vice-President</i>	Seattle
GRANT ARMSTRONG	Chehalis
THOMAS BALMER	Seattle
DONALD G. CORBETT	Spokane
CHARLES F. FRANKLAND	Seattle
MRS. J. HERBERT GARDNER	La Conner

Helen Hoagland, *Secretary*

OFFICERS OF ADMINISTRATION

HENRY SCHMITZ, Ph.D.	<i>President of the University</i>
HAROLD P. EVEREST, M.A.	<i>Vice-President of the University</i>
ETHELYN TONER, B.A.	<i>Registrar</i>
NELSON A. WAHLSTROM, B.B.A.	<i>Comptroller and Business Manager</i>
DONALD K. ANDERSON, B.A.	<i>Dean of Students</i>
FOREST J. GOODRICH, Ph.D.	<i>Dean of the College of Pharmacy</i>

COLLEGE OF PHARMACY FACULTY

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.

ANDRIES, MAURICE C., 1955.....	<i>Instructor in Pharmacognosy</i>
B.S., 1925, Montana State College;	
M.A., 1936, California	
FISCHER, LOUIS, 1929 (1945).....	<i>Professor of Pharmaceutical Chemistry;</i>
B.S., 1926, Ph.C., 1926, M.S., 1928,	<i>Assistant to the Dean; Chairman</i>
Ph.D., 1933, Washington	<i>of the Department of Pharmaceutical Chemistry</i>
GOODRICH, FOREST J., 1914.....	<i>Professor of Pharmacognosy;</i>
Ph.C., 1913, B.S., 1914, M.S., 1917,	<i>Dean of the College of Pharmacy;</i>
Ph.D., 1927, Washington	<i>State Chemist</i>
HALL, NATHAN A., 1952	<i>Assistant Professor of Pharmacy</i>
B.S., 1939, Ph.D., 1948, Washington	
KRUPSKI, EDWARD, 1944 (1955).....	<i>Associate Professor of Pharmaceutical</i>
B.S., 1939, M.S., 1941, Ph.D., 1949, Washington	<i>Chemistry</i>
MCCARTHY, WALTER C., 1949.....	<i>Assistant Professor of Pharmaceutical</i>
B.S., 1943, Massachusetts Institute of Technology;	<i>Chemistry</i>
Ph.D., 1949, Indiana	
PLEIN, ELMER M., 1938 (1951).....	<i>Professor of Pharmacy</i>
Ph.C., 1929, B.S., 1929, M.S., 1931, Ph.D., 1936, Colorado	
RISING, L. WAIT, 1934 (1936).....	<i>Professor of Pharmacy; Chairman of the</i>
Ph.C., 1924, B.S., 1924, Oregon State College; M.S.,	<i>Department of Pharmacy</i>
1926, Ph.C., 1928, Ph.D., 1929, Washington	<i>and Pharmacy Administration</i>
YOUNGKEN, HEBER W., Jr., 1942 (1952).....	<i>Professor of Pharmacognosy; Chairman</i>
A.B., 1935, Bucknell; B.S., 1938, Massachusetts College	<i>of the Department</i>
of Pharmacy; M.S., 1940, Ph.D., 1942, Minnesota	<i>of Pharmacognosy</i>
Naumann, Walter, D.D.S.....	<i>Supervisor, Drug Plant Gardens</i>
Roth, William, M.S.....	<i>Assistant State Chemist</i>

CALENDAR

All fees must be paid at the time of registration. Registration is by appointment only.

SUMMER QUARTER, 1956

REGISTRATION PERIOD

MAY 29-JUNE 1
JUNE 11-JUNE 15

Registration for all students. (*Registration appointments for students in residence Spring Quarter, 1956, and for former students not in residence Spring Quarter, 1956, may be obtained from the Registrar's Office beginning April 16. New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Summer Quarter. Registration appointments for new students will be mailed with notification of admission.*)

ACADEMIC PERIOD

JUNE 18-MONDAY
JUNE 19-TUESDAY
JUNE 22-FRIDAY
JULY 4-WEDNESDAY
JULY 18-WEDNESDAY
JULY 19-THURSDAY
JULY 20-FRIDAY
AUG. 17-FRIDAY

Instruction begins
Last day to add a course for the first term
Last day to add a course for the full quarter
Independence Day holiday
First terms ends
Second term begins
Last day to add a course for the second term
Instruction ends

AUTUMN QUARTER, 1956

REGISTRATION PERIOD

SEPT. 11-OCT. 2

SEPT. 14-OCT. 2

SEPT. 17-SEPT. 28

SEPT. 17-OCT. 2

Registration for students in residence Spring Quarter, 1956. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 21, but no later than September 21.*)

Registration for former students not in residence Spring Quarter, 1956. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 21, but no later than September 21.*)

Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (*August 31 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)

Registration for new transfer students with at least full sophomore standing. (*August 31 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointments will be mailed with notification of admission.*)

ACADEMIC PERIOD

OCT. 1-MONDAY

Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing.

OCT. 3—WEDNESDAY	Instruction begins (8 a.m.) for all other students
OCT. 9—TUESDAY	Last day to add a course
NOV. 12—MONDAY	State Admission Day holiday
NOV. 21—NOV. 26	Thanksgiving recess (6 p.m. to 8 a.m.)
DEC. 21—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1957

REGISTRATION PERIOD

NOV. 26—DEC. 14	Registration for students in residence Autumn Quarter, 1956. (<i>Registration appointments will be issued on presentation of ASUW cards beginning October 26.</i>)
JAN. 2—JAN. 4	Registration for former students not in residence Autumn Quarter, 1956. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 26.</i>)
JAN. 2—JAN. 4	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Winter Quarter. Registration appointments will be mailed with notification of admission.</i>)

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. 22—FRIDAY	Instruction ends

SPRING QUARTER, 1957

REGISTRATION PERIOD

FEB. 27—MAR. 15	Registration for students in residence Winter Quarter, 1957. (<i>Registration appointments will be issued on presentation of ASUW cards beginning January 25.</i>)
MAR. 27—MAR. 29	Registration for former students not in residence Winter Quarter, 1957. (<i>Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 25.</i>)
MAR. 27—MAR. 29	Registration for new students. (<i>New students should submit applications for admission, with complete credentials, at least thirty days before the beginning of Spring Quarter. Registration appointments will be mailed with notification of admission.</i>)

ACADEMIC PERIOD

APR. 1—MONDAY	Instruction begins
APR. 5—FRIDAY	Last day to add a course
MAY 24—FRIDAY	Governor's Day
MAY 30—THURSDAY	Memorial Day holiday
JUNE 9—SUNDAY	Baccalaureate Sunday
JUNE 14—FRIDAY	Instruction ends
JUNE 15—SATURDAY	Commencement



GENERAL INFORMATION

GENERAL INFORMATION

ANNOUNCEMENT

The College of Pharmacy announces that all students starting their pharmacy program September 15, 1957, or later will be required to complete five years of college work. One year of pre-pharmacy may be taken in the Premajor Department of the College of Arts and Sciences or at any other recognized institution of higher learning, but the final four years must be spent in an accredited college of pharmacy. The credits to be earned during the pre-pharmacy year and required for admission to the College of Pharmacy are: English, 9 quarter credits; chemistry (including qualitative analysis) 15 quarter credits; mathematics (including trigonometry and college algebra) 8 quarter credits; electives (general education) 13 quarter credits.

IN JULY, 1894, the Board of Regents of the University of Washington established a College of Pharmacy and directed that instruction begin in the school year 1894-95. 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 was established in 1904 and graduate work was begun in 1912, with one year of 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 pharmacy, pharmaceutical chemistry, and pharmacognosy.

The College of Pharmacy is a member of the University Division of Health Sciences, which also includes the Schools of Dentistry, Medicine, and Nursing. The Division was established to coordinate the teaching and research of these four members and to strengthen and reinforce each of them. In the basic science areas, for which a joint staff is maintained, teaching and research are planned to meet the special needs of each group in the Division.

The College of Pharmacy is accredited by the American Council on Pharmaceutical Education as a Class A college. It is a member of the American Association of Colleges of Pharmacy.

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 prescription practice, pharmaceutical chemistry, pharmacognosy, drug assaying, toxicology, and research; a model prescription pharmacy; a drug service department; and a stockroom.

DRUG PLANT GARDENS AND LABORATORY

The Drug Plant Gardens of the College comprise approximately four and a half acres of garden area, including a laboratory building that contains five greenhouses, three research laboratories, a classroom, drug grinders, 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 plant constituents.

DRUG SERVICE DEPARTMENT

The drug service department manufactures pharmaceutical preparations for the Health Center, the Schools of Dentistry and Medicine, and other sections of the University. When a pharmacy wing is added to the Health Sciences Building, it is expected that the drug service will be housed there and will expand its services to include the manufacture of most of the drugs and preparations that will be used in the dispensary of the new teaching hospital.

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 laboratory is under the direction of the Dean of the College.

ADMISSION

Regulations pertaining to admission to the University are administered by the Board of Admissions, an administrative board appointed by the President. First preference is given to qualified residents of Washington and Alaska and sons and daughters of University of Washington alumni. The College of Pharmacy, however, like most colleges in the University, admits qualified out-of-state students and encourages those with good scholarship records to apply.

Applications for admission must be submitted by prescribed deadlines and must be substantiated by certain credentials and reports submitted in accordance with University rules and practices. It is important that the student's application be submitted by the proper time, for the University can accept no responsibility for applicants who come to the campus before their credentials have been forwarded or before they have been notified of acceptance.

Correspondence regarding requirements for admission to and graduation from any college or school of the University should be addressed to the Registrar.

It is the student's responsibility to make sure that complete credentials covering all his previous secondary and college education are submitted to the University. To be official they must be forwarded by the principal or registrar of the last school 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.

Since it has become necessary to admit students to the College of Pharmacy on a selective basis, the College has adopted a special personal-information blank and

an interview to supplement the University's application for admission form. This special blank may be obtained from the University Registrar. Appointments for personal interviews are made with the Chairman of the College of Pharmacy's Admission Committee through the College Office. Interviews are held from May 1 through May 28, 1956, exclusive of Saturdays, and July 10 through July 12, 1956. Students whose credentials and personal information blanks have not been received before July 16 will be accepted only if vacancies exist in the College.

For admission in Autumn Quarter, the required credentials should be forwarded after high school graduation and before July 16. *The last day for new students to submit applications with complete credentials for admission in Autumn Quarter is August 31.* For admission in the other quarters, applications and credentials should be submitted at least thirty days before the opening of the quarter. This applies to all new students seeking admission as graduates or undergraduates. *It is imperative that students observe this deadline in order to allow time for evaluating the credentials and replying to correspondence.*

Before notice of admission is given, a medical questionnaire, on a form supplied by the Registrar, is issued to new out-of-state students. This should be completed by a doctor of medicine and returned by him to the Registrar's Office.

ADMISSION FROM ACCREDITED HIGH SCHOOLS

Graduates who earn diplomas of graduation from accredited high schools and who meet the University unit and scholarship requirements for entrance are eligible for admission as freshmen with regular standing.

No out-of-state student will be accepted for admission who would not be acceptable to the university of his own state (see Scholarship Requirement, page 12).

All entering freshmen are required to submit from an accredited high school an official application-for-admission blank (obtainable from any high school principal or from the Registrar) which includes all credits and grades and a statement that the student has completed his high school course with a diploma of graduation. A high school diploma may not be substituted for the official blank. Accredited high schools in Washington are those accredited by the State Department of Public Instruction; in Alaska, by the Northwest Association of Secondary and Higher Schools; in other states, by the state university or by a regional accrediting association. (See the announcement on page 9.)

UNIT REQUIREMENT. The minimum requirement of the University is 16 high school units¹ (or 15 units exclusive of activity credit in physical education, debate, etc.) with grades certifiable for university entrance. The 16 units should include at least 9 units in academic subjects (a unit equals two semesters, or one full year of high school study). No unit which received less than the lowest passing grade as defined by the high school itself may be included in the required total. For admission to the College of Pharmacy, the 9 academic units must include 3 units of English, 1 unit of elementary algebra, and 1 unit of plane geometry. One unit each of chemistry and physics is strongly recommended.

Students who enter with 1½ or more units of algebra may not take for credit Mathematics 101, in the first-year curriculum. Such students are given a special examination; those who pass substitute a 5-credit elective course, and those who fail take Mathematics 101 without credit.

Students who are deficient in mathematics are not admitted to the College of Pharmacy but may apply for admission to the College of Arts and Sciences with provisional standing. Arts and Sciences admission requirements are described in the *College of Arts and Sciences Bulletin*, which may be obtained from the University Registrar. After making up deficiencies, students may apply for a transfer to the College of Pharmacy.

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

SCHOLARSHIP REQUIREMENT. The College of Pharmacy requirement is a 2.20 grade-point average (equivalent to a C+ on the state of Washington grading system) in high school studies. Students from high schools in other states which use different grading systems will have their scholarship averages adjusted to the Washington four-point system (see Admission from Accredited High Schools, second paragraph, page 11).

Students whose grade-point average is at least 2.00 may apply for admission to the premajor program of the College of Arts and Sciences. After achieving a 2.20 average, they may apply for a transfer to the College of Pharmacy. Graduates of accredited schools in Washington and Alaska whose grade-point average is below 2.00 may petition the University Board of Admissions for entrance to the College of Arts and Sciences on probation, if they meet other College and University admission requirements. Prospective students in either of these categories should obtain from the University Registrar a *College of Arts and Sciences Bulletin*, which describes admission requirements. In general, the College of Arts and Sciences will not consider a petition for admission with a deficiency in either algebra or geometry unless the student has a 2.30 scholarship average or better.

ADMISSION BY EXAMINATION

Graduates of nonaccredited high schools in Washington and Alaska may petition the Board of Admissions for permission to enter if they meet other entrance requirements and are recommended by their high school principals. The Board will require these students to take special entrance examinations.

Prospective students who are not high school graduates must pass College Entrance Board Examinations and without deficiency meet requirements for admission to the University and the College of Pharmacy.

In general, the Board of Admissions considers that College Entrance Board Examinations may be used to supplement nonaccredited or incomplete preparatory study but may not be used as the sole basis to supply entrance credits. Applications of this kind have to be reviewed by the Board of Admissions.

Information regarding College Entrance Board Examinations may be obtained by writing to the Educational Testing Service, P.O. Box 592, Princeton, N.J., or Box 9896, Los Feliz Station, Los Angeles 27, California.

ADMISSION WITH ADVANCED UNDERGRADUATE STANDING

Students in other institutions who plan to transfer to the College of Pharmacy are advised to register for courses which fulfill the requirements of the College, so that they can transfer as many credits as possible.

Applicants are admitted to the University and to the College of Pharmacy by transfer from accredited colleges, universities, and junior colleges under these conditions:

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

2. Applicants who have completed a year or more of college work must have a 2.00 (C) grade-point average in their entire college records and in the last term of attendance. Those with less than a year of college work must have a 2.00 (C) average in both their college and high school records. The American Council on Pharmaceutical Education requires all member colleges to enforce the following regulation: "No student entering a college of pharmacy with advanced credit shall be permitted to complete the course in pharmacy in less than three collegiate years." (See the announcement on page 9.)

3. Complete transcripts and letters of honorable dismissal must be sent directly to the University Registrar by the registrar of the former school. Failure to supply complete college credentials will be considered a serious breach of honor and may result in permanent dismissal from the University.

4. A student who cannot meet the scholarship standards or qualify under the above, if he believes there are extenuating circumstances meriting consideration, may petition for permission to enter on probation. Such petitions will be considered by the Board of Admissions which has final authority to accept or reject them. A petition should be accompanied by evidence that the student is able to do better work than is indicated by his school records.

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

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 toward the work of the senior year. Extension and correspondence credits from schools that are members of the National University Extension Association are accepted without examination; credits from schools that are not members are accepted only after examination.

7. The maximum number of credits obtainable by acceptance of Armed Forces training school 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.

8. Credits earned in extension 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 correspondence credits is acceptable; the 90 credits may include the 45 extension or correspondence credits allowable from other institutions or may consist entirely of courses taken in this University's Division of Adult Education. All credits earned by advanced-credit examination and all acceptable Armed Forces training school credits must be counted in the 90-credit maximum. Up to 10 extension or correspondence credits from this University can apply toward the work of the senior year.

9. The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted. Definite advanced standing is not determined until 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. No credit will be allowed in the senior year.

For work done 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.

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

ADMISSION OF FOREIGN STUDENTS AND STUDENTS EDUCATED ABROAD

Students educated entirely or partially in foreign countries must meet the same general requirements as those educated in American schools and must demonstrate

a satisfactory command of the English language. The official record of Canadian students is the matriculation certificate or university admission certificate of their province. A student who has graduated from a school system that provides less than twelve years of instruction may be required to take additional high school work. Students who have been in university attendance must have official transcripts forwarded (see Admission, page 10.)

ADMISSION OF SPECIAL STUDENTS AND AUDITORS

Persons twenty-one or older who are residents of Washington or Alaska and are not eligible for admission as regular students 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 requirements for admission to the College, special students may change their status to that of regular students and may receive degrees.

Persons twenty-one or older may register as auditors in nonlaboratory courses or the lecture parts 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. Students who have been dropped for low scholarship or new applicants who do not qualify for admission may not register as auditors until they have been reinstated or accepted in some college of the University.

ADMISSION TO THE GRADUATE SCHOOL

Prospective graduate students must apply for admission to the Graduate School. Entrance requirements are described in the *Graduate School Bulletin*.

WORLD WAR II AND KOREAN VETERANS

ADMISSION

The University welcomes veterans under the G.I. Bill, the Vocational Rehabilitation Act, and the Korean Bill, provided they can meet the University of Washington entrance requirements.

ENTITLEMENT TO EDUCATIONAL BENEFITS

Veterans who are accepted for entrance to the College of Pharmacy and who expect to study under the provisions of Public Laws 16, 894, or 346 should apply to a Veterans Administration regional office for a Certificate of Eligibility at least one month prior to registration. This certificate should be presented at the Veterans Division, 1B Administration Building, the day of registration. Those who do not have this certificate at the time they register must pay all charges; they will receive refunds when authorization from the Veterans Administration is established.

Korean veterans entering under the provision of Public Law 550 should apply to a Veterans Administration regional office for a Certificate for Education and Training at least one month prior to registration. This certificate should be presented at the Veterans Division, 1B Administration Building, the day of registration or during the first week of instruction. Under this law students receive an educational allowance and pay their own tuition and fees. Korean veterans should be prepared to meet all their own expenses as well as the cost of tuition, fees, and supplies for at least two months. Educational allowances are not paid until a full month's attendance has been established.

REGISTRATION

All students must have definite registration appointments each quarter. New students are given appointments when they are notified of admission, and 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) may obtain registration appointments by writing or telephoning the Registrar's Office at the time specified in the Calendar (see page 5). Students in residence may obtain appointments at the time announced in the Calendar.

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 Dean's consent.

REGULAR STUDENTS

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

ADVISING

After notification of admission, and before registration, new students should visit or write to the College for help in planning their course program. Academic and other counseling of pharmacy students is done by the Dean's Office.

APTITUDE TESTS

New students of freshman standing (including transfer students with less than 45 quarter credits exclusive of credits in physical education activity and Army, Air Force, and Navy ROTC subjects) will take college aptitude tests at a time to be announced each quarter.

The aptitude tests consist of a battery of several tests selected on the basis of their proven value for the prediction of grades most likely to be earned by each student. Thus, the results of testing may be used in advisement of the student and are used as an aid in assigning students to appropriate sections in English composition and other subjects. Little can be gained by preliminary study for these tests. Sample copies are not available. Special, exchange, and blind students and auditors will be exempted. Also, foreign students who have markedly inadequate previous training in the use of English may be exempted.

MATHEMATICS PLACEMENT AND EXEMPTION TESTS

Students who have taken third-semester algebra in high school and who plan to take Mathematics 104 (Plane Trigonometry) and/or Mathematics 105 (College Algebra) are required to take a placement test before they are permitted to register for these University courses. Students who have taken trigonometry and/or college algebra in high school and whose University courses of study require these subjects may obtain exemption from Mathematics 104 and/or 105 by taking an exemption test. Directions for taking these tests are included in *Registration Information for New Students* which is enclosed with the Notification of Admission blank. Students are advised to review their high school work before taking these tests.

MEDICAL EXAMINATIONS

All new students, and all former students who have not attended the University within the preceding calendar year, must take a medical examination, including a chest X ray. For out-of-state students, this examination is in addition to the medical questionnaire which is part of the application for admission. An annual chest X ray is required of all students.

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 Announcement*.

Tuition

Resident students, per quarter **\$25.00**

A resident student is one who has been domiciled in Washington or Alaska for at least a year immediately before registration. The domicile of a minor is that of his parents.

Nonresident students, per quarter **\$75.00**

Prospective students are classified as nonresidents when their credentials come from schools outside Washington and Alaska. If they believe they are residents, they may petition the Nonresident Tuition Office for a change of classification.

Auditors, per quarter **\$12.00**

Veterans of World Wars I and 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, University Comptroller's Office.

Nonresident students who meet one of these requirements pay one-half the non-resident tuition.

This exemption is not granted to Summer Quarter students.

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), per year **3.00-5.00**

Autumn, Winter, and Spring Quarters, \$5.00; Winter and Spring Quarters, \$3.00; Spring Quarter, \$3.00.

Military Uniform Deposit, per year **25.00**

Paid by students in Army and Air Force ROTC; refundable when uniform is returned in good condition. Limitation on refund to Army ROTC students 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 Sheet Fee **.25**

One grade sheet is furnished each quarter without charge; the fee is charged for each additional copy.

Transcript Fee **.50**

One transcript is furnished without charge; the fee is charged for each additional copy. Supplementary transcripts are 25 cents each.

Graduation Fee **10.00**

SPECIAL FEES

From \$2.00 to \$5.00 is charged for late registration; \$2.00 for each change of registration; \$5.00 for a late medical examination; and \$1.00 for a late X ray. The fee for a special examination is \$1.00; for an advanced-credit examination, \$2.00 per credit; and for removal of an Incomplete, \$2.00.

MUSIC FEES, per quarter are: Private lessons, one-half hour a week (2 credits), \$25.00. Private lessons, one hour a week (3 credits), \$37.50. Group lessons, \$5.00.

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 ACTIVITY FEES, per quarter are: Bowling, \$3.00. Canoeing, \$2.50. Golf Instruction, \$3.00 per quarter; Season Ticket, \$5.00 per quarter, a season ticket is good on the golf course for play and may be purchased alone or in addition to golf instruction fee. Riding Fee is payable to riding academy and varies in amount.

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

Tuition, Incidental, and ASUW Membership Fees

Full-time resident student	183.00
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Full-time nonresident student	408.00
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<i>Athletic Admission Ticket</i> (optional)	3.00-5.00
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<i>Accident Insurance</i> (optional)	4.35
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<i>Special Fees and Deposits</i>	38.50
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Military uniform deposit, breakage ticket, and locker fee.

<i>Books and Supplies</i>	75.00
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Board and Room

Room and meals in Men's Residence Hall	600.00
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Room and meals in Women's Residence Halls	540.00-630.00
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Room and meals in student cooperative house	445.00-460.00
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Room and meals in fraternity or sorority house	660.00-700.00
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Initial cost of joining a fraternity or sorority is not included; this information may be obtained from the Interfraternity or Panhellenic Council.

<i>Personal Expenses</i>	200.00
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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 one alumni and forty-two collegiate chapters. Rho Chapter, at the University of Washington, was established in 1932. Members are selected from among juniors and seniors with a grade-point average of at least 3.00. 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 forty-seven 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 twenty-nine collegiate and thirteen alumnae chapters. Chi Chapter, at the University of Washington, participates in many activities. New members, usually sophomores, are selected on the basis of character, scholarship, and personality.

VISIT TO PHARMACEUTICAL PLANTS

Various Midwest 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.

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 and is in a position to direct 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 Counselor for International Services offers 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 counselor in the Office of the Dean of Students. United States students who are interested in study abroad may obtain information on institutions and on Fulbright and other scholarships from the Counselor for International Services.

COUNSELING CENTER

The Counseling Center offers vocational and personal counseling to students who need help in their adjustments to college living. The staff of the Center,

which includes vocational counselors, psychiatric social workers, and clinical psychologists, works closely with other student facilities on campus and supplements the academic advisory program.

HOUSING

Men students may obtain rooms in the Men's Residence Hall through the Office of Student Residences. Rooms for women are available on the campus in the Women's Residence Halls. Interested students should write to the Director of Student Residences or the Business Manager of the Women's Residence Halls. The Student Cooperative Association, 1114 East Forty-fifth Street, Seattle 5, provides housing for men and women students. Information about fraternities may be obtained from the Interfraternity Council and information about sororities from the Panhellenic Council.

It is expected that women students under twenty-one who are not living at home will live in approved group residences, such as the Women's Residence Halls, student cooperatives, Wesley House, and sorority houses. Other living arrangements must be approved by the Office of the Dean of Students.

The Office of Student Residences keeps listings of rooms, rooms with board, housekeeping rooms, and a few apartments and houses. These listings must be consulted in person. Married students who are veterans of World War II or Korea may apply to this office for accommodations in Union Bay Village, the University's family housing project. Since there is a long waiting list, new students should not rely on the possibility of immediate housing there.

HEALTH CENTER

The University maintains a health center and infirmary which help to 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.

PLACEMENT

Part- and full-time work off campus may be obtained at the University Placement Office. Applications are accepted from students and graduates of the University and from the wives and 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 Nonacademic Personnel Department and the ASUW Personnel Office.

The College of Pharmacy faculty helps pharmacy students to obtain part-time work while at the University and permanent employment upon graduation.

AWARDS 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. A handbook listing current awards and loans may be obtained from the Office of the Dean of Students.

Awards established especially for pharmacy students include scholastic recognition awards sponsored by the Rho Chi Honorary Society, Kappa Psi Fraternity, Lambda Kappa Sigma Sorority, Linton Memorial, Merck and Company, and the Lehn and Fink Company. Other scholarships, fellowships, and grants are:

JOHN B. QUICK ENDOWMENT SCHOLARSHIP, \$825. A part or all to be awarded annually to worthy and deserving undergraduate students.

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, \$90. Three awarded to deserving upper-division students showing unusual interest in retail pharmacy as a career.

AMERICAN FOUNDATION FOR PHARMACEUTICAL EDUCATION SCHOLARSHIPS, \$100. Four available, awarded to upper-division students in the upper 25 per cent of their class who need financial assistance.

McKESSON AND ROBBINS SCHOLARSHIP, \$100. Awarded to the junior student with the highest grade-point average.

WOMEN'S AUXILIARY OF THE WASHINGTON STATE PHARMACEUTICAL ASSOCIATION SCHOLARSHIPS, \$50. Several awarded by the state auxiliary and its Seattle, Spokane, and Pierce County units to students showing excellent scholarship and needing assistance.

LAMBDA KAPPA SIGMA INSPIRATIONAL AWARD, \$25. Awarded to a student who shows unusual leadership and helpful student influence.

COLLEGE OF PHARMACY UNIVERSITY TEACHING FELLOWSHIPS. Several of these fellowships are awarded each year to graduate students interested in teaching. The fellowships amount to \$150 a month for nine months, with tuition exemption. Recipients may carry a maximum of 11 credits each quarter in addition to their work as teaching fellows.

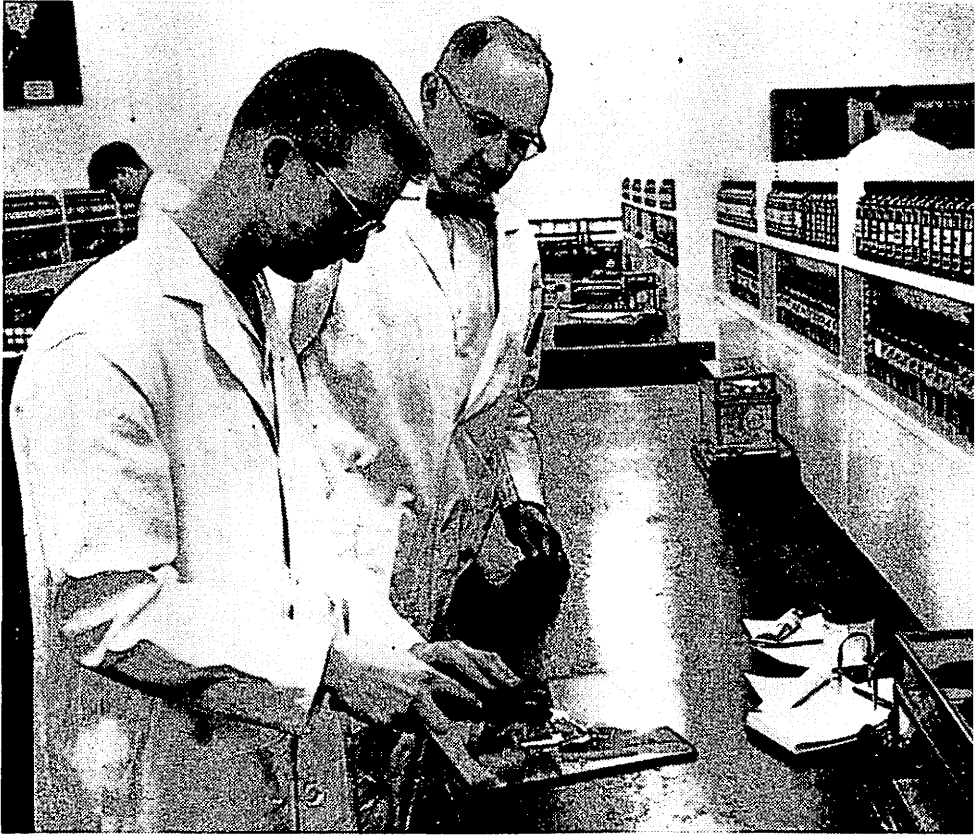
AMERICAN FOUNDATION FOR PHARMACEUTICAL EDUCATION FELLOWSHIPS. Up to \$1,500 a year is available upon approval of the foundation to students in the upper 25 per cent of their class who are interested in pharmaceutical education or industry.

ELI LILLY RESEARCH AWARD, \$1,500. Two awards available for graduate students with a major interest in plant biochemistry and pharmacognosy.

ARTHUR A. DENNY FELLOWSHIP AWARD, \$500. Awarded when funds are available to a graduate student showing an interest in research.

AMERICAN PHARMACEUTICAL ASSOCIATION RESEARCH GRANT, \$500. Awarded to a graduate student with a major interest in the field of dermatologic preparations.

Application forms and further information about undergraduate and graduate awards in pharmacy may be obtained by writing to the Dean of the College.



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. Curricula for these degrees are accredited by the American Council on Pharmaceutical Education.

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 work as pharmacists in hospital and clinic dispensaries; as personnel in wholesale drug distribution; as medical representatives for pharmaceutical concerns; as production, control, and research chemists 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 Army, the Navy, and other government departments. Teaching and research careers in colleges of pharmacy are available after the completion of graduate study.

LICENSURE

Admission to the practice of pharmacy in any state is conditional upon the candidate's meeting the requirements of the state pharmacy laws. In the state of Washington admission to practice is dependent upon the candidate's having a Bachelor of Science in Pharmacy degree, completing one year of practical experience, and passing the licensing examination. For candidates who are already licensed to practice in another state, portions of the licensing examination may be waived by reciprocity with that state.

Further information about licensure requirements may be obtained from the State Board of Pharmacy, Seattle.

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. A student may choose to graduate under the graduation requirements of the appropriate school or college bulletin published most recently before the date of his entry into the college in which he is to graduate, provided that not more than ten years have elapsed since that date. As an alternative he may choose to fulfill the graduation requirements as outlined in the appropriate school or college bulletin published most recently before the date of his graduation. All responsibility for fulfilling graduation requirements will 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.

MILITARY TRAINING

Male students who enter the University as freshmen or sophomores are required to complete six quarters of military training. Students should meet this requirement during the first two years they are in residence (that is, registered in regular University classes).

The requirement may be met with courses in one of three University departments: Air Science, Military Science and Tactics, or Naval Science. The Departments of Air Science and Military Science offer six-quarter (two-year) basic programs of class work and drill which fulfill University requirements, and two years of advanced ROTC training which selected students may enter after completing the basic program. Information about these programs may be obtained from the Professor of Air Science and the Professor of Military Science and Tactics at the University. The Department of Naval Science offers four-year programs only, and prospective students who are interested in Naval ROTC should write to the Professor of Naval Science.

Students with junior or senior standing in the Naval ROTC, and those who enter advanced Air Force or Army ROTC, must complete the program as a condition of graduation unless excused or dismissed by authority of the Secretary of the service concerned.

Exemptions from the requirement are granted to:

1. Students who are twenty-three or older at the time of original entrance.
2. Special students.
3. Part-time students, those registered for 6 credits or less.
4. Students who are not citizens of the United States.
5. Students who because of physical condition are exempted by the University Health Officer.
6. 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.
7. Students who are active members or reserve officers of the Armed Forces or Coast Guard, or commissioned officers of the National Guard.
8. Students who are active enlisted members of the National Guard or of the Organized Reserve of the Armed Forces or Coast Guard.
9. 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.
10. 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 4 or 10 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

ACTIVITY COURSES. Students who enter the University as freshmen or sophomores are required to complete one physical education activity course per quarter for the first three quarters of residence.

Men students must take one quarter of swimming, unless the required swimming proficiency (exemption) test has been passed. In the other two quarters, a student can elect any activity course he desires, but only one quarter of any one activity can be counted toward graduation. Any freshman or varsity sport may be substituted for any activity course except swimming.

Women students must complete one quarter of swimming, unless the safety swimming test has been passed, and one of the fundamental movement courses prescribed by the Department during the three quarters.

Exemptions from the requirement are granted to:

1. Students who are twenty-five or older at the time of original entrance.
2. Special students.
3. Part-time students, those registered for 6 credits or less.
4. 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 School of Physical Education. All other students who are reported by the University Health Officer as unfitted to join regular classes will be assigned by the Executive Officer of the School of Physical Education to special programs adapted to their needs.
5. Students who are veterans of military service. Complete exemption is granted for six months or more of active service. Veterans with less than six months of service receive no exemption.

6. 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 undergraduates are required to take Physical Education 175, a course in personal health, within the first three quarters of residence. Veterans with six months or more of active service are exempt from this requirement. Other exemptions are by examination and by transfer of credit for a similar course in an accredited college.

Women students who enter the University as freshmen are required to take Physical Education 110, a course in health education, within the first three quarters of residence. This requirement may be satisfied by passing a health-knowledge examination given during the Autumn Quarter registration period for women entering the University for the first time.

SCHOLARSHIP AND MINIMUM CREDITS

Students must maintain a grade-point average of at least 2.00 in all course work. 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 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.

For graduation, students must have an over-all grade-point average of at least 2.20 in all courses in pharmacy, pharmaceutical chemistry, and pharmacognosy, and must have an average of not less than 2.00 in each Department. To register in

any pharmacy course numbered 499, students must have a cumulative average of not less than 2.50.

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 pharmacy courses numbered 499 may be applied toward graduation.

A student whose average falls below 2.00 during any quarter is placed on probation and is allowed one additional quarter to attain a cumulative 2.00. Failure to earn the required average in this time will be cause for the student to be dropped from the College. A student who has been dropped and who wishes to be readmitted must apply to the College of Pharmacy Admissions Committee. Grades earned at other institutions may not be used to raise the grade-point average at this College.

Only students enrolled in the College may register for professional pharmacy courses unless written permission is obtained from the Dean and the instructor.

SENIOR-YEAR RESIDENCE

Senior standing is attained when 135 credits, plus the required quarters of ROTC and physical education, have been earned. In 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 extension or correspondence courses.

CURRICULUM

The four-year curriculum leading to the degree of Bachelor of Science in Pharmacy is outlined below. The third- and fourth-year elective courses, which permit some specialization in the field of the student's particular interest, should be chosen in consultation with an adviser. (See the announcement on page 9.)

First Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Pharm. 101-. Principles ...	3-	Pharm. -102-. Principles ...	3-	Pharm. -103. Principles ...	3
Pharm. 104. Hist. Pharm.	2	Bot. 111. Elementary ...	5	Chem. 113. Qual. Analysis	5
Chem. 111 or 115.		Chem. 112. Gen. Chem. ...	5	Engl. 103. Composition ...	3
Gen. Chem.	5	Engl. 102. Composition ...	3	Math. 101. Intermediate	
Engl. 101. Composition ...	3	Phys. Educ. Activity ...	1	Algebra	5
Phys. Educ. 110 or 175.	3	ROTC	2- 3	Phys. Educ. Activity ...	1
Health	2			ROTC	2- 3
Phys. Educ. Activity ...	1				
ROTC	2- 3				
	16-19		17-20		17-20

Second Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Pharm. 209-. Prescriptions	3-	Pharm. -210-. Prescriptions	3-	Pharm. -211. Prescriptions	3
Pharmacog. 212-. Pharm-		Pharmacog. -213-. Pharm-		Pharmacog. -214. Pharm-	
acog.	3-	acog.	3-	acog.	3
Chem. 237. Organic		Chem. 238. Organic		Chem. 239. Organic	
Pharmaceutical	5	Pharmaceutical	5	Pharmaceutical	5
Physics 101 and 107.		Physics 102 and 108.		Zool. 208. Physiol.	5
General	5	General	5	ROTC	2- 3
ROTC	2- 3	ROTC	2- 3		
	16-19		16-19		16-19

Third Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Pharmacog. 304. Pharm-		Pharmacog. 411. Hormones	3	Phys. Educ. 292. First	
acog. Laboratory	3	Pharm. Chem. 326.		Aid and Safety	3
Pharm. Chem. 325.		Quant. Pharm. Anal. ...	5	Pharmacol. 303. General	3
Quant. Pharm. Anal. ...	5	Pharmacol. 302. General	3	Electives	10
*Pharmacol. 301. General	3	Micro. 301. General Micro	5		
Econ. 201. Principles ...	5				
	16		16		16

* Students entering on or after September 15, 1956, will be required to complete a prescribed laboratory course in pharmacology.

Fourth Year

AUTUMN QUARTER	CREDITS	WINTER QUARTER	CREDITS	SPRING QUARTER	CREDITS
Pharm. 313. Advanced ...	5-	Pharm. 314. Advanced ...	-5-	Pharm. 315. Advanced....	-5
Pharm. 382. Modern Pharmaceuticals	5	Pharm. 318. Pharm. Acctg.	5	Pharmacog. 412. Serums...	2
Pharm. Chem. 340-. Or-		Pharm. Chem. 341-. Or-		Pharm. Chem. 342. Or-	
ganic. Med. Prod.	3-	ganic. Med. Prod.	-2-	ganic. Med. Prod.	-2
Pharm. Chem. 395-. Pharm.		Pharm. Chem. 396. Pharm.		Pharm. Chem. 497. Pharm.	
Chem.	3-	Chem.	-3	Chem.	5
	16		15	Electives	3
					17

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*. The choice of bulletin (see page 24) 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. For graduate study, the approval of both the College of Pharmacy and the Graduate School is necessary.

Specialization is offered in pharmacy, pharmaceutical chemistry, and pharmacognosy. Graduate study and work toward an advanced degree in pharmacology is directed by the Department of Pharmacology of the School of Medicine.

Graduate students majoring in each Department of the College of Pharmacy 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 major professor.

MASTER OF SCIENCE. Candidates must have the degree of Bachelor of Science in Pharmacy 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 45 credits in course work and thesis must be presented with not less than 27 credits of course work exclusive of nonthesis research.

The candidate must present a certificate of proficiency in one foreign language.

DOCTOR OF PHILOSOPHY. Candidates must complete at least two years of graduate study in addition to the work done for the master's degree, as well as a research problem that yields comprehensive results and is a definite contribution to knowledge.

A total of not less than 135 credits of course work and thesis must be presented with not less than 56 credits in course work exclusive of nonthesis research. This rule shall not apply to those graduate students enrolled before January 1, 1955. The credits earned for the master's degree may be applied toward the doctor's degree.

The candidate must present a 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 open only to graduate students, though 400 courses may carry graduate credit for graduate students.

The number in parentheses following the course title indicates the amount of credit the 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 quarterly *Time Schedule and Room Assignments*.

PHARMACEUTICAL SCIENCES**PHARMACEUTICAL CHEMISTRY****Chairman: LOUIS FISCHER, 307 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 intend to work toward a Master of Science or Doctor of Philosophy degree should communicate with the Chairman of the Department before registration.

Courses

- 301 Bibliography Technique (2)** **McCarthy**
Use of scientific literature, preparation of abstracts, and assignments in selected pharmaceutical topics.
- 325 Quantitative Pharmaceutical Analysis (5)** **Krupski**
Principles of volumetric analysis with special emphasis on medicinal compounds. Prerequisite, Chemistry 113.
- 326 Quantitative Pharmaceutical Analysis (5)** **Krupski**
Principles of gravimetric and colorimetric analysis applied to medicinal compounds. Prerequisite, 325.
- 340-341-342 Organic Medicinal Products (3-2-2)** **Fischer**
Nomenclature, classification, synthesis, properties, structure, and activity of medicinal products. Prerequisite, Chemistry 239.
- 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.
- 497 Pharmaceutical Chemistry and Toxicology (5)** **Fischer**
History, source, structure, synthesis, qualitative detection, and quantitative determination of alkaloids, including the separation and identification of poisons from animal tissues. Prerequisites, 326 and Chemistry 239.
- 499 Undergraduate Research (1-5)** **Fischer, 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 1958-59.)
- 520 Seminar (1, maximum 3)** **Staff**
Graduate students attend seminar every quarter while in residence, but a maximum of 1 credit per year is allowed.
- 521, 522, 523 Advanced Organic Medicinal Products (3,3,3)** **McCarthy**
Synthesis, isolation, and relation between structure and physiological activity for the important classes of medicinal agents. (Offered every third year; offered 1957-58.)
- 526, 527, 528 Advanced Organic Medicinal Products Laboratory (2,2,2)** **McCarthy**
Synthesis of important medicinal products and isolation of active principles from natural sources. (Offered every third year; offered 1957-58.)
- 531 Plant Chemistry (3)** **Staff**
Alkaloids, including methods of isolation, degradation studies, proof of structure, and synthesis of alkaloids, with emphasis on pharmaceutical compounds. (Offered every third year; offered 1956-57.)
- 532 Plant Chemistry (3)** **Staff**
Production, isolation, and chemistry of the volatile oils and of sterols, with emphasis on pharmaceutical compounds. (Offered every third year; offered 1956-57.)
- 533 Plant Chemistry (3)** **McCarthy**
Glycosides and related compounds, including methods of isolation, proof of structure, synthesis, and activity, with emphasis on pharmaceutical compounds. (Offered every third year; offered 1956-57.)
- 600 Research (*)** **Fischer, Krupski, McCarthy**
Thesis (*) **Staff**

PHARMACOGNOSY

Chairman: HEBER W. YOUNGKEN, 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 for experimental use.

Students who intend to work toward a Master of Science or Doctor of Philosophy degree should communicate with the Chairman of the Department before registration.

Courses

- 212-213-214 Pharmacognosy (3-3-3)** **Goodrich, Youngken**
A general introduction to plant and animal products used in pharmacy. Emphasis is placed upon active principles, their sources, certain derivatives, production, and uses. Therapeutic and nontherapeutic agents are included. Prerequisite, Botany 111 or an equivalent course in biology.
- 304 Pharmacognosy Laboratory (3)** **Andries**
The application of microscopic and microchemical methods in the study of vegetable and animal drug principles. Prerequisites, -214 and Chemistry 239.
- 405 Advanced Pharmacognosy (3)** **Staff**
Identification, tissue staining reactions, and advanced microchemical examination of vegetable drug constituents, with emphasis upon adulteration and contamination factors. Prerequisite, 304 or permission.
- 406 Medicinal Plants (2)** **Youngken**
Problems in drug plant cultivation and commerce, with considerable field work in the Drug Plant Gardens. Emphasis is placed upon alkaloid-, glycoside-, and oil-yielding plants. Weedicides and insecticides are included. Prerequisite, -214 or permission.
- 411 Hormones and Glandular Products (3)** **Youngken**
An advanced study of pharmaceutical products derived from animal exocrine and endocrine glands, with emphasis upon hormones and their chemical and physiological role as drugs. Prerequisites, -214, and Zoology 208 or equivalent.
- 412 Serums, Vaccines, and Allergens (2)** **Staff**
Production, quality, and use of serum, vaccine, virus, and allergenic products currently employed in the prevention and treatment of disease. Prerequisites, -214, 411, and Microbiology 301.
- 499 Undergraduate Research (1-5)** **Goodrich, Youngken**
Research problems in pharmacognosy. Open to qualified juniors and seniors.

Courses for Graduates Only

- 520 Seminar (1, maximum 3)** **Staff**
Graduate students attend seminars every quarter while in residence, but a maximum of 1 credit per year is allowed.
- 600 Research (*)** **Goodrich, Youngken**
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 intend to work toward a Master of Science or Doctor of Philosophy

degree should communicate with the Chairman of the Department before registration.

Courses

- 101-102-103 Fundamental Principles and Processes of Pharmacy (3-3-3)** **Hall**
Manufacture of U.S.P. and N.F. galenical preparations; development of laboratory technique.
- 104 History of Pharmacy (2)** **Hall**
Development of the science and profession of pharmacy and its literature.
- 115 Home Remedies (2)** **Rising**
Remedies and cosmetic preparations commonly used in the home, from the point of view of composition, effectiveness, and safety. For nonmajors.
- 209-210-211 Prescriptions (3-3-3)** **Plein**
Fundamental principles of prescription compounding and dispensing, with emphasis on accuracy and technique. Pharmaceutical Latin and prescription reading are included. Prerequisites, -103 and Chemistry 113 or equivalent.
- 251 Elementary Pharmacy (2)** **Hall**
Fundamental theory of dispensing pharmacy and pharmacy arithmetic. For students in the School of Nursing.
- 261 Pharmacology and Therapeutics for Nurses (3)** **Hall**
General study of the action and uses of drugs. For students in the School of Nursing.
- 313-314-315 Advanced Prescriptions, Professional Pharmacy, Professional Management (5-5-5)** **Rising**
Principles of management and the laws governing the practice of pharmacy. The divisions of professional pharmacy are discussed under such headings as general practice, veterinary, and dental pharmacy. Advanced techniques in prescription practice are stressed. Prerequisite, -211.
- 318 Pharmaceutical Accounting (5)** **Cannon**
Basic principles of accounting as used in pharmacy, with emphasis on state and federal taxes and deductions and on fiscal reports for comparing business trends under accepted business procedures.
- 352 Pharmacy and Therapeutics for Dental Hygienists (3)** **Hall**
Principles of pharmacy; mathematics of pharmacy; pharmacological and therapeutic action of drugs pertaining to dentistry.
- 382 Modern Pharmacouticals (5)** **Plein**
New and important pharmaceuticals found in modern practice considered from the standpoint of composition, manufacture, dosage, and properties. Prerequisites, -211, Chemistry 239 or equivalent, and senior standing.
- 473 Cosmetic Manufacturing (3)** **Rising**
Preparation of many types of cosmetics and study of their physical, chemical, and physiological properties. Prerequisite, Chemistry 239 or equivalent.
- 483 Hospital Pharmacy (3-5)** **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 3)** **Staff**
Graduate students attend seminars every quarter while in residence, but a maximum of 1 credit per year is allowed.
- 540 Pharmaceutical Emulsions (2)** **Rising**
Problems in the preparation of emulsions in pharmaceutical manufacturing. Prerequisites, Chemistry 239 and either Chemistry 351, 352, or equivalent.
- 550 Solvents and Solvent Extraction (2)** **Plein**
Theories of solvent extraction and the use of solvents applied to pharmaceutical manufacturing. Prerequisite, permission.
- 600 Research (*)** **Hall, Plein, Rising**
- Thesis (*)** **Staff**

OTHER COURSES FOR PHARMACY STUDENTS

- Botany 111 Elementary Botany (5)** **Staff**
Structure, physiology, and reproduction of seed plants.

- Chemistry 111 General Chemistry (5)** **Staff**
Open only to students without high school chemistry. Primarily for those who expect to continue through 113 or beyond. Periodic system; some families of elements; laws of chemical combination, gases, atomic, kinetic, and ionic theories; electrolysis.
- Chemistry 112 General Chemistry (5)** **Staff**
Atomic and molecular structure, chemical bonding, oxidation-reduction, electrochemistry, nonmetals, solutions, equilibria. Prerequisite, 111 or 115.
- Chemistry 113 Elementary Qualitative Analysis (5)** **Staff**
Semi-micro qualitative analysis for common cations; metals, metallurgy, carbon compounds, nuclear reactions. Prerequisite, 112.
- Chemistry 115 General Chemistry (5)** **Staff**
For students who have had high school chemistry. Primarily for those who expect to continue through 113 or 116. Chemistry advisers should be consulted as to whether this course should be followed by 112 or 116. Content similar to that of 111. No credit if 111 has been taken.
- Chemistry 237, 238, 239 Organic Pharmaceutical Chemistry (5,5,5)** **McCarthy**
The chemistry of the carbon compounds and their application to pharmacy. For pharmacy students only. Prerequisite, Chemistry 113.
- Economics 201 Principles of Economics (5)** **Staff**
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.
- 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.
- 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. Prerequisite, one year of high school algebra.
- 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. Prerequisites, two quarters of general chemistry.
- Pharmacology 301, 302, 303 General Pharmacology (3,3,3)** **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 such poisonous effects.
- Physical Education 106 through 250 Physical Education Activities (Men) (1 each)** **Staff**
106, handball; 107, basketball; 108, tennis; 109, softball; 110, golf (fee, \$3.00 per quarter); 11, track; 112, crew (class), prerequisite, swimming; 113, fencing; 114, boxing; 115, gymnastics; 117, wrestling; 118, volleyball; 119, swimming; 120, Rugby; 121, touch football; 122, badminton; 123, archery; 125, skiing (fee); 126, speedball; 127, bowling (fee, \$3.00 per quarter); 128, weight training; 129, sailing; 131, beginning, 134, intermediate folk and square dancing; 141, freshman, 241, varsity basketball; 142, freshman, 242, varsity crew, prerequisite, swimming; 143, freshman, 243, varsity football; 144, freshman, 244, varsity track; 145, freshman, 245, varsity swimming; 146, freshman, 246, varsity baseball; 147, freshman, 247, varsity tennis; 148, freshman, 248, varsity golf; 149, freshman, 249, varsity skiing (fee); 150, freshman, 250, varsity volleyball; 151, modern dance; 154, social dance.
- Physical Education 110 Health Education (Women) (2)** **Staff**
Health problems of freshman women. Required of all freshmen.
- Physical Education 111 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; 121, bowling (fee, \$3.00 per quarter); 124, fencing; 126, golf (fee, \$3.00 per quarter); 128, riding (fee); 129, sailing; 131, ski conditioning; 132, elementary skiing (fee); 133, stunts and tumbling; 135, beginning tennis; 141, basketball; 142, field sports; 143, hockey; 144, softball; 145, volleyball; 148, beginning folk and square dancing; 149, international folk dance; 151, modern dance; 154, social dance; 155, tap dance; 157, canoeing (fee, \$2.50 per quarter); 160, adapted swimming; 161, beginning swimming; 162, elementary swimming; 215, intermediate archery; 218, intermediate badminton; 221, intermediate bowling (fee, \$3.00 per quarter); 222, advanced bowling (fee, \$3.00 per quarter); 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 dancing; 251, intermediate modern dance; 252, advanced modern dance; 257, intermediate canoeing (fee, \$2.50 per quarter); 263, intermediate swimming; 264, advanced swimming; 265, rhythmic swimming; 266, diving; 267, lifesaving.
- Physical Education 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 by examination.
- Physical Education 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.
- Physics 50 General Physics (0)** **Staff**
Mechanics and sound for students concurrently registered in 101 with deficiencies. Methods for handling problems in physics. Prerequisite, concurrent registration in 101.

Physics 101, 102, 103 General Physics (4,4,4)**Staff**

101: mechanics and sound. Prerequisite, plane geometry, trigonometry, or concurrent registration in 50, one year of high school physics, and concurrent registration in 107. 102: electricity and magnetism. Prerequisite, 101 and concurrent registration in 108. 103: heat, light, and modern physics. Prerequisite, 101 and concurrent registration in 109. No credit for 101, 102, 103 without credit in 107, 108, 109, respectively.

Physics 107, 108, 109 General Physics Laboratory (1,1,1)**Staff**

107: mechanics and sound laboratory to be taken concurrently with 101, 108: electricity and magnetism laboratory to be taken concurrently with 102. 109: heat and light laboratory to be taken concurrently with 103.

Zoology 208 Elementary Human Physiology (5)**Staff**

Each organ system is described and its functions illustrated in the laboratory. Prerequisite, freshman chemistry.